KAKATIYA GOVERNMENT COLLEGE

HANUMAKONDA

Name : Dr. RAJEERU JARUPULA
Designation : Assistant Prof of commerce
Year of Award of PhD. : 2024
Name of the University : Kakatiya University
Year of entering into Govt. Service : 2011

S. No.	Details of copies of Certificates	Remarks
1	Copy of Ph.D Certificate	Enclosed
2	Press note	Enclosed
3	Research work dates of seminars and Pre-Ph.D Date of joining in this college	RDS - 22-03-2013 PSS - 20-05-2023; 24-11-2022 (Ph.D Coll)
4	Details of Ph.D Admission-part time or full time	Part-time
5	Copies of RDC Approval letters of Ph.D	N.A.
6	Name of guide/supervisors with mobile number, email id (mail ID not available)	Dr. K. Omprakash Reddy 9849589439, (N.A)
7	Copies of guide allotment letter	Enclosed
8	No. of increments sanctioned for Ph.D.	03
9	Published Research article-copies.	Enclosed
10	Original Ph.D Thesis.- Book.	(available in office) Enclosed

PRINCIPAL
KAKATIYA GOVT. COLLEGE
Hanamkonda.

Rajeeru
(Rajeeru)
Name & Designation

Kakatiya University

4340

No. 1107

PROVISIONAL CERTIFICATE

Ph.D.

This is to certify that Rajeeru Jarupula

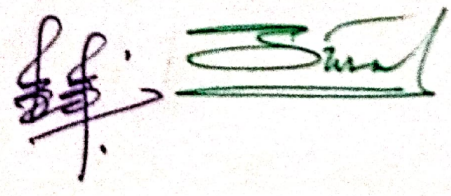
Son/Daughter of Sardar has been declared qualified for the award of the Ph.D. Degree in Commerce & Business Management of this University in October, 2023.

Topic of Thesis:

"ROLE OF FOREIGN INSTITUTIONAL INVESTORS (FIIS) IN INDIAN CAPITAL MARKET - AN ANALYTICAL STUDY"

Warangal T.S. - 506 009
Date: 14-12-2023

for Registrar



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WARANGAL - 506 009 (TELANGANA)
(Accredited with A+ Grade by NAAC)

No. 157 /Ph.D./E1/KU/2023 Date: 10-10-2023

PRESS NOTE

Mr/Ms. **Rajeeru Jarupula,** Research Scholar in **Commerce & Business Management,** Kakatiya University, Warangal, who has presented the thesis entitled **"ROLE OF FOREIGN INSTITUTIONAL INVESTORS (FIIS) IN INDIAN CAPITAL MARKET - AN ANALYTICAL STUDY"** has been declared qualified for the Degree of **Doctor of Philosophy** (Ph.D) in **Commerce & Business Management** of Kakatiya University.

"By Order"

CONTROLLER OF EXAMINATIONS

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1. The Registrar, Kakatiya University, Warangal.
2. The Secretary, University Grants Commission, New Delhi-110 002.
3. The Editor, University News, A.I.U., 16 Kotla Marg, New Delhi-110 002.
4. The Dean, Faculty of Commerce & Business Management, KU, Warangal.
5. The Coordinating Officer, U.G.C. Unit, Kakatiya University, Warangal.
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9. The E X A M I N E R.
10. **Prof. K. Omprakash (Retd.,)**(Supervisor), Commerce & Business Management, Kakatiya University, Warangal.
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17. The Person concerned (**Rajeeru Jarupula** S/D/o.**Sardar**).

(4340)

Departmental Research Committee (DRC)

Department of Commerce
& Business Management,
KAKATIYA UNIVERSITY
Warangal – 506009, (TS), India.

Date:

Certificate

Certified that **Mr. Jarupula Rajeeru** has presented (II – Seminar) **Pre-Submission Seminar (PSS)** on **20th May 2023 at 11.00 a.m.** before the Departmental Research Committee (DRC) on the topic title **"Role of Foreign Institutional Investors (FIIs) in Indian Capital Market – An Analytical Study"** under the supervision of **Prof. K. Omprakash.** It is approved in conformity with the Ph.D. rules of the University effective from 2010-11.

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Prof. K. Omprakash
DEAN

No.45 /DEAN/FCBM/KU/2012 Date: February 29, 2012

Joining Orders

Sub: Faculty of Commerce and Business Management – Admissions into Ph. D. Programme for the year 2010-11 – Issue of Joining Orders.

****

The following candidates have been admitted into the Ph. D. Programme for the year 2010-11 in the Faculty of Commerce and Business Management on the recommendation of the Admission Committee and with the approval of Vice-Chancellor, Kakatiya University, Warangal. These candidates have joined the programme as per the dates stated against their names.

S. No	Name / Father's Name	Research Supervisor	Mode	Date of Joining	Basis of Admission	Course Work
01	SISIRA NETI	Prof. P. Indrasena Reddy	Part-Time	31-01-2012	NET	Required
02	MALLA REDDY MEESALA	Prof. B. Venkat Rathnam	Part-Time	06-02-2012	MPHIL	Exempted
03	SRIDHAR R	Prof. K. Omprakash	Part-Time	06-02-2012	NET	Required
04	THIRUPATHI KANCHU	Prof. K. Raji Reddy	Part-Time	18-02-2012	MPHIL	Exempted
05	VEENA DHARMAPURI	Prof. G. V. Bhavani Prasad	Full Time	01-02-2012	ELG TEST	Required
06	CHINNAPPAIAH YARNAM	Prof. V.V. Subramanya Sarma	Part-Time	17-02-2012	SLET	Required
07	SANJAY KUMAR	Prof. V.V. Subramanya Sarma	Part-Time	16-02-2012	ELG TEST	Required
08	GOWTHAMI CHINTALA	Prof. N. Hanumantha Rao	Part-Time	07-02-2012	ELG TEST	Required
09	VENUGOPAL K	Prof. S. Kamaleshwar Rao	Part-Time	04-02-2012	MPHIL	Exempted
10	DEEPASRI KUMMARI	Dr. S. Narasimha Chary	Part-Time	16-02-2012	ELG TEST	Required
11	PAVANI GUDURU	Prof. K. Sayulu	Part-Time	11-02-2012	NET	Required
12	VEERENDAR M	Prof. Ch. Rajesham	Part-Time	06-02-2012	SLET	Required
13	VENUGOPAL JANGA	Prof. B. Venkat Rathnam	Part-Time	16-02-2012	MPHIL	Exempted
14	YELLA SWAMY AMBATI	Dr. Ch. Satyanarayana Reddy	Part-Time	7-02-2012	ELG TEST	Required
15	PRASAD KUSHINI	Dr. P. Amaraveni	Part-Time	17-02-2012	ELG TEST	Required
16	PREETHI K	Prof. T. Srinivasa Rao	Part-Time	03-02-2012	ELG TEST	Required
17	KAVITHA LOYA	Prof. P. Indrasena Reddy	Part-Time	04-02-2012	ELG TEST	Required
18	VVNRC MURTHY VELAMURI	Prof. G. V. Bhavani Prasad	Part-Time	11-02-2012	ELG TEST	Required
19	VIJAYA LAKSHMI S	Prof. T. Srinivasa Rao	Part-Time	16-02-2012	ELG TEST	Required
20	NARENDAR S	Dr. K. Rajendar	Part-Time	08-02-2012	MPHIL	Exempted
21	SAI SHARAN KONISHETTY	Prof. G. V. Bhavani Prasad	Part-Time	14-02-2012	ELG TEST	Required

22	SRINIVAS REDDY GUJJULA	Dr. S. Venkateshwarlu	Full time	23-02-2012	ELG TEST	Required
23	RAJU SHATHABOINA	Dr. K. Raji Reddy	Part-Time	08-02-2012	MPHIL	Exempted
24	HANUMANDLU T	Prof. M. Subramanya Sarma	Part-Time	09-02-2012	ELG TEST	Required
25	SOWJANYA YADANDLA	Prof. N. Kusuma	Part-Time	16-02-2012	ELG TEST	Required
26	RAVINDER G	Prof. N. Kusuma	Part-Time	17-02-2012	ELG TEST	Required
27	LAXMINARASAIAH K	Dr. P. Varalaxmi	Part-Time	16-02-2012	MPHIL	Exempted
28	SRINIVAS D	Prof. N. Hanumantha Rao	Part-Time	17-02-2012	ELG TEST	Required
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30	SRINIVAS GUNDARAPU	Dr. M. Sathyavathi	Part-Time	15-02-2012	MPHIL	Exempted
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34	MOHD YAKUB	Dr. K. Rajendar	Part-Time	08-02-2012	ELG TEST	Required
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36	JOSHUA DANIEL S	Prof. K. V. Janardhan Rao	Part-Time	17-02-2012	ELG TEST	Required
37	VAMSHI KRISHNA B	Prof. P. Krishnama Chary	Part-Time	11-02-2012	ELG TEST	Required
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42	AMENA KHATOON	Prof. N. Hanumantha Rao	Part-Time	15-02-2012	ELG TEST	Required
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44	SANTHOSH M	Dr. P. Varalaxmi	Part-Time	14-02-2012	NET	Required
45	THIRUPATHI J	Prof. K. V. Janardhan Rao	Part-Time	15-02-2012	ELG TEST	Required
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47	NARASAIAH AMBATI	Dr. K. Rajendar	Part-Time	02-02-2012	MPHIL	Exempted
48	ANITHA CH	Prof. K. Sayulu	Full Time	06-02-2012	ELG TEST	Required
49	SAMATA JANNU SOLOMAN	Prof. S. Kamaleshwar Rao	Part-Time	04-02-2012	ELG TEST	Required
50	KUMARY MARY MATHE	Prof. Ch. Rajesham	Full Time	06-02-2012	ELG TEST	Required
51	JARUPULA CHINNA	Prof. D. Sakriya	Part-Time	08-02-2012	MPHIL	Exempted
52	RAJEERU JARUPULA	Prof. K. Omprakash	Part-Time	19-02-2012	NET	Required
53	NARENDER NAIK DHARAVATH	Prof. D. Sakriya	Part-Time	07-02-2012	ELG TEST	Required
54	VANITHA KUMARI VANKUDOTH	Dr. S. Venkateshwarlu	Full Time	15-02-2012	ELG TEST	Required
55	SRINIVAS VAGINEPELLI	Prof. K. Raji Reddy	Part-Time	16-02-2012	ELG TEST	Required
56	YAKAIAH ABBANAPURI	Dr. S. Upendra Sastry	Full Time	04-02-2012	ELG TEST	Required
57	RAJU GUGLOTH	Prof. M. Subramanya Sarma	Full Time	06-02-2012	JRF	Required

The admitted candidates are informed that:

1. The full-time / part-time scholars have to complete the Ph.D. Programme within a minimum period of 2 / 3 years and a maximum of 4 / 5 years from the date of registration.

2. The full-time research scholars shall attend to the department / college regularly, wherever their Research Supervisors are working and put up minimum attendance as per the University Rules certified by the Research Supervisors and Drawing Officers of the department/college concerned.

3. They have to renew their admission through proper channel by paying the applicable fees every year as per the norms of the office of the Principal, University College, Kakatiya University and file a copy of the Receipt / Challan with the office of the Dean, Faculty of Commerce and Business Management.

4. They should present a minimum of two (2) seminars during the programme, including one on Research Design and the other before the submission of the thesis.

5. They should publish at least one paper on the research area concerned in reputed / recognized /referred Journal before presentation of second seminar.

6. They should submit half-yearly progress reports on the progress of the research work from time to time through the Research Supervisor and Head of the Department to the Dean of the Faculty.

7. The candidates other than M. Phil degree holders should undergo Course-Work and pass Pre-Ph.D. examination within two successive attempts from the date of Registration. The candidates with M. Phil degree from Kakatiya University either through regular or distance mode and M. Phil degree holders from regular mode from other universities recognized by UGC are exempted from course work.

8. The candidates registered as part-time research scholars are required to undergo course work by applying leave for the entire duration of the course work.

9. In all other matters, the candidates are governed by the Rules and Regulations of Degree of Doctor of Philosophy, 2010. Any violation of these rules and regulations by the candidates will entail the cancellation of their registration.

DEAN

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6. The Deputy Registrar, Academic Branch, Kakatiya University, Warangal.
7. The Secretary to Vice-Chancellor, Kakatiya University, Warangal.
8. All the Research Supervisors of the Faculty.
9. All the candidates concerned.
10. The Stack File.

Prof. P. KRISHNAMA CHARY
M.Com., Ph.D., FDPM(IIMA)
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Phones: 0870-2461432
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Andhra Pradesh

ORDERS

No.363/DEAN/FCBM/KU/2013 Dt. 22nd July 2013

Sub:- Ph.D. Programme 2010 – II, Faculty of Commerce and Business Management, KU. Wgl – approval of Research Topics – Issue of Orders

Ref: 1) 315/DEAN/FCBM/KU/2012 Dt.18/01/2012
2) 45/DEAN/FCBM/KU/2012 Dt.29/02/2012

<o>

In continuation of the orders cited above, the approved topics of candidates registered for the Ph.D. Programme is listed herewith along with their dates of joining.

S. No.	Name of the Candidate	Supervisor	Topic of Research	Date of Joining
01	SISIRA NETI	Prof.P. Indrasena Reddy	Retail Marketing Practices in Corporate sector – A study of select companies	31-01-2012
02	MALLA REDDY MEESALA	Prof.B. Venkat Rathnam	Foreign Direct Investment in Indian Banking Sector – A study of select Banks	06-02-2012
03	SRIDHAR. R	Prof.K. Omprakash	Dynamics of Indian Capital Market – Role of Institutional Investors	06-02-2012
04	THIRUPATHI KANCHU	Prof.K. Raji Reddy	Performance Evaluation of RRBs – A study of APGVB in Warangal District	18-02-2012
05	VEENA DHARMAPURI	Prof. G.V. Bhavani Prasad	Asset and Liability Management in Indian Banks – A study of select Banks	01-02-2012
06	CHINNAPPAIAH YARNAM	Prof.V.V. Subramanya Sarma	Work life balance among Executives in the Singareni Collieries Company Limited	17-02-2012
07	SANJAY KUMAR	Prof.V.V. Subramanya Sarma	Economic Sustainability of Print Media through Advertising Revenue – A study of select Daily news papers in Andhra Pradesh	16-02-2012
08	GOWTHAMI CHINTALA	Prof.N. Hanumantha Rao	Job satisfaction among Teachers in Technical Educational Institutions in Telangana Region.	07-02-2012
09	VENUGOPAL. K	Prof.S. Kamaleshwar Rao	Problems and prospects of Handloom sector – A select study of Andhra Pradesh	04-02-2012
10	DEEPASRI KUMMARI	Dr.S. Narasimha Chary	Performance Evaluation of Public Sector Enterprises in India - A study of select companies.	16-02-2012
11	PAVANI GUDURU	Prof.K. Sayulu	Impact of Micro Finance Institutions on Women Empowerment – A study	11-02-2012
12	VEERENDER. M	Prof. Ch. Rajesham	NPAs Management in Indian Commercial Banks – A comparative Study	06-02-2012
13	VENUGOPAL JANGA	Prof. B. Venkat Rathnam	Quality of work life in power sector – A selected study of NTPC, Ramagundam	16-02-2012
14	YELLA SWAMY AMBATI	Dr. Ch. Satyanarayana Reddy	Working capital Management policies, practices and prospects of paper Industry of Andhra Pradesh – A study of select units	07-02-2012
15	PRASAD KUSHINI	Dr. P. Amaraveni	Impact of Post-reforms on performance of Public Sector Banks – A case study	17-02-2012

16	PREETHI. K	Prof. T. Srinivasa Rao	Impact of Consumer life style on Purchasing Behaviour – A study of Select Products.	03-02-2012
17	KAVITHA LOYA	Prof. P. Indrasena Reddy	Customer Relationship Management in Life Insurance Sector in India – A study on Complaints Management in LIC of India	04-02-2012
18	VVNRC MURTHY VELAMURI.	Prof. G. V. Bhavani Prasad	Performance Management Practices in Select I.T. companies – A Study.	11-02-2012
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21	SAI SHARAN KONISHETTY	Prof. G. V. Bhavani Prasad	Impact of ERP Systems on Service Sector. – A study of select company.	14-02-2012
22	SRINIVAS REDDY GUJJULA	Dr. S. Venkateshwarlu	Performance Management Practices in Coal Industry – A study of Singareni Collieries Company Ltd.	23-02-2012
23	RAJU SHATHABOINA	Dr. K. Raji Reddy	Seed Industry in Andhra Pradesh – A Micro level Analysis	08-02-2012
24	HANUMANDLU. T	Prof. M. Subramanya Sarma	Organizational Development practices in Power Sector – A study of NTPC	09-02-2012
25	SOWJANYA YADANDLA	Prof. N. Kusuma	Leadership Styles in Singareni Collieries Company Limited – A Case Study	16-02-2012
26	RAVINDER. G	Prof. N. Kusuma	Impact of Derivatives in Spot Market Volatility – A study of select commodities	17-02-2012
27	LAXMI NARSAIAH. K	Dr. P. Varalaxmi	Customer Relationship Management in Banking Industry – A Study of Select Regional Rural Banks.	16-02-2012
28	SRINIVAS. D	Prof. N. Hanumantha Rao	Service Quality in Commercial Banks – A Comparative study of Select Public and Private Sector Banks in Warangal District.	17-02-2012.
29	CHAITANYA GOLLAPALLY	Prof. N. Kusuma	Strategic Human Resource Management in Commercial Banks – A study	13-02-2012
30	SRINIVAS GUNDARAPU	Dr. M. Sathyavathi	Branding strategies and its impact on consumer purchase behaviour – A study of select Textile brands	15-02-2012
31	PARASHURAMULU. B	Dr. P. Amaraveni	Profitability in Nationalised Banks in the changing banking environment – A study of select banks	07-02-2012
32	CHAITANYA SRAVANTHI PULI	Dr. Ch. Satyanarayana Reddy	Working capital Management of Dairy Industry in Andhra Pradesh – A study of select undertakings	14-02-2012
33	BHAGYALAXMI KARNAKANTI	Prof P. Krishnama Chary	Financial policies and practices in Cement Industry A comparative study of select companies.	13-02-2012
34	MOHD YAKUB	Dr. K. Rajendar	Lending and recovery performance of Commercial Banks – A study	08-02-2012
35	VENKATA RAJAM CHIRRA	Prof. M. Subramanya Sarma	Corporate Social Responsibility in Indian Corporate Sector – A comparative study of select companies	16-02-2012
36	JOSHUA DANIEL. S	Prof. K. V. Janardhan Rao	Risk Management practices in Banking Sector through Asset Liability Management – A Study	17-02-2012
37	VAMSHI KRISHNA. B	Prof. P. Krishnama Chary	Core competencies & Performance of Commercial banks – A comparative study	11-02-2012
38	SRINIVAS USHKAMALLA	Prof. P. Indrasena Reddy	Marketing strategies of Dairy co-operatives in Andhra Pradesh – A study of select units!	16-02-2012
39	NARESH BOORA	Prof. B. Venkat Rathnam	Job Hopping in software industry with reference to select software companies – A study	14-02-2012

	OTHI RAJAN GAINENI	Prof. G. V. Bhavani Prasad	HRD Practices in Rural Electrification Corporation.	16-02-2012
	MOHAMMED AFREEN	Prof. M. Subramanya Sarma	Branding strategies of FMCG Companies – A case study	07-02-2012
42	AMEENA KHATOON	Prof. N. Hanumantha Rao	Human Resource Development in Northern Power Distribution Company Limited of Andhra Pradesh	15-02-2012
43	ESHWARAMMA NAKKA	Dr. M. Satyavathi	Impact of TQM on Organizational Effectiveness – A study of NTPC	18-02-2012
44	SANTHOSH. M	Dr. P. Varalaxmi	Performance of Small and Medium Scale Industries in A.P. – A study of select units.	14-02-2012
45	THIRUPATHI. J	Prof. K. V. Janardhan Rao	Performance of Agricultural Co-operative Societies – A comparative study.	15-02-2012
46	RAJENDAR PONNALA	Dr. S. Narasimha Chary	Performance Evaluation of Development Financial Institutions in India – A study of select Institutions.	17-02-2012
47	NARASAIAH AMBATI	Dr. K. Rajendar	Work motivation and Job satisfaction in Public services – A Select study of Andhra Pradesh Police Service	02-02-2012
48	ANITHA. CH	Prof. K. Sayulu	Rural Consumer Behaviour with regard to select Consumer Durables – A Study	06-02-2012
49	SAMATA JANNU SOLOMAN	Prof. S. Kamaleshwar Rao	Job satisfaction and interpersonal relations of Teachers in Universities – A study of select Universities in Andhra Pradesh	04-02-2012
50	KUMARI MARY MATHE	Prof. Ch. Rajesham	Human Capital Management in Public Sector Enterprises – A study of BHEL	03-02-2012
51	JARUPULA CHINNA	Prof. D. Sakriya	Performance of Regional Rural Banks in India – A study of Deccan Grameena Bank.	08-02-2012
52	RAJEERU JARUPULA	Prof. K. Omprakash	Role of Foreign Institutional Investors (FIIs) in Indian Capital market – An Analytical study	19-02-2012
53	NARENDER NAIK DHARAVATH	Prof. D. Sakriya	Working capital Management policies and practices in Food and Agro based Industries – A study of select units in Warangal District	07-02-2012
54	VANITHA KUMARI VANKUDOTH	Prof. D. Sakriya	Investors Perception towards Institutional Investment in Liberalised Era – A study of Warangal district of Andhra Pradesh	15-02-2012
55	SRINIVAS VAGINEPELLI	Prof. K. Raji Reddy	Performance of State Bank of India in poverty alleviation – A case study of select districts	16-02-2012
56	YAKAIAH ABBANAPURI	Dr. S. Upendra Sastry	Evaluation of Mahatma Gandhi National Rural Employment Guarantee Scheme – A comparative study	04-02-2012
57	RAJU GUGLOTH	Prof. M. Subramanya Sarma	Impact of Trade Unions on Industrial Climate in APSRTC – An Evaluation	06-02-2012

The candidates are governed by the rules and regulations of Ph.D. Programs enforced from 2010-2011 onwards.

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8. All the Research Supervisor of the Faculty.

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विषय:— शिक्षकांची नियुक्ती, सेवांतर्गत पदोन्नती, मार्गदर्शक मान्यता इत्यादीसाठी शोधनिबंध (Research Paper) ग्राह्य धरणेबाबत.

विद्यापीठ अधिकार मंडळाने घेतलेल्या निर्णयानुसार शिक्षकांची नियुक्ती, सेवांतर्गत पदोन्नती (CAS) संशोधन मार्गदर्शक मान्यता (CAS) इत्यादीसाठी खालीलप्रमाणे शोध निबंध ग्राह्य धरण्यास मान्यता देण्यात येत आहे.

अ) UGC Approved List of Journals आणि UGC Care List अस्तित्वात येण्यापूर्वी ISSN क्रमांक असणाऱ्या सर्व संशोधन पत्रिकेतील शोध निबंध.

ब) बारकाईने पुनर्विलोकन केलेल्या (Peer Reviewed Journal) संशोधन पत्रिकेतील शोध निबंध. परंतु त्यासाठी सदरची प्रक्रिया Single blind review/Double blind review/Open or Transperent Peer Review पध्दतीने पूर्ण केल्याबाबतचे संबंधित संशोधन पत्रिका संपादकांचे प्रमाणपत्र आवश्यक राहील. उपरोक्त प्रक्रिया न करता संशोधन पत्रिकेच्या संपादकाने केवळ बारकाईने पुनर्विलोकित केलेले (Peer Review Journal) असे नमूद केले असेल तर ते ग्राह्य धरण्यात येऊ नये.

क) वेळोवेळी प्रसिध्द केलेल्या UGC Care List मध्ये Index केलेल्या संशोधन पत्रिकेत प्रसिध्द शोध निबंध.

सदरचे धोरण पुर्वलक्षी प्रभावाने लागू करण्यात येत असून यापूर्वी विहित संख्येएवढे शोध निबंध प्रसिध्द नसल्याच्या कारणास्तव नाकारण्यात आलेले कोणतेही प्रस्ताव या धोरणाप्रमाणे मान्य होत असल्यास अशा अर्जदारांस पुन्हा नव्याने प्रस्ताव सादर करावा लागेल.

मा. प्राचार्य/मा. संचालक, सर्व संलग्न महाविद्यालये/मान्यताप्राप्त परिसंस्था आणि मा. विभागप्रमुख, विद्यापीठातील सर्व शैक्षणिक विभाग यांना विनंती की, सदर परिपत्रकाचा आशय सर्व संबंधितांच्या निदर्शनास आणून द्यावा.

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उपकुलसचिव

1. A Study on Changing Role of Foreign Institutional Investors (FIIs) in Indian Capital Market

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Abstract

In the early 1990s, financial sector reforms in India shifted from funding deficits through loans to leveraging non-debt capital flows. Foreign Institutional Investors (FIIs) were allowed to participate in Indian financial markets from September 14, 1992, transforming market dynamics significantly. FIIs, including major entities like investment banks and mutual funds, play a crucial role in providing funds to businesses in developing countries. They contribute to improved capital structures and foster financial innovation and growth in capital markets.

Introduction

Foreign Institutional Investors (FIIs) registered outside India engaging in Indian financial markets, including stocks, hedge funds, insurance, pension funds, and mutual funds.FIIs, big entities like investment banks and mutual funds, significantly impact the Indian markets.Their securities transactions affect market trends, driving upward or downward movements. Indian Capital market Shift from self-sufficiency to foreign investment focus in the 1990s.Financial sector reforms emphasized inviting foreign direct investment (FDI) and portfolio investment flows. FIIs and Overseas Corporate Bodies permitted to invest in financial instruments from September 14, 1992.FIIs required preliminary registration with SEBI and RBI's general permission under FERA for five years.

Renewal after five years allowed. Guidelines included eligibility conditions such as track record, professional competence, and financial soundness.

Objective of the Study

The study aims at understanding the role of FIIs in Indian Capital Market with the following other objectives

- To know about changing role of FIIs in Indian capital market

- To understand about regulations of FIIs in India
- To study the FII flows in Indian stock market

Important of the Study

This study will to help understand role and importance of FIIs in Indian stock market as they are important to emerging economies because they bring foreign funds and capital to businesses in emerging countries like India. It will also help to understand how FIIs involve in hedge funds, mutual funds, insurance companies and investment banks among others and hold equity positions in foreign financial markets.

Methodology of the study

The method used in this paper is descriptive and the data has been collected through secondary sources by taking help of various research papers, books, articles and websites of NSE, BSE, RBI, NSDL, CDSL, SEBI and Government of India.

Foreign Institutional Investors (Fiis) In India

Dynamic growth in developing economies attracts high FIIs activity, offering greater opportunities than developed economies. India experiences significant FIIs involvement, driven by a growing economy, holding a substantial share in capital markets.FIIs aim to anticipate market movements for maximizing returns.As of Sep 30, 2023, FPIs/FIIs invested Rs. 1.32 lakh crore (US$16 billion) in India (IBEF).Strong correlations exist between FIIs' activities and market movements in secondary equity, primary, and debt markets. Portfolio Investment Schemes (PIS) often invest in India through PIS, favoring developing countries for higher growth potential.FIIs engage in short-term investments, enhancing liquidity but causing occasional monetary flow instability. Regulatory SEBI regulates FII activities; all investors must register, and RBI defines and maintains investment caps.

Eligible entities include Foreign Mutual Funds, Investment Banks, Pension Funds, Hedge Funds, etc.Maximum FII investment in an Indian company is 24% of paid-up capital, subject to sectoral caps or statutory ceilings.RBI monitors investments, setting a 2% cut-off below the maximum ceiling, with further approvals required beyond this point.

Literaturereview

Sandhya Anantha narayanan (2004) held that as part of its initiative to liberalize its financial markets, India opened her doors to foreign institutional investors in September, 1992. This event represents a landmark event since it resulted in effectively globalizing its financial

services industry. We study the impact of trading of Foreign Institutional Investors on the major stock indices of India.

David A. Carpenter et al (2005) has examined that the Indian government has established a regulatory frame work for three separate investment avenues: foreign direct investment; investment by foreign institutional investors; and investment by foreign venture capital investors.

Samy Dr. P. Chella et al (2006) held that Investors can pick up stocks at these levels for a growth story for long term i.e. for equities a 5 years holding period is reasonable to give a very above average return.Caution maybe exercised to buy only good,well established market movers and never,to buy on margins or play intraday or dabble in derivatives market,which is high risk.

Share holding of promoters is not substantial. Among the financial performance variables the share returns and earnings per share are significant factors influencing their investment decision.

It has been found in many occasions that FII exit their investment in critical time when developing countries actually need their assistance and from time to time external forces also influence the inflow by FII, which is not under control of developing countries.

Changing Role of Fiis Inindian Capital Market

For a long, the foreign institutional investors have influenced the Indian markets as they were one of the biggest blocks with an almost ravenous appetite and an unending reservoir of low-priced capital. Their funds ran into hundreds of billions of dollars and even a fraction of that huge sum was able to affect the market sentiments in our country. Consequently since the FIIs were first allowed in the early 1990s, in the Indian markets, till very recently, if they poured money into Indian markets substantially, and when they pulled the investment allowing the Indian markets to fall down.

FII activity in Futures and Options (F&O): The foreign institutional investors (FIIs) also play in the futures& options (F&O) segment, which is very crucial for Indian markets, including in terms of setting the short-term trend. FII statistics has been proved crucial in predicting the undercurrent of the market; hence, many traders and investors track it keenly. F&O trades are concentrated on returns month on month. Apart from looking at leverage levels, traders also see when FIIs are long with huge positions, as any small negative news

leads to unwinding and vice versa. There has been a rise in FII activity in the F&O segment and one of the key reasons are the higher returns.

FIIs, mostly based out at Europe and the US, see lucrative opportunities in India. These returns are considerably higher when compared to their home market fixed income returns. The rise in FII activity in F&O segment is also partly due to the depth in the cash segment, which is not big enough to absorb high volumes. Thus, FIIs activity, with strong back up of significant holding in most index heavy weights from banking, software and automobiles sectors, have raised their game in the F&O segment rather than buying heavy weights in the cash market. Had it not been for the higher activity in the F&O segment, Indian markets would have been more volatile. Although, today FDI investments are clubbed with the FII and FPI,it is to be remembered that FII is now an umbrella term that includes active business owners (FDI), passive investors (FPIs), and speculators (FIIs). The following are some important aspects of FII investment to be taken into consideration.

1. Foreign Institutional Investors route their money into emerging economies because of greater growth potential and possibility of getting higher return.
2. In India, there has seen significant investment by FPIs and FIIs with close to Rs. 1.32 Lakhs crore (or USD 16 Billion) in 2022-23 upto Sep30,2023(Source:IBEF)
3. Some FIIs are also interested in short-term investments in securities because this can, on one hand,boost the liquidity in the market, but on the other hand can cause instability in the money supply.
4. FIIs act as both a vehicle and a trigger for the receiving markets. They can encourage better performance and corporate governance by voting by their feet. Some times, due to completely unrelated reasons, FIIs can alienate a company or a market leaving the retail investors to fend for themselves.
5. Foreign institutional investors directly affect the stock and bond markets of the country, the exchange rate,inflation,and overall market sentiment.
6. The actions of FIIs are driven by many factors such as external and internal that may be too complex to predict even approximately such are:

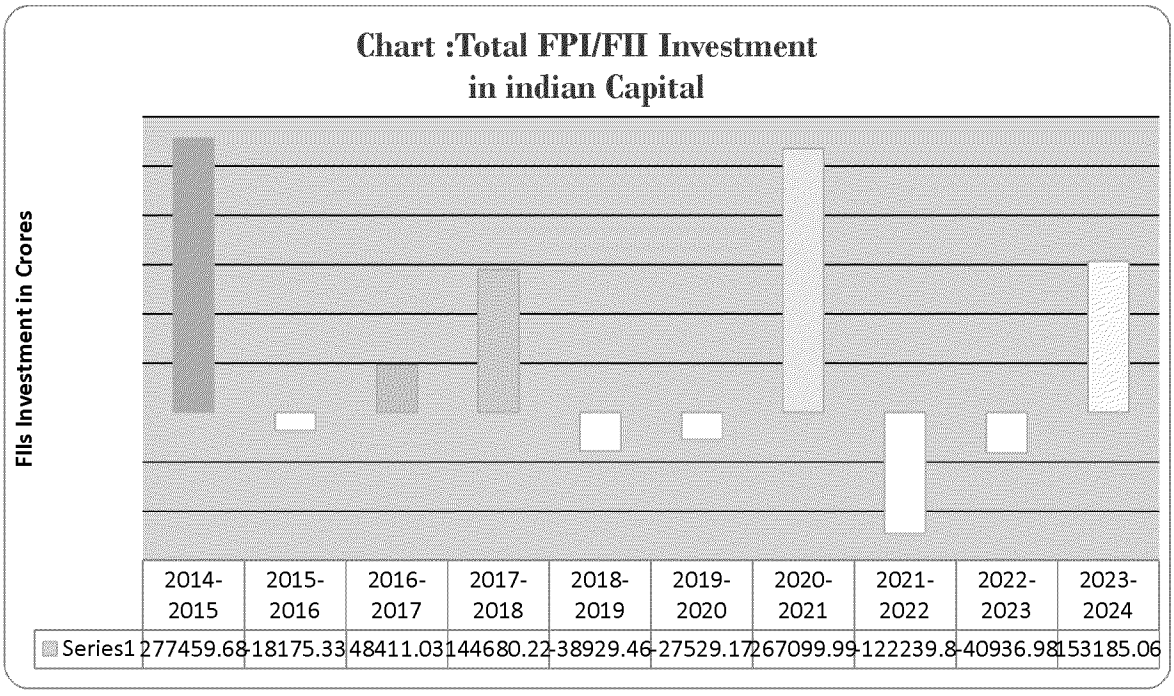
- The US, European and global interest rates
- The prices of International crude and commodity
- The international geo political stability or lack thereof

- Performance of the international markets
- Geopolitical tension such as Russia-Ukraine war,Isial and Palastina War
- Performance of Indian markets-standalone basis and vis-à-viso there merging economies
- Inflation, interest rate, and growth scenario in India
- Taxation policies and other regulations in India
- Future prospects of the overall sector,industry,and the security
- The following table shows the quantum of FII flows in Indian stock market.

Table showing FPI/FII Investment in Indian Capital market detail in last 10 years

nancialYear	INR in Crores				
	Equity	**Debt**	**Debt-VRR**	**Hybrid**	**Total**
2014-2015	111332.59	166127.09	0	0	277459.68
2015-2016	-14171.57	-4003.76	0	0	-18175.33
2016-2017	55702.67	-7291.64	0	0	48411.03
2017-2018	25634.19	119035.74	0	10.29	144680.22
2018-2019	-87.73	-42355.97	0	3514.24	-38929.46
2019-2020	6152.26	-48710.23	7331.17	7697.63	-27529.17
2020-2021	274031.96	-50443.62	33264.56	10247.09	267099.99
2021-2022	-140009.6	1628.53	12642.83	3498.41	-122239.83
2022-2023	-37631.57	-8937.74	5814.04	-181.71	-40936.98
2023-2024** Nov 1.	121749.1	32837.82	-2132.97	731.11	153185.06
Total	1112199.63	303215.3	57114.95	31237.29	1503767.17

Source: Central Depository Services (India) limited



Source:CDSL(Central Depository Services (India)limited)

Note (2023-24) data only up to Nov.01,2023)

The Indian Government, investors and financial institutions people kept close track of the actions by the FIIs and external factors that could affect their decisions. Even as light change in the interest rates in the US, the UK, or Europe could result in billions of dollars going in or out of Indian markets in a matter of days. This used to affect the exchange rate, making currency management that much more difficult. Even today, after the enhance participation by retail investors and DIIs becoming almost as prominent as FIIs,they still hold sufficient cart to control the market movement. But over the years, their actions and movements have become more predictable.

Regulations of Fiis Inindia

Arguments in Favour of Fii's

- FIIs will enhance the flow of capital into the country
- These investors generally prefer quit over debt. So this will also help maintain and even improve the capital structures of the companies they are investing in.
- They have a positive effect on the competition in the financial markets
- FII help with the financial innovation of capital markets in our country
- These institutions are professionally managed by expert asset managers and analysts

who may generally improve the capital markets of the country.

Arguments Against Fii's

- These FII"s drive the fortune of big companies in which they invest bur but their buying, selling or trading of securities have a huge impact on the stock market. The smaller companies are taken a long for the ride.
- Due to the activities of FII's, the demand for the Indian currency(rupee) increases and this can cause severe inflation in the economy.
- Sometimes many FII's are interested in making only short-term returns and thus when they pull their investments, banks and financial institutions can face a shortage of funds.

Conclusion

Post-1991 Financial Reforms, FIIs vital for capital formation and economic development in India.

India encourages FII investment for growth, given its capital-scarce status.FIIs bring rationality to financial markets, identifying and supporting high-growth companies.FIIs contribute to transparency and efficiency in the Indian financial market. Their extensive financial knowledge helps identify and support upcoming companies.FIIs crucial for emerging economies by providing capital through capital markets. Giant entities like mutual funds and investment banks invest significantly in Indian markets.FIIs drive financial innovation and growth in capital markets.FII entry influences domestic markets, increasing demand for local currency and affecting inflation. Restrictions placed by authorities on FII stakes to prevent undue influence and exploitation.FIIs impact stock markets, exchange rates, and inflation. They can invest in listed, unlisted, and to-be-listed companies in both primary and secondary markets.FIIs focus on fund transfer and capital gains, different from the more intentional nature of FDIs. Restrictions aim to balance FII influence while avoiding exploitation.

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ROLE OF FOREIGN INSTITUTIONAL INVESTORS (FIIs) IN INDIAN CAPITAL MARKET – AN ANALYTICAL STUDY

THESIS SUBMITTED TO THE KAKATIYA UNIVERSITY
FOR THE AWARD OF THE DEGREE OF

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IN
COMMERCE AND BUSINESS MANAGEMENT

By

RAJEERU JARUPULA

Under the Supervision of

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JUNE, 2023

DECLARATION

I hereby declare that the thesis entitled **"Role of Foreign Institutional Investors (FIIs) in Indian Capital Market – An Analytical Study"** has done by me under the guidance of **Prof. K. Omprakash Garu,** Retired Professor, Department of Commerce & Business Management, Kakatiya University for the award of the Degree of Doctor of Philosophy in Commerce and Business Management from Kakatiya University, Warangal. It is a record of bonafied and independent research work carried out by me. The thesis has not been submitted previously either in part or in full to this or any other University for the award of any Degree.

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This is to certify that the thesis entitled **"Role of Foreign Institutional Investors (FIIs) in Indian Capital Market – An Analytical Study"** is submitted by **Rajeeru Jarpula** to the Department of Commerce & Business Management, **Kakatiya University,** Warangal for the award of the **Degree of Doctor of Philosophy in Commerce and Business Management** is a record of bonafied and independent research work carried out by him under my supervision. The Thesis is not been submitted previously either in part or in full to this or any other University for any Degree.

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CERTIFICATE OF PLAGIARISM CHECK

01	Name of the Research Scholar	**RAJEERU JARPULA**
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1 CHAPTER I INTRODUCTION Introduction The year 1991 can be named as a significant mile stone as it saw a dawn in the Indian financial system and also the liberalisaion of financial policies. The budget presented in that year has undoubtedly brought about significant financial changes which led to significant growth and development in India in the subsequent years. Till the year 1991 India had policies that has not attracted international private capital ever since the implementation of the Five year planning and Industrial plans after independence. After the enactment of Economic policy resolution, 1991 and the opening of the economy by introduction of the policies of Globalisation, Privatization, Liberalisation and Marketisation the Indian financial market opened the gates to the "Foreign Institutional Investors" on 14 th Day of the month of September 1992. In the month of April 1992, the Indian Government took a very significant step through the establishment of SEBI with an intention to give a structure and regulated framework for the foreign investors. From the day of the start of the functioning of SEBI as a regulatory body for the Indian capital market, it had framed and enacted various significant rules and regulations and also modified them from time to time as per the need of the day to have a strict regulation over domestic as well as foreign investors. SEBI brought in the concept of Foreign Portfolio Investors in the month of June of the year 2014 by combining the existing three types of foreign investors viz. FIIs, Qualified Foreign Investors, and also the FII sub-account. FII investment

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(Rajeeru Jarupula)

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List of Abbreviations

ACF	Autocorrelation Function
ADF	Augmented Dicky-Fuller
ADR	American Depository Receipt
AMC	Asset Management Company
AMFI	Association of Mutual Funds in India
ARCH	Autoregressive Conditional Heteroskedasticity
ARIMA	Auto Regressive Integrated Moving Average
ASBA	Application Supported by Blocked Amount
AUC	Asset Under Custody
AUM	Asset Under Management
BO	Beneficiary Owner
BRICS	Brazil, Russia, India, China, South Africa
BSE	Bombay Stock Exchange
CAGR	Compounded Annual Growth Rate
CDG	Consumer Durable Goods
CDSL	Center Depository Services (India) Limited
CG	Capital Goods
CM	Clearing Member
CNX	CRISIL NSE Indices
DDP	Designated Depository Participants
DIIs	Domestic Institutional Investors
DP	Depository Participant
DPS	Dividend Per Share
EPS	Earnings Per Share
ETF	Exchange-Traded Funds
F&O	Future and Option
FDI	Foreign Direct Investment
FEMA	Foreign Exchange Management Act
FIIs	Foreign Institutional Investors
FMCG	Fast Moving Consumer Goods
FPI	Foreign Portfolio Investor
FPO	Follow On/Further Public Offering
GAAR	General Anti-Avoidance Rules
GARCH	Generalize Autoregressive Conditional Heteroskedasticity
GDP	Gross Domestic Product
GDR	Global Depository Receipt
GOI	Government of India
G-Sec	Government Securities
GST	Goods and Service Tax

INR	Indian Rupee
IRDA	Insurance Regulatory and Development Authority
IT	Information Technology
KYC	Know Your Client
MAT	Minimum Alternate Tax
MF	Mutual Fund
MoF	Ministry of Finance
MWPL	Market Wide Position Limit
NBFC	Non-Banking Financial Company
NRI	Non-Resident Indian
NSDL	National Security Depository Limited
NSE	National Stock Exchange
OCB	Overseas Corporate Body
OCI	Overseas Citizens of India
ODI	Offshore Derivative Instruments
OTC	Over The Counter
P/E	Price Earning Ratio
PACF	Partial autocorrelation Function
PAN	Permanent Account Number
PNs	Participatory Notes
PSU	Public Sector Unit
QDP	Qualified Depository Participant
QFI	Qualified Foreign Investor
QIBs	Qualified Institutional Buyers
RBI	Reserve Bank of India
RI	Resident Indian
S&P	Standard & Poor's
SARIMA	Seasonal Autoregressive Integrated Moving Average
SEBI	Securities and Exchange Board of India
SENSEX	Sensitivity Index
TARCH	Threshold Autoregressive Conditional Heteroskedasticity
USD	US Dollar
US	United States
USA	United States of America

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CHAPTER I
INTRODUCTION

Introduction

The year 1991 can be named as a significant mile stone as it saw a dawn in the Indian financial system and also the liberalisaion of financial policies. The budget presented in that year has undoubtedly brought about significant financial changes which led to significant growth and development in India in the subsequent years. Till the year 1991 India had policies that has not attracted international private capital ever since the implementation of the Five year planning and Industrial plans after independence.

After the enactment of Economic policy resolution, 1991 and the opening of the economy by introduction of the policies of Globalisation, Privatization, Liberalisation and Marketisation the Indian financial market opened the gates to the "Foreign Institutional Investors" on 14th Day of the month of September 1992. In the month of April 1992, the Indian Government took a very significant step through the establishment of SEBI with an intention to give a structure and regulated framework for the foreign investors. From the day of the start of the functioning of SEBI as a regulatory body for the Indian capital market, it had framed and enacted various significant rules and regulations and also modified them from time to time as per the need of the day to have a strict regulation over domestic as well as foreign investors. SEBI brought in the concept of Foreign Portfolio Investors in the month of June of the year 2014 by combining the existing three types of foreign investors viz. FIIs, Qualified Foreign Investors, and also the FII sub-account.

FII investment in the Indian ever since their inception in Indian equities market, debt market, and overall investment have grown at CAGRs of 26.05%, 33.08%, and 27.43%, respectively, till the completion of the fiscal year 2018-19. In shall be noted that in the year 2016–17, the proportion of the turnover of FIIs' to the turnover of the Indian stock market stood at 21% in the cash segment and 13% in the F&O segment. It is also to be noted that USA was the prominent

investor and comprised 33.08% of total assets under custody of FIIs and 35.73 percent of AUC investments in the Indian equity market. As of March 2019, FIIs most preferred bet was to invest in banking and financial services sector when compared to any other industry.

An overview of the Regulatory framework for FIIs Investment in India:

In the month of April of the year 1992, SEBI started its official operations after the pavement of new economic policy in the year 1991. The main and the prominent intention of the Government in enactment of SEBI was to provide a fair and transparent regulation the Indian capital market as well as to give protection to the interest of the Indian as well as foreign investors.

The liberalisation of Indian economy could made it possible as well as convenient for foreign players to invest in India. As a result the Foreign institutional investors (FIIs) and overseas corporate bodies (OCBs) were allowed and given permission to invest in Indian financial products from the Day of 14th of the month of in the year 1992, however with pre guided limitations and restrictions.

Such a move demanded a formal guidelines and modalities for Foreign Brokers to Deal in India on behalf of Registered Foreign Institutional Investors. Such guidelines were released by SEBI on 15th October in the year 1993 and the first set of rules on the investment of FIIs was released.

Table 1.1

Terminologies and Meaning under SEBI regulations for FIIs

Terminology	**Meaning**
Foreign Institutional Investor	An institution established or incorporated outside India whichproposes to make an investment in India in securities
Sub-Account	Any person resident outside India, on behalf whom investments are offered to be made in India by a foreign institutional investor and who is registered as a sub-accountunder these regulations

Foreign Portfolio Investors	Any FIIs or sub-account or qualified foreign investor (QFI) holding a valid certificate of registration till the termination of the block of 3 years for which fees have been paid as per the Securities and Exchange Board of India (Foreign Institutional Investors) Regulations, 1995
Qualified Foreign Investor	A person who has opened an account of dematerialized with aqualified depository participant (QDP) as a QFI
Qualified Depository Participant	A depository participant (DP) approved by the Board to act asQDP
Investment Manager	An entity carrying out the role of investment management, investment advisory or any similar role, including trustees. It also considered the meaning of a person, NRI and RI under the Foreign Exchange Management Act, 1999 (FEMA)

The SEBI has a standard practice of making changes in the existing guidelines in the form of updated regulations from time to time and as per the need of the day. The following details provide the framework and the list which makes it clear to understand so as to when these rules shall be used and applied.

Table 1.2
An overview of the SEBI regulations and amendments

Date of Announcement	Regulation	Details of the Regulation
15th October 1993	First guidelines about Foreign Institutional Investors (FIIs)	• Both SEBI's registration and RBI's general approvals underFERA were to hold good for 5years and were to be renewed after 5 years.
December 1995	Securities and Exchange Board of India (foreign institutional investors) regulations, 1995	• procedure for FIIs as well as Sub-account to get register with SEBI • Responsibility of FIIs

1996-97	SEBI (ForeignInstitutional Investors) Regulations,1995 Amendment	• Various institutions registeredwith a legislative body in theircountry of establishment having at least trail record of 5years were allowed as FIIs. • Limit of FIIs, as well as sub-account, were determined up 10% in any company with subject to 24% overall limit ofother foreign investment including other FIIs, NRIs and OCBs and this limit can be raised from 24% to 30% with shareholders' approval. • FII investment permitted in unlisted securities and proprietary funds • FIIs allowed investing their 100% of their portfolios in debt securities, who obtain specific approval from SEBI. It consists of corporate debt securities as well as government securities and is treated to be part of the total limit on external commercial borrowing. • SEBI and RBI took care to make the registration procedure of FIIs easier.
30th June 1998	The SEBI (Foreign Institutional Investors) Regulations, 1995 Amendment	• Provided the revised procedure of registration of sub-accounts of registered FIIs
18th May 1998	The SEBI (Foreign Institutional Investors) Regulations, 1995 Amendment	• FIIs permitted to invest in Treasury Bills • allowed to invest through 100% debt route as well as to the equity route where up to 30% investments can be made indebt instruments

29th February 2000	The SEBI (Foreign Institutional Investors) Regulations, 1995 Amendment	• Indian portfolio managers andapproved asset management companies who are registeredportfolio managers get adeemed Foreign InstitutionalInvestor (FIIs) status - only tomanage the foreign funds including sub-accounts. • Foreign firms and high net worth individuals allowed investing as sub-accounts of FIIs.
13th February 2001	Securities and Exchange Board of India (Foreign Institutional Investors) (Amendment) Regulations, 2001	Provided guidelines for disinvestment by FIIs as well as their sub-account in case of does not desire to renew their registration or failed to make an application for renewal
19th July 2002 Circular No. FITTC/FIIs/04/2002	Regulation 16 (2) (b) of the Securities and Exchange Board of India (Foreign Institutional Investors) Regulations, 1995	FIIs were asked to submit the details of their transactions on a daily basis.
December 2002	The SEBI (Foreign Institutional Investors) (Amendment) Regulations, 2002	Made registration procedure easier for FIIs
19th February 2004	Securities and Exchange Board of India (Foreign Institutional Investors) (Second Amendment) Regulations, 2004	Provided precise guidelines for FII to Issuance of Offshore Derivative Instruments by them
26th June 2006	Securities and Exchange Board of India (Foreign Institutional Investors) (Amendment) Regulations, 2006	Reduced registration fees of FIIs
21st August 2006	SEBI announced Securities and Exchange Board of India (Foreign Institutional Investors) (Second Amendment) Regulations, 2006	Provided a revised format for registration of FIIs “Form A” Application Form for Grant of Certificate of Registration as Foreign Institutional Investor (FIIs)

22nd May 2008	Securities and Exchange Board of India (Foreign Institutional Investors) (Amendment) Regulations, 2008	• Provided norms for Know Your Client (KYC) procedure for FIIs and their Subaccounts • An AMC, investment manager or advisor or an institutional portfolio manager set up and/ or owned by non resident Indians (NRIs) shall be qualified to be registered as FIIs subject to the condition that they shall not invest their owner funds
January 07, 2014	SEBI announced the Securities and Exchange Board of India (Foreign Portfolio Regulations 2014)	Introduced new class of foreign investor Foreign Portfolio Investor merging FIIs, QFIs and sub-account of FIIs. Also provided Criteria for the registration of FPIs. Provided a list of institutions under major three different categories, who can register them as FPI Provided a list of securities in which FPIs are permitted to invest Provided criteria for QFI Defined qualified depository participant KYC norms for Offshore derivative instruments issue by FPIs All FPIs have to obtain Permanent Account Number from the Income Tax Department. SEBI may suo motu or upon receipt of information or complaint appoint one or more persons as inspecting authority to undertake

		inspection FPI account. Form A, Application Form for Grant of Certificate of Registration as Foreign portfolio investor (FPI) provided.
8th July 2016	SEBI announced the Securities and Exchange Board of India (Foreign Portfolio Investors) (Amendment) Regulations, 2016	Announced that the requirement of prior approval of FPI before the transfer of offshore derivative instruments issued by or on behalf of it.
25th May 2017	SEBI (Foreign Portfolio Investors) (Third Amendment) Regulations, 2017	Announced that FPIs shall not be issued to or transferred offshore derivative instruments to resident Indians or non-resident Indians person and entities that are beneficially owned by resident Indians or non-resident Indians.
20th July 2017	SEBI (Foreign Portfolio Investors) (Fourth Amendment) Regulations 2017	Intimated FPIs to collect a regulatory fee, for the block of three years, from every subscriber of offshore derivative instrument issued by them and deposit the same with SEBI.
31st December 2018	SEBI notified the Securities and Exchange Board of India (Foreign Portfolio Investors) (Third Amendment) Regulations, 2018	Introduced new term "Investment Manager"

Source: SEBI official website.

The FIIs also trade, deal and negotiate to foreign exchange, as a result they are also required to deal and work in collaboration with the RBI.

Table 1.3
Regulations and Guidelines provided by RBI

Date	Regulation and their details
October 15, 1993	First guidelines about Foreign Institutional Investors (FIIs)under FERA, to get an approval of RBI to operate as in India
May 3, 2000	Regulation 5(2) of FEMA Notification No.20
December 17, 2003	RBI announced its decision to do away with the constraint ofgaining clearance from RBI and SEBI separately
September 11, 2007	RBI also provided guidelines to clearing members of FIIs regarding Derivatives and New Products Department. In which FIIs are required to deposit the collateral with the clearing members, in which at least 50% of the liquid assets, shall be in the form of cash or cash equivalents, and the rest can be in the form of non-cash components.

A View of the restrictions on FII investments in India:

Despite the FIIs were allowed to enter in India to invest in Indian capital market, The Government did not provide a total free hand and free will to FIIs for investment which means that there is a cut and limits on the investment limit for FIIs in various asset classes which includes G-Sec, state development loans, and corporate loans.

On the Day of 15th of the month of October in the year 1993, the maximum limit of FIIs was restricted to 5% of any company, provided 24% overall limit of additional foreign investment. These ceilings or the maximum limits were changed from time to time and were raised to 49 percent in March 2001 and in September 2001 it was changed to a special process limit and marked for sectoral limit.

On the day of 7th in the month of January of the year 2014 laid a special provision limiting the maximum number of equity shares to 10% of the total issued capital of a company by a sole foreign portfolio which is now called as FIIs. These limits were raised from time to time and enabled FIIs to have a friendly investment environment in India.

As the present study aims at understanding the role of FIIs investment in India it becomes imperative and more meaningful to examine the origin, growth as well as

development of FII investment in India, this section describes the increase in the number of FIIs in India over the period of the study.

A view of the Quantity of FPI and FFI in India

It is noted that right from the year of allowing FIIs investment in India the number of FIIs as well as the number of FIIs which got registered with SEBI has shown a continuous increasing trend both in terms of number as well as the amount invested by them year after year. A view of the Figure 1.1 clearly reveals the growth of FIIs in India over the period of time.

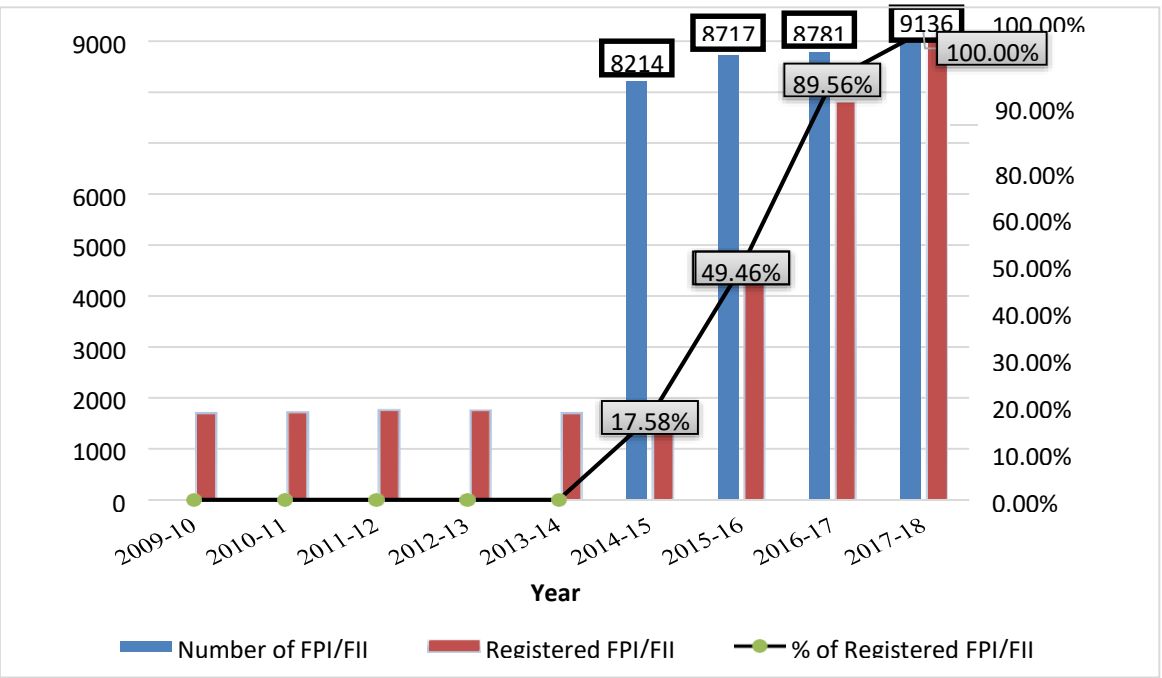

Figure 1.1
Number of FIIs in India

Source: Indian Securities Market, A Review 2014 & 2019, Data about the total number of FPs were not available before the year 2014-15

It can me noted that in the year 1996 the number of FIIs were 396 till the month of August and the same went up to 412 by October 1996. Figure 1.1 clearly reveals that the number of FIIs grew year after year. A very significant and interesting observation that can be noted that all the FIIs and FPIs operating in India by the end of the financial year 2017-18 got themselves registered with SEBI. This clearly reflects the basic operation and functioning of SEBI which state one of its important objective as the growth and development of Indian capital market. The growth and registration of FIIs

aid towards achieving this objective of SEBI. As FIIs investments generally come with a very long term objective, it has undoubletedly provided the much more needed financial stability in Indian Capital market and in turn increased the faith of the same globally.

Investment of FIIs in India's Stock/equities, Debt, and Total

At the time of allowing of FIIs in Indian financial sector there was no clear regulation or the mechanism to keep a clear record or track the investment by FIIs in various asset classes such as equities, bonds and the overall investment in Indian markets. However, as few years passed by SEBI out of its experience framed a mechanism to have a clear and transparent tracking of the investments by FIIs. As a result after the fiscal year 1997-98 SEBI started collection as well as availability of entire data related to FIIs in a very systematic manner. One of the important milestone in keeping record and track of such massive inflows by FIIs is the start of the operations of NSDL and CDSL. These two institutions were exclusively started to have a total record of Indian capital markets transactions of both the domestic as well as foreign investors.

The important sectors where the FII investments in India flow are categorized as Equity and Debt. An attempt is made to undersand the flow of FII investment in India in equity as well as the debt from the year 1997-98 to 2018-19. The data relating to such flows for the said year is presented in Table 1.4.

Table 1.4.

Yearly net flow (Rs. in Crores) of FIIs in India (1997-98 to 2018-19)

Year	Cum_FIIs_ Eq	Cum_FIIs_ Debt	Cum_FIIs_ Total	%_FIIs_ Eq	%_FIIs_ Debt	%_FIIs_ Total
1997-98	5267.0	691	5957.2			
1998-99	4549.8	-176	4373.2	-13.62%	-125.47%	-26.59%
1999-00	14219.3	276.6	14495.3	212.53%	-257.16%	231.46%
2000-01	24426	3.3	24428.7	71.78%	-98.81%	68.53%
2001-02	31340.4	1046.8	32386.6	28.31%	31621.21%	32.58%
2002-03	33867.4	1208.8	35075.6	8.06%	15.48%	8.30%
2003-04	73827.1	7013.8	80840.3	117.99%	480.23%	130.47%
2004-05	117949.8	8772.4	126721.6	59.76%	25.07%	56.76%
2005-06	166750.3	1438.6	168188.3	41.37%	-83.60%	32.72%
2006-07	191986.0	7043.3	199028.7	15.13%	389.59%	18.34%
2007-08	245389.8	19818.6	265207.8	27.82%	181.38%	33.25%
2008-09	197683.6	21713.8	219396.8	-19.44%	9.56%	-17.27%
2009-10	307904.0	54151.5	362054.9	55.76%	149.39%	65.02%
2010-11	418024.8	90468.8	508493	35.76%	67.07%	40.45%
2011-12	461762.4	140456.7	602218.5	10.46%	55.25%	18.43%
2012-13	601794.0	168790.7	770585.3	30.33%	20.17%	27.96%
2013-14	681502.0	140729.7	822234.3	13.25%	-16.62%	6.70%
2014-15	792834.0	306855.7	1099695.3	16.34%	118.05%	33.74%
2015-16	778665.0	302852.7	1081520.3	-1.79%	-1.30%	-1.65%
2016-17	834368.0	295559.7	1129931.3	7.15%	-2.41%	4.48%
2017-18	860001.9	414597.1	1274611.9	3.07%	40.28%	12.80%
2018-19	858372.4	371645.7	1233542.6	-0.19%	-10.36%	-3.22%

Source: Data compiled from SEBI and NSDL Website

The cumulative flow of FII investment in Indian stocks, debt, and the total market is shown in Table 1.4. As it is a very challenging and complex job to comprehend and understand the absolute statistics for such massive data and figures. In order to have an easy and simple understanding of these figures and attempt is made to include three explanatory columns are included to display the relative change in these investments.

The important and major findings of the calculations of the FIIs flows over the period is presented in the form of an inline chart along with the three distinct diagrams, one each for equity, debt, and total investment. The CAGR and the fluctuations in the FIIs flows are calculated through a statistical technique which is popularly called as

standard deviation and for better understanding of the same the final calculations and summary is presented in Table 1.5. A look at the table 1.5 reveals that at a CAGR of 26.05%, 33.08%, and 27.43% for equity, debt and total investment respectively it is very clear and evident that the FIIs investment in India ever since their entry in the country has increased over the period of time.

Table 1.5. CAGR and Variance

	FIIs_Eq	FIIs_Debt	FIIs_Total
CAGR	26.05%	33.08%	27.43%
Standard Deviation of yearly percentage change	0.5157	68.9175	0.56149

Source: Authors Calculation

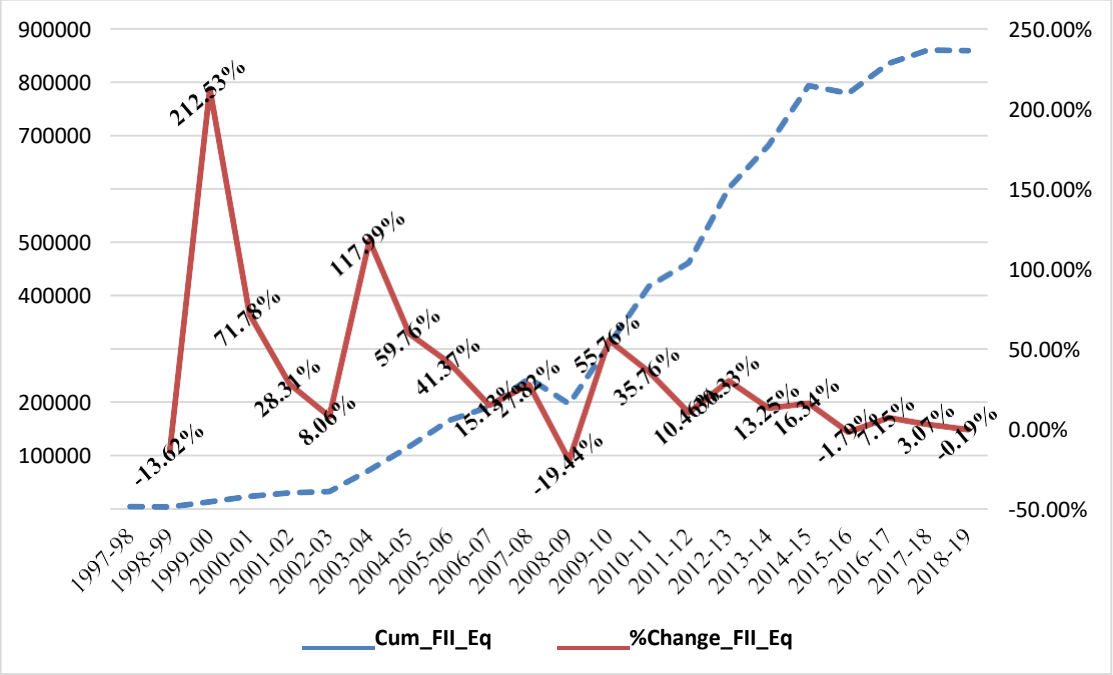

Figure 1.2.

FIIs Investment in Indian equity and percent change Year on Year (YoY)

An analysis of the FIIs flow during the various years of the period of the study is made and the results are presented in the form of a line diagram in Figure 1.2. it can be noted that the investment of FIIs during the year 1999-2000 is to the tune of Rs.1,400 crores and interestingly it can also be noted that the Indian stock market grew by 212.53% during the same year. It is clear indication that the flow of FIIs have a direct

bearing upon the rise or fall of the market, however may not be true in all the times but is true in majority of times in the period of the study.

An understanding of the graph shown in the year 1.2 indicates that the slope of the curve is increasing from the year 2002-03 to 2007-08. However, during the year 2007-08 the slope changed due to the effect of the sub-prime crisis which took into its fold all the major economies of the world and there was a short lived recession across the world.

However, as soon the dark clouds of the subprime crisis faded from the year 2008-09 the Indian capital markets once again saw a sudden and sharp reversal of FII investment and the slope of the curve started to move north wards in a steep manner and such increasing trend witnessed an upward trend till 2014-15. The CAGR of FII investment during the period 2007-08 and 2014-15 is calculated as 26.05% which can be concluded as very good and one of the highest in the world. An understanding of the curve and the statistical values for the last four years of the present study i.e. from 2014–15 to 2018–19, the CAGR calculations indicates that the FIIs investment during this period has gone down to 2%.

The CAGR of FII investment during the period 2007-08 and 2014-15 is calculated as 26.05% which can be concluded as very good and can be regarded as one of the highest in the world. An understanding of the curve and the statistical values for the last four years of the present study i.e. from 2014–15 to 2018–19, the CAGR calculations indicates that the FIIs investment during this period has gone down to 2%.

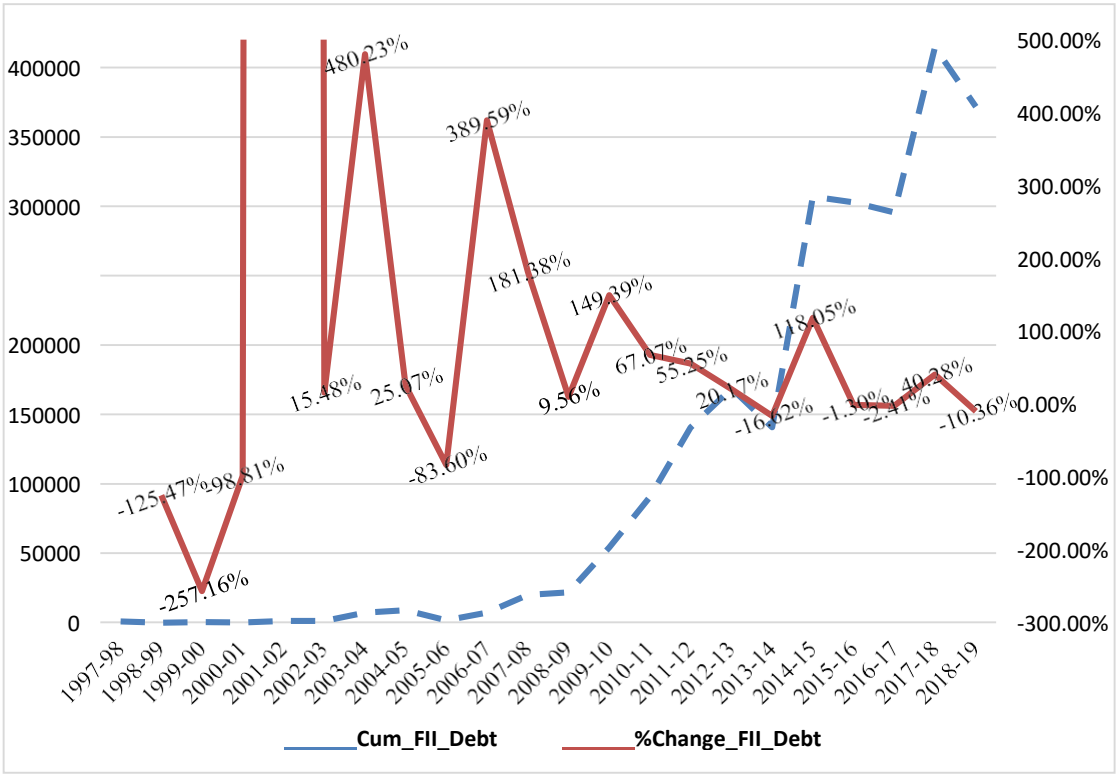

Figure 1.3
FIIs Investment in Indian Debt Market and percentage change year on year

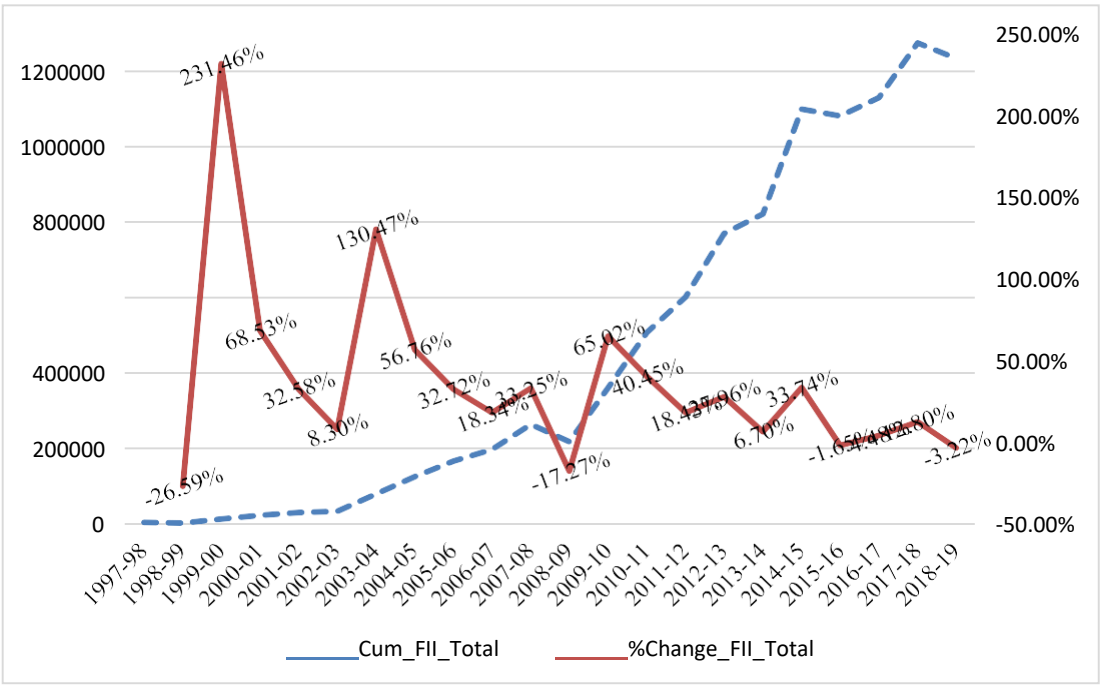

Figure 1.4.

FIIs Total Investment and per cent change YOY

An understanding of the Figure 1.4 indicates that the FIIs flows in India in terms of total investment and also in terms of percentage change of FIIs investment can be understood from 1997-98 to 2018-19. It can be observed that the FIIs investment has shown a declining trend during the past few years in general and from the year 2014-15 in particular. The change in the percentage change can also noticed to be negative for the years 2015-16 and 2018-19.

The directional change through a simple line diagram of the FIIs investment in India for equity and debt proved to be useful to understand the investment in both these categories. The line diagram and the movement of lines for these segments is presented in Figure 1.5. Interestingly it is observed that the line for both the segments moved almost in similar fashion and the result is also substantiated through the most appropriate statistical value correlation of coefficient which is calculated as +0.95 and can be said a highly positive correlation.

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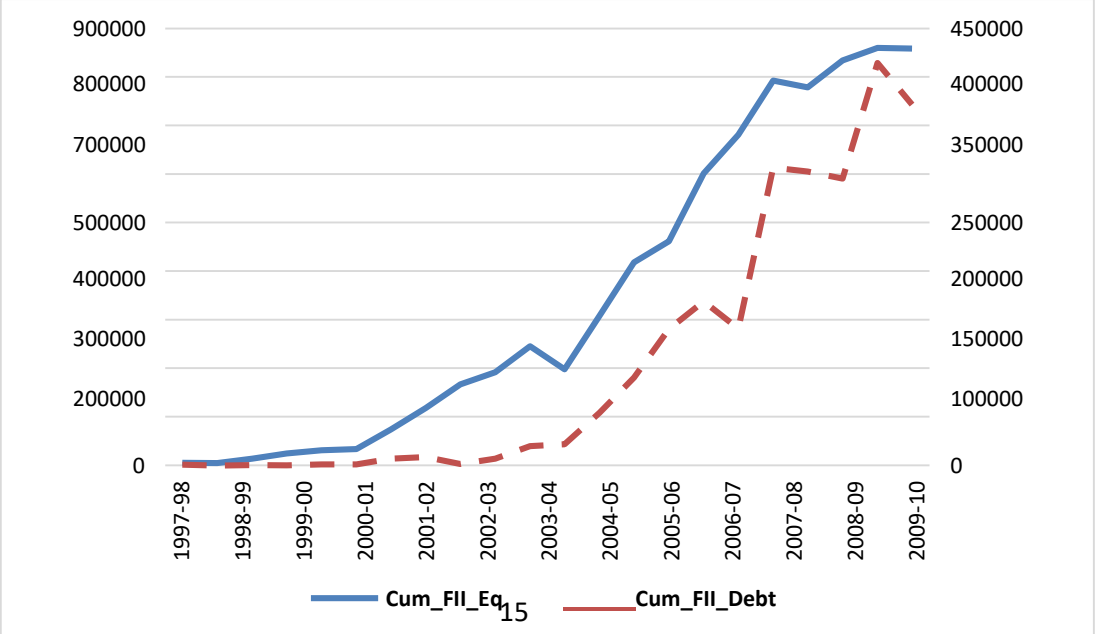
Figure 1.5
FIIs Investment in Indian Equity and Debt Market



Ratio of FIIs' turnover on the India stock exchange

A Ratio can be defined as a mathematical relationship between tow numbers. An understanding of the ratios of the FIIs turnover and investment in India in relation to the Indian stock exchange may give an insight of the significance of FIIs investment and turnover in Indian capital markets. The related values of the FIIs turnover on the tow major indices of India viz NSE and BSE in Equity segment and the turnover in the F&O segment in NSE is illustrated in the graph and the table presented below.

An analysis of the Table 1.6 and Figure 1.7 very clearly represent the strong hold of FIIs in India in both the segments viz cash segment and derivatives segments. The related values of the turnover from the year 2006-07 to 2016-17 indicate that the hold and strength of FIIs has increased over the years of the study. The dominance is so strong that the turnover of FIIs in relation to the total market turnover in NSE and BSE stood at 20–22% especially in the cash segment.

Table 1.6.
Gross Turnover of FIIs in the Equity Market Segment of NSE and BSEand F&O Segment of NSE

Year	FIIs turnover to total turnover of NSE & BSE (%)	FIIs turnover to total F&O turnover on NSE (%)
2006-07	15.8	8.7
2007-08	16.6	9.6
2008-09	15	9
2009-10	11.6	9.8
2010-11	15.3	10.7
2011-12	17.7	14.5
2012-13	19.0	15.7
2013-14	20.6	15.2
2014-15	21	11.3
2015-16	22	11.8
2016-17	21	13.7

Source: Data compiled from Indian Stock Market A Review, 2013, 2014 & 2017

The presence and dominance of FIIs turnover saw a steady growth ever since they were allowed to participate in Indian Capital makkets, however there was a sudden jump and increase in the turnover of FIIs in the F&O sector from the year 2006-07 where it stood as 8.7% to 15.7% in the year 2012-13. Such sudden rise in the growth of the turnover of FIIs can be mainly attributed to the fact that the investment in F&O can be

used as a tool for hedging, speculation or arbitrage. Despite there are ups and downs in the FIIs turnover in the Indian capital markets in various years it can be clearly felt that the participation and turnover of the FIIs has increased significantly over the period of the present study.

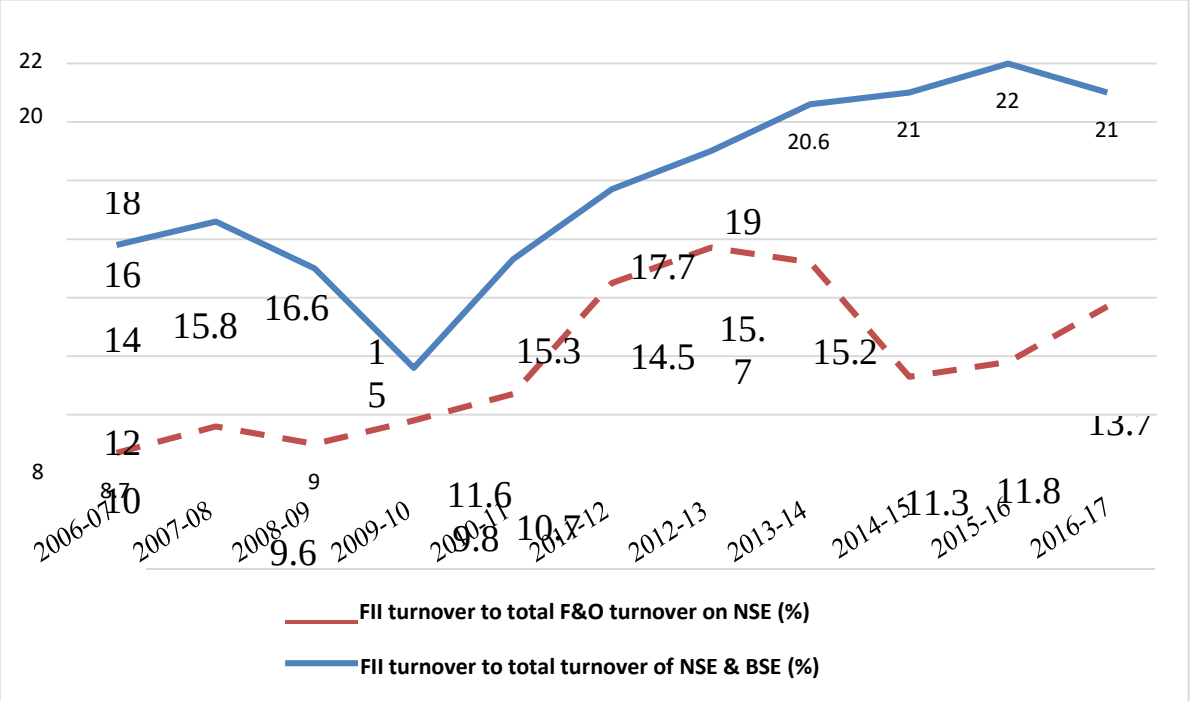


Figure 1.7
FIIs turnover % to the turnover of Indian Equity and Derivative Market

It is observed that the turnover of FIIs has increased year after year it also becomes important to determine and understand the countries or sources from where such investments are flowing into the country. In this regard and understanding of the most dominant and powerful countries who have evinced interest to invest in India shall be identified.

An overview of Country wise Assets Under Custody (AUC) of FIIs and FPIs

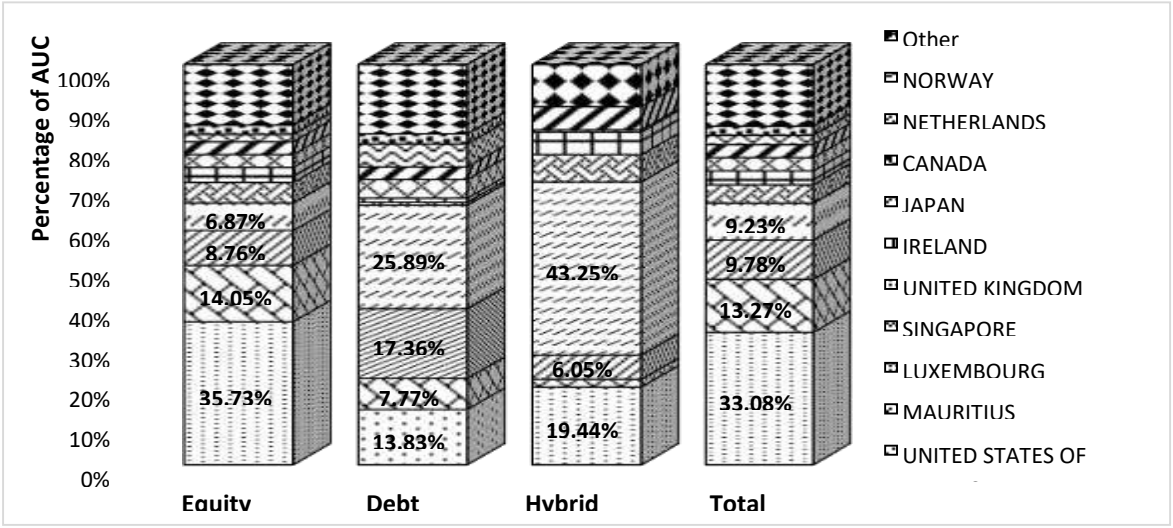
Many developed as well as developing nations have shown keen interest to invest their long term capital in the Indian capital markets. An attempt is made to identify and understand the most prominent countries which have a strong presence through their investment and such important countries details are shown in Table 1.7 and Figure 1.8.

Table 1.7.
FPI/FIIs AUC Country-wise (top 10 countries) data

Sr. No.	Country	AUC (INR Cr.)			
		Equity	Debt	Hybrid	Total
1	United States of America	1,072,359	56,305	1,782	1,130,447
2	Mauritius	421,819	31,623	176	453,618
3	Luxembourg	262,945	70,688	555	334,189
4	Singapore	206,167	105,433	3,964	315,563
5	United Kingdom	153,275	2,944	625	156,844
6	Ireland	112,943	4,144	516	117,604
7	Japan	95,811	19,023	51	114,886
8	Canada	96,362	12,839	530	109,732
9	Netherlands	55,512	23,400	0	78,912
10	Norway	68,414	10,274	0	78,688
11	Other	455,691	70,540	966	527,196
	Total	**3,001,299**	**407,214**	**9,166**	**3,417,679**

Source: www.fpi.nsdl.co.in (Data as provided by DDPs), Here FPIs includes FIIs, SubAccounts & QFIs.

Figure 1.8
FPI/FIIs AUC Country-wise (INR Cr.) May 2019



Not taking it by surprise USA the most powerful economy of the world has shown utmost interest to invest in India's growth story. USA has an investment to the tune of 33.88% in relation to the total FIIs investment in India by the end of May 2019. The details of the various countries which has shown more interest to invest in India's promising economic story are shown in Table 1.5 and the same have been shown as figure for better understanding in Figure 1.8. other countries too have shown their interest to invest in India. It can be noted that after the United States other countries such as Mauritius, Luxembourg, and Singapore have also invested heavily in India. The respective investment of the three countries stands at 13.27%, 9.78%, and 9.23% of the total FII investment in the Indian capital market and 14.055%, 8.76%, and 6.88% in the Indian stock market.

FIIs make an indepth analysis and are very vigilant in making their investment as their investment are generally very long term in nature. As an understanding of the sources of investment of FIIs is made it also becomes significant to understand the various industries or the companies in which FIIs have generated interest to invest. The following is the presentation of such industries and the companies of FIIs preference to invest.

AUC by sector of FIIs/FPI

The result of the introduction of the LPG economic policies in India was the sudden and strong growth of services sector. There has been a paradigm shift in the Indian economy from agrarian economy and industrial economy to the present day services led economy. The main industries that has spurt in the booming services economy are the growth and development of financial services and information technology. These sectors have changed the presence of India at the global level in a very encouraging and different way. The industries of FIIs interest and also the companies in which they have evinced interest to invest are shown in Figure 1.9

An understanding of the Figure 1.9 clearly indicates that the banking and financial sector is the most preferred sector of FIIs. After this sector they have

shown their interest to invest in oil and gas sectors. For any economy to grow and prosper the financial sector should be more vibrant and shall play a key role in providing required financial resources to the corporate as well as the citizens of the country. The growth of the financial sector and the growth of the economy has a direct relationship and one cannot be separated from the other as both go hand in hand. Technology is another important sector which shall also grown in order to provide the fruits of the technological advancements to the companies as well as the people of the nation. As a result the other sun rise sector which saw enormous growth after liberalisation of economic policies was the software and its allied sectors. The real engine of growth which runs the entire economy is the oil and gas sector. The countries visionary business leaders have grasped the significance of these three sectors and have made significant investments and started lot of business units in these three sectors. Not only the Indian business leaders but FIIs have also sensed the bright future of these sun rise sectors in advance and made significant investment in the companies related to these industry. In light of these developments which have been brought by the favorable economic policies it becomes significant to understand the FIIs investment in various business of India and the details are presented in the Figure 1.10. Figure 1.10 shows the investments made by FIIs in prominent Indian companies. It also attempts to show displays the proportion of stakes held by FIIs in various corporations in March 2018.

	March 2018	FII holding (40 qtrs)	
Company Name	FII stake (in%)	Median	Mean
HDFC	74	73	69
IndusInd Bank	52	38	36
Axis Bank	50	41	39
Shriram Transport Finar	49	41	37
Apollo Hospitals	49	42	37
ICICI Bank	48	39	41
KPIT Technologies	46	26	25
PVR	44	22	21
Hero MotoCorp	42	33	34
Mindtree	42	25	26
NIIT Technologies	41	27	25
HDFC Bank	40	33	33
Cyient	40	30	30
UPL	40	37	38
Kotak Mahindra Bank	40	31	32
Tech Mahindra	39	16	19
Redington (India)	38	31	29
Page Industries	36	20	22
Gateway Distriparks	35	25	28
Mahindra & Mahindra	34	33	31
PTC India	33	26	24
Info Edge (India)	33	27	27
Eicher Motors	31	14	18
City Union Bank	30	22	24
Dr. Reddys Laboratories	30	29	30
Max Financial Services	29	29	28
Phoenix Mills	29	22	22
Tata Power Company	28	25	23
Kajaria Ceramics	28	17	15
Hindalco Industries	28	27	24
Godrej Consumer Produ	28	28	25
Grasim Industries	27	23	23
Marico	27	26	25
Piramal Enterprises	27	25	24
Idea Cellular	27	17	17

[Source: ETMarkets.com| (Oberoi, 2018)]

Figure 1.10
FII investment in Indian companies (March 2018)

Significance of the study

As discussed in the earlier sections of the present study that the Government of India had adopted a liberal economic policy by opening the gates to the private as well as foreign players to do business in the areas which were under the exclusive control of the Government. The new and buzzing words which started sounding in the Indian Economy during 1991 were Liberalisation, Privatization and Globalisation.

Along with the changes that were made to the structure of the Indian economy, one more significant regulation was to allow the flow foreign capital into India in form of FIIs and FDI. As a result the Indian economy in general and Indian capital markets in particular saw a significant change in terms its operations and wealth creation. Owing to the importance of the FIIs in Indian capital markets as they have a strong and dominating presence and can also influence the movement of stock markets, this study assumes significance and also seeks to understand the role of FIIs in Indian stock markets. The theoretical framework and an establishment of cause and effect relationship of FIIs investment and its impact on Indian Capital markets would provide better and greater insights to the investors of all kinds for making prudent and better investment decisions

Objectives of the study:

The following are the objectives set forth for the study.

- To understand the meaning and the concept of FII's and also to study the origin, growth and development of FII's in India.
- To have an understanding of the investment pattern of FIIs in the Indian Equity Market
- To have an overview and also to analyse the various factors that have an impact upon the FIIs investment decision in the Indian Equity Market
- To study the effect of FII investment in the Indian Equity Market
- To draw the findings and conclusions arising from the study and to present the same in the form of summary.

Research Design

In order to achieve the objectives set for the study the present study intends to make an in-depth analysis of the FIIs investment in India. A descriptive research is used for completing the present study. An extensive review of literature is undertaken by exploring the data available on the related areas of the present study. This has helped to understand the various dimensions of the research already undertaken on the various areas related to the FIIs investment in India. The origin, growth and development of FIIs investment in India is understood by gathering the available data from the most appropriate and reliable source SEBI website. As the data regarding the FII Investment is available from the year 1997 onwards the available data is used for better understanding of the stated problem of the study. The investment of FIIs in India and its effect on the Indian stock market are analysed by using the most appropriate statistical tools relevant for the study.

In nutshell, it can be said that the present study is a descriptive research design. An attempt is made in the study to understand the FIIs investment in India during the period of the study. An effort is also made to understand the various factors that determine and have an effect on the FIIs investment in India. Various important components such as the performance of Indian stock markets, market turnover, movement of stock indices are analysed for determining the significance of FIIs investment in Indian stock markets.

Sources of Data:

To achieve the objectives set for the study the present study extensively used secondary data. The important source of secondary data is the official reports of the SEBI, Annual reports of SEBI and the SEBI website. However other related sources of data such as Government publications are also used for having a better understanding of the FIIs investment in India and its impact on the Indian stock markets.

Sampling

A sample can be said as the small proportion of the total data which reflects the entire population characteristics. The Indian stock exchanges have various sectoral indices and the movement of those is analysed in line with the FIIs investment in India to understand the impact of the same on Indian stock exchanges. In order to achieve the broader objective of the study the important economic indicators of the country such as GDP, WPI, Foreign exchange rate and so on are also studied in relation to the FIIs investment in India.

The period of the study is set as 1997-98 to 2018-19 and the available data for the period is collected and analysed to achieve the stated objectives for the study.

Sectoral Indices in NSE

1. NIFTY Auto Index
2. NIFTY Bank Index
3. NIFTY Financial Services Index
4. NIFTY FMCG Index
5. NIFTY IT Index
6. NIFTY Media Index
7. NIFTY Metal Index
8. NIFTY Pharma Index
9. NIFTY Private Bank Index
10. NIFTY PSU Bank Index
11. NIFTY Realty

Index Sectoral Indices in BSE

1. S&P BSE Basic Materials Index
2. S&P BSE Consumer Discretionary Goods & Services Index
3. S&P BSE Energy Index
4. S&P BSE Fast Moving Consumer Goods* Index
5. S&P BSE Finance* Index
6. S&P BSE Healthcare* Index
7. S&P BSE Industrials* Index

8. S&P BSE Information Technology* Index
9. S&P BSE Telecom* Index
10. S&P BSE Utilities* Index
11. S&P BSE AUTO* Index
12. S&P BSE BANKEX* Index
13. S&P BSE CAPITAL GOODS* Index
14. S&P BSE CONSUMER DURABLES* Index
15. S&P BSE METAL* Index
16. S&P BSE OIL & GAS* Index
17. S&P BSE POWER
18. S&P BSE REALTY* Index
19. S&P BSE TECK* Index

Data Collection:

The data for the present study is gathered from the secondary sources only. The most reliable sources such as SEBI reports and its official website, Government reports and publications and the available data on the areas related to the study are used. The data published and made available by the NSDL and CDSL websites is used understand the FIIs investment in India. These two are the depositories in Indian capital market and all the data relating to the foreign as well as the domestic investors is available with them.

Data Processing:

Proper care is taken to process the collected data and used the most appropriate data for getting the best results in the study. The data relating to FIIs investment is very huge, dispersed and not normal in nature. The figures are available in absolute terms. In order to overcome this problem the data collected is converted into usable form by using appropriate statistical techniques such as correlation, time series, log transformation and so on. ARIMA models are used to have a better understanding of the data related to FIIs investment in India for the

period of the study. Appropriate statistical tools such as ACF, ADF, Hannan Quinn model are used with the help of SPSS for getting the better results.

CAGR is a most appropriate and useful tool to understand the growth of a variable over a period of time. This is used in the present study to understand the compounded growth of FIIs investment in India.

$$CAGR = \frac{(End\ Value}{Begning\ Value}^{(1/n)} - 1$$

Limitations of the Study:

The present study has few limitations. As the study is purely based on the secondary data the limitations relating to the use of the secondary data might have creeped into the present study too. The following are the important limitations of the study:

1. The availability and the quality of the secondary data from the various sources have affected the study.
2. The present study is made only in relation to the FIIs investment in India. So it may not be generalized and used at global levels.
3. The periodicity of the usage of the secondary data also affects the results of the study. In the present study the monthly data is used. An usage of daily data may yield more better and accurate results. However, due to various constraints the monthly data is used.
4. Various staticial tools are available for making analysis. However the most appropriate and suitable tools only are used. Hence the results may not be generalized.

Chapterisation Scheme:

In order to have a clear and better understanding of the entire research work the entire work is divided into six chapters.

Chapter I - Introduction

This first chapter being introductory in nature states the significance of the study. It also sets the objectives of the study and the research methodology used for undertaking the present study.

Chapter II – Review of Literature

The second chapter is devoted to undertake an extensive review of the available literature.

Chapter III – Indian Financial System – An Overview

The third chapter tries to explain the structure of the Financial System of India. The important components of Indian Financial System, the various regulatory bodies and the various players of the Indian financial system are talked about in this chapter.

Chapter IV – FIIs Investment in India – Trends and Patterns

In this chapter the FIIs investment in India and its pattern are explained. The statistical tools such as ARIMA and SARIMA are used for better understanding of the pattern of FIIs investment in India.

Chapter V – Factors affecting the FIIs investment Decisions in India – An Overview

This chapter makes an attempt to explain the various factors that affect FIIs investment in India. Not all the countries attract same FII investment. The countries favorable demographic and economic factors have an impact on the investment decisions of FIIs. All such factors are analysed to understand the flow of FII investment in India.

Chapter VI – Findings & Conclusions

This chapter being conclusion in nature the results of the entire study are summed up and presented in the form of conclusions.

CHAPTER II
REVIEW OF LITERATURE

From the year 1991, to boost the economic growth of the country, the Indian government has taken several measures to boost the Indian financial system. Since India is relatively capital-scarce country, the purpose of liberalisation, was to increase the availability of capital sources in Indian Financial Markets. In this process, foreign capital was invited, so that foreign funds augment Indian capital sources and deepen Indian Financial Market. Liberalised foreign investment supplemented scarce capital resource. In the latter half of the twentieth-century lot of other countries also allowed foreign investment in their economy. This phenomenon is studied and evaluated by different researchers from time to time. In this chapter, an effort is made to review related literature on it.

Role of Financial System in Economy

Duisenberg, (2001) Financial System is the backbone of the economy of developed as well as developing countries. Well-developed financial market leads to economic growth (Duisenberg, 2001). Financial markets aid the process of economic growth by performing certain functions viz. increase the liquidity and traceability of assets in an economy, provide openings for economic mediators to diversify their risk, reduce information asymmetry by assembling information on deficit units, promote savings mobilization and the attraction of foreign capital and improve the corporate governance of businesses.

- Duisenberg, W. F. (2001). The role of financial markets for economic growth (Economics Conference "The Single Financial Market: Two Years into EMU" organised by the Oesterreichische Nationalbank in Vienna ed.): European Central Bank.

Greenwood, Sanchez, and Wang (2013) added that world output could increase somewhere between 65 and 88% of all countries adopted the best financial practice in the world.

The relationship between financial system and economic growth is studied by different researchers for different economy in different economic phases. Pradhan, Arvin, Hall, and Nair (2016) found that innovation in financial market and financial development result into substantial increase in per capita income in Euro Zone countries.

Batuo, Mlambo, and Asongu (2018) found that in their research in African countries, financial development and financial liberalization have a positive impact on financial instability and economic growth also reduces financial instability.

The success of financial market depends upon the efficiency of intermediaries and Greenwood et al. (2013) suggested that that financial intermediation is key for economic development and they also found that about 30% of U.S. growth can be credited to technological advance in financial intermediation.

- Greenwood, J., Sanchez, J. M., & Wang, C. (2013). Quantifying the impact of financial development on economic development. *Review of Economic Dynamics*, *16*(1), 194-215.
- Pradhan, R. P., Arvin, M. B., Hall, J. H., & Nair, M. (2016). Innovation, financial development and economic growth in Eurozone countries. *Applied Economics Letters, 23*(16), 1141-1144.
- Batuo, M., Mlambo, K., & Asongu, S. (2018). Linkages between financial development, financial instability, financial liberalisation and economic growth in Africa. *Research in International Business and Finance, 45*, 168-179.
- Greenwood, J., Sanchez, J. M., & Wang, C. (2013). Quantifying the impact of financial development on economic development. *Review of Economic Dynamics*, *16*(1), 194-215.

Capital Market and Economic Growth

The formal financial markets have major two components i.e. Capital Market and Money Market. Capital market deals with long-term finance whereas Money market deals with short-term finance and credits. So developments in capital market strengthen the financial market which leads to economic development. Capital market development depends on capital formation and flow of capital and its investment.

Durusu-Ciftci, Ispir, and Yetkiner (2017) argued that the capital market does capital formation through mainly two modes i.e. debt (long-term) and equity (ownership) which is essential for economic growth. Credit market and stock markets are two major factors which contribute to the development of financial sectors and accelerate economic growth.

Pathak (2014) opined that the equity market is significant for capital market development and it includes primary (new issue) and stock (secondary) market. The equity market development contributes to the development of the economy. Well-developed and efficient stock market contributes well to economic growth. The secondary market contributes to economic growth by channelizing funds into the most efficient channel through the process of disinvestment to reinvestment.

H.-J. Chang (2011) emphasised the role of institutions and intermediaries and argued that Liberalized institutions that provide maximum business freedom and the strongest protection of private property rights are the best for economic development.

- Durusu-Ciftci, D., Ispir, M. S., & Yetkiner, H. (2017). Financial development and economic growth: Some theory and more evidence. *Journal of Policy Modeling, 39*(2), 290- 306.
- Pathak, B. V. (2014). *The Indian Financial System: Markets, Institutions and Services* (N. Rakshit Ed. Fourth ed.). Delhi, Cheannai: Dorling Kindersley (India) Pvt. Ltd, licensees of Pearson Education in South Asia.
- Chang, H.-J. (2011). Institutions and economic development: theory, policy
  and history. *Journal of Institutional Economics, 7*(4), 473-498.

Foreign Investment

Mill (1965) emphasised on importance of foreign capital in simulative economic development. Foreign capital not only helps in increasing employment, output and income but also smoothens the balance of payments and inflationary pressures (Jhingan, 2014). Hence in 1991 we opened up the economy and initiated with liberalisation.

Durham (2004) explained that FDI and Equity Foreign Portfolio Investment (EFPI) are positively related but it is not unconditional. Foreign capital flows improve capital accumulation and technological diffusion thus promoting economic growth.

Albulescu (2015) studied the impact of FDI and FPI in long term Central and Eastern European countries for the time-span of 2005-2012 and found that both FDI and FPI exercise an influence on the long-term economic growth. FDI is most relevant to growth, where equity flow is smaller and less stable.

The flow of foreign investment plays an important role in a boost of economic growth as well as financial markets of developed as well as developing countries. As a result, an inflow of Foreign Direct investments has come to be a noticeable measure of economic development in both developing and developed countries (Sultana & Pardhasaradhi, 2012). They stated that FDI and FIIs have become apparatuses of international economic assimilation and stimulus. They finally concluded that the impact of the flow of FDI & FIIs on the Indian stock market is significant.

- Mill, J. (1965). Principles of Political Economy, Collected Works of John Stuart Mill vols. II and III, ed. J. Robson: Toronto: Toronto University Press.
- Durham, J. B. (2004). Absorptive capacity and the effects of foreign direct investment and equity foreign portfolio investment on economic growth. *European economic review,48*(2), 285-306.
- Albulescu, C. T. (2015). Do Foreign Direct and Portfolio Investments Affect Long-term Economic Growth in Central and Eastern Europe? *Procedia Economics and Finance,23*, 507-512.
- Sultana, S. T., & Pardhasaradhi, S. (2012). Impact of flow of FDI & FII on Indian stock market. *Finance Research, 1*(3), 4-10.

FDI and Economy

As FDI contributes to direct contribution to various industry unit establishments through technology or by acquiring assets for the business. Hence it contributes to economic growth through the development of various industries. Developing countries are always in the dearth of cost-effective capital and technology. FDI helps developing countries in the transfer of technology hence it is better than domestic investment for the growth.

Effect of FDI on economic growth also depends upon the precondition of the host country. Zhang (2001) studied 11 economies in East Asia and Latin America during 1960-97 to study the link between FDI and economic growth and found that impact of FDI on host country is country-specific and host countries which adopted liberalised trade regime, improved education, export orientation and maintain macroeconomic stability are more likely to promote economic growth.

Bengoa & Sanchez-Robles, (2003) opined FDI is positively correlated with economic growth but at the same time economic stability, liberalised market and human capital are significant for long- term capital inflow found in the study of 18 Latin American countries for the period of 1970–1999.

In one of the studies of the Nigerian economy for the period of 1984-2016 Fashina, Asaleye, Ogunjobi, and Lawal (2018) found that foreign aid induced economic growth up to a certain point but beyond that, it affects negatively. They also found that FDI and trade openness was also a significant factor for economic development.

- Borensztein, E., De Gregorio, J., & Lee, J.-W. (1998). How does foreign direct investment affect economic growth? *Journal of international Economics, 45*(1), 115-135.
- Chung, K. H., & Zhang, H. (2001). Corporate governance and institutional ownership. *Journal of Financial and Quantitative Analysis, 46*(1), 247-273.
- Bengoa, M., & Sanchez-Robles, B. (2003). Foreign direct investment, economic freedom and growth: new evidence from Latin America. *European journal of politicaleconomy, 19*(3), 529-545.
- Fashina, O. A., Asaleye, A. J., Ogunjobi, J. O., & Lawal, A. I. (2018). Foreign aid, human capital and economic growth nexus: Evidence from Nigeria. *Journal of InternationalStudies, 11*(2), 104-117.

FIIs and Economy

With FDI, FPI is also relevant to economic growth as it assists in capital formation. Albulescu (2015) found that FDI and FPI affected the long-term economic growth in Central and Eastern European countries during the period of 2005-2012.

To invite foreign investment, the Government have to provide them rigour platform in terms of regulations and policies. Thus overall government regulations also improve through FIIs. Li, Moshirian, Pham, and Zein (2006) observed with the growth in institutional investment in equity markets around the world, financial institutions have become the largest investor group in many countries; and are observed mostly in countries with stronger regulatory and governance structure. When any country has more suitable regulatory environment it provides an opportunity for institutional investors for investment than another country. Different financial institutions viz. mutual funds, banks, insurance companies, pension funds and foreign institutions have different investment objectives. Depending on their investment objectives and the regulatory environment, their influence on firm performance is dissimilar. For example, while there are regulatory restrictions for banks to invest in a firm's equity in the US; they are the largest shareholders in Germany and Japan; and also have significant participation on management's actions.

Mexico was privileged to be next to the United States while Indonesia was in a key position as it is in Southeast Asia; the centre of global growth in recent years, and links to China (Michael Klimes, 2014). Mexico, Indonesia and Nigeria of MINTS are also commodity producers.

- Albulescu, C. T. (2015). Do Foreign Direct and Portfolio Investments Affect Long-term Economic Growth in Central and Eastern Europe? *Procedia Economics and Finance,23*, 507-512.
- Moshirian, F., Pham, P. K., & Zein, J. (2006). When financial institutions are large shareholders: The role of macro corporate governance environments. *The Journal ofFinance, 61*(6), 2975-3007.
- Klimes, M. (2014). Ex-Goldman Guru Jim O'Neill Says 'Mints' are the New Brics. *International Business Times*.

Determinants of FIIs

FII investment can be predictable as they are affected by various factors. The government can consider such determinant and their study would be crucial while framing various policies to attract and regulate FIIs flow in India.

Joshi (2013) stated that the Indian stock market is very sensitive and affected by many factors. He also observed Factors like Flow of Foreign Institutional Investors (FIIs), Political Stability, Growth of Gross Domestic Product, Inflation, Liquidity and different interest rate and Global level factors are major factors responsible to create movement in Indian stock market. Various factors are taken into consideration by FIIs even when they identify investment opportunities.

Roszkowska and Langer (2019) found that foreign investors can be effected through both types of factors i.e. factors related to host country as well as other global factors including factors affecting the investing country. The foreign investor should focus on local risk factors rather than global factors to identify abnormal investment opportunities in comparison with other countries. As a part of international finance stock being a part of leading index might prefer by FIIs.

Abid and Bahloul (2011) found that in international market geographical distance especially in case of seven Middle East and North Africa MENA countries (Algeria, Egypt, Iran, Saudi Arabia, Morocco, Tunisia and Turkey) as a location for FPI from the G7 investors' viewpoints over the period from 2001 to 2005 is also found significant. The risks associated with US equity market encourage foreign institutional investors to invest more in host country equity markets.

- Joshi, M. C. (2013). Factors affecting Indian stock market. *International Journal of Contemporary Research in Management, Engineering and Health Science,002*(001), 37-45.
- Roszkowska, P., & Langer, L. K. (2019). (Ab) Normal Returns in an Emerging Stock Market: International Investor Perspective. *Emerging Markets Finance and Trade*, 1-25.
- Abid, F., & Bahloul, S. (2011). Selected MENA countries' attractiveness to G7 investors. *Economic Modelling, 28*, 2197-2207.

Srinivasan and Kalaivani (2015) concluded that US equity market returns have a positive and significant influence on FIIs flows in the long run but the positive and insignificant influence on FIIs flows in the short- run.

Many researchers also found crisis as an important determinant at international level to choose country or to switch the FIIs portfolio.

Chakrabarti (2001) studied the importance of the effect of 'regional factors' as determinants of FIIs portfolio flows increasing over time. He opined that Asian crises significantly affected FIIs flow before and after in the Indian equity market. They also found that the Asian Crisis marked a regime shift in the determinants of FIIs flows to India with the domestic equity returns becoming the sole driver of these flows since the crisis.

Anand (2015) reported that experts are of the opinion that selling by FIIs is more or less transitory, and they should become net buyers as and when suspicions of global slowdown recede.

Singhania and Saini (2018) also observed that in developing countries crisis period (2006– 2008) significantly influenced the inflow of FPIs.

Oyerinde (2019) observed FIIs flow in the Nigerian stock market is sensitive to the economic crisis. In contradiction Ding, Nilsson, and Suardi (2013) found that in the Shanghai (SHSE) and Shenzhen (SZSE) stock exchanges during the period of April 2004 to the end of March 2012 Foreign institutional participation and liquidity remain strong before, during, and after the recent financial crisis.

- Srinivasan, P., & Kalaivani, M. (2015). Determinants of foreign institutional investment in India: An empirical analysis. *Global Business Review, 16*(3), 364-376.
- Chakrabarti, R. (2001). FII flows to India: Nature and causes. *ICRA Bulletin Money &Finance, Oct. - Dec. 2001*, 61-81.
- Singhania, M., & Saini, N. (2018). Determinants of FPI in Developed and Developing Countries. *Global Business Review, 19*(1), 187-213.
- Oyerinde, A. A. (2019). Foreign Portfolio Investment And Stock Market Development inNigeria. *The Journal of Developing Areas, 53*(3).
- Ding, M., Nilsson, B., & Suardi, S. (2013). Foreign institutional investors and stock market liquidity in China: State ownership, trading activity and information asymmetry. *The Knut Wicksell Centre for Financial Studies, Lund University Working Paper, 14*.

FIIs choose host countries very carefully. Government regulations and policies framework are important determinants for FIIs flow.

Singhania and Saini (2018) mentioned that in developed and developing both countries trade openness is significant to FIIs flow.

Bose and Coondoo (2004) have studied liberalisation policies that expanded the membership of FIIs categories and their scope of investment in the Indian market, enhanced sectoral and individual caps, made provision for hedging FII' risk of making investment in the Indian stock markets by allowing them to enter the foreign exchange and derivatives market, and made procedural simplifications and fees reduction, seem to have a significant expansionary effect on net inflows. Measures to improve the SEBI/RBI's control over the FIIs investments like banning of NRIs/OCBs and mandating stricter disclosure norms also do not show any significant negative impact on the net inflows. On the whole, it is found that these policies mostly render FIIs investments more sensitive to domestic market returns and raise the inertia of FIIs flows.

Ferreira and Matos (2008) suggested that countries with strict disclosure standards are preferred by institutional investors in the international market.

Performance of the economy of the host country is the most important determinant for foreign investment. Oyerinde (2019) suggested pursuing positives measure for the economy to attract foreign portfolio investors and discourage capital flight in the country.

- Singhania, M., & Saini, N. (2018). Determinants of FPI in Developed and Developing Countries. *Global Business Review, 19*(1), 187-213.
- Bose, S., & Coondoo, D. (2004). The Impact of FII Regulations in India. *Money and Finance*.
- Ferreira, M. A., & Matos, P. (2008). The colors of investors' money: The role of institutional investors around the world. *Journal of Financial Economics, 88*(3), 499-533.
- Oyerinde, A. A. (2019). Foreign Portfolio Investment And Stock Market Development inNigeria. *The Journal of Developing Areas, 53*(3).

Various economic indicators like GDP, Call Rate, Exchange Rate, Inflation rate etc. are crucial for FIIs while investing in the host country. Many research found causality between these determinants and FII investment. Gross Domestic Product (GDP) is one of the indicators of economic activity of the host country. GDP of the host country is significant for foreign investors. GDP is one of the vital instrument for the relative study ofstock market development and foreign investment.

Nwosa (2018) has studied Stock market development i.e. the of ratio total market capitalization to GDP and foreign portfolio investment i.e. the ratio of net foreign portfolio investment to GDP and found significant relation.

Mohanasundaram and Karthikeyan (2017) also advocated the GDP of the home country also become crucial for foreign investment, as it determines investment opportunity in the investing country. If opportunities are good in investing country foreign investor may withdraw money and go back to their domestic country for a better opportunity. USA GDP is significantly related to FIIs flows in India at 5% level.

The interest rate determines the risk-free return in the financial market as well as the cost of capital. P. Mukherjee, Bose, and Coondoo (2002) said that if the interest rate is the high cost of capital is high as well as risk-free return is also high. When a foreign investor invests in the equity market they take risk related to the host country stock market. If the interest rate is high they prefer risk free investment or less risky investment like government securityand other debt security. Thus, the interest rate is significant to FIIs.

- Nwosa, P. I. (2018). Does Stock Market Development Spurs Capital Inflows In Nigeria? *Nile Journal of Business and Economics, 4*(9), 22-29.
- Mohanasundaram, T., & Karthikeyan, P. (2017). Decisive Economic and Stock Market Indicators on Foreign Institutional Investments: Evidence from India. *Journal of Applied Management and Investments, 6*(1), 43-57.
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FIIs and Equity Market

Being the stock market itself is one the important factor for the attraction of Foreign Investment, many pieces of research advocate the relationship between FII investment and equity market.

Bodla and Kumar (2009) found the purchase and the sale of foreign investor both are having bidirectional relations with market capitalisation. When domestic investors start investment in the national market it boosts the confidence of foreign investors to investin that country.

Mohanasundaram & Karthikeyan (2017) Market Cap of NSE is significantly related to FIIs flows at 5% level. There is a direct causal relationship between stock market development (the ratio total market capitalization to grossdomestic product) and foreign capital inflows.

Kaur (2017) also found that FIIs has a significant impact on SENSEX (representing Indian Stock Market). Activities of FIIs carry more influence on returns of Indian stock as compared to DIIs and buying and selling activities of FIIs influence the behaviour of DIIs.

D. Mukherjee and Ghosh (2004) found that among the institutional investors, FIIs show consistency in stock picking as compared to DFIs who are sporadic and volatile.

B. Singh (2005) stated that FII investment in India helped in achieving a higher degree of liquidity at the domestic stock market; it had increased price-earnings ratios and finally reduced the cost of capital for investment. Along with this they also help in improving the functioning of the domestic stock market.

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Srikanth and Kishore (2012) studied causes and effects of FPI flows into the Indian economy during the period of April 2003 to March 2011 and found bi-directional causation between net FIIs inflows and the BSE Sensex. They found positive impact FIIs inflow on Indian stock market.

Kim and Yi (2006) studied a large sample of firms in the Korean market and found evidence that foreign investors look at firm-specific data in making investment decisions.

Aggarwal, Erel, Ferreira, and Matos (2011) also noted that monitoring and involvement by institutions travel beyond country borders and lead to better firm performance and institutional investors are able to uphold good corporate governance practices around the world beyond the effect of government regulations. In a study of the relation between the level of foreign shares and pay-performance sensitivity in a sample of Korean firms Garner and Kim (2013) also found that foreign investors are beneficial in improving corporate governance. In India stock market

Mukhopadhyay and Chakraborty (2017) studied the role of FIIs and firms performance through the study of 137 BSE listed firms for the period of 2000-2001 to 2012- 2013. They studied variables viz. age of the firm, capital expenditure, firm size, leverage, cash flow and ownership concentration and found that FIIs has a positive and significant impact on the firm performance in India.

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C. Chang (2010) argued that in emerging markets the foreign investors may lack expertise in the local environment which might lead to informational disadvantage. FIIs being volatile some their outflow may unstabilised or make the stock market of host country inefficient.

Agbloyor et al. (2014) argued that countries with strong domestic financial markets, however, benefit more by being able to transform the negative impact of private capital flows into a positive one.

Choudhury (2014) took a broad examination into India's service sector, the main growth apparatus for the Indian economy during the past two decades. First, dealt with the endogenous multiple structural breaks developed by (Bai & Perron, 1998, 2003) and also used both the models of pure and partial structural breaks promulgated by Bai and Perron.

Vardhan and Sinha (2016) examined the effect of FIIs investments in the Indian equity market and its role in integration with the United States (US) equity market. In the study, structural breaks were used to create sub-periods to employ different vector auto-regression models and the stability of two parameters has been tested using the Chow test (Chow, 1960).

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CHAPTER III

INDIAN FINANCIAL SYSTEM – AN OVERVIEW

A strong, vibrant and investor friendly financial system is the need of the day for any country to attract foreign flow of money. However, a strong regulation is also needed to have a watch over the transactions of the public and corporate in order to have a smooth and fair flow of money in the system. After the opening of the gates to the foreign capital in India during 1991 and then after the country has witnessed structural as well as paradigm change in the financial system of the country.

A strong stable and transparent financial system helps in attracting the foreign money to invest in a country. For a country like Indian with is capital scare economy and which pre dominantly depends on the international funding agencies for the development requirements such as industrial development, infrastructure development, the need and significance of the foreign capital is very essential as they come to invest here for long term and also assist in the economic development of the country.

In this chapter an attempt is made to understand the financial system of India. The various components of financial system of india are tried to be presented in this chapter. However, as the present study basically deals with the role or FIIs in Indian stock market more emphasis is laid on the capital markets and its relation to the FIIs regulation.

Financial System and Economic Growth in India

The basic pillars of any financial system are the saver and borrowers. The savers save their surplus with the financial institutions and these institutions in turn lend the money to the borrowers who borrow for their economic activities. Hence, the role of the financial institutions is of high value in the flow of money from savers to the borrowers and aid in capital creation as well as capital mobilisation which otherwise may lie idle and as it is said idle funds fetch nothing.

Principally, the Indian financial system may be divided into formal (structured) and informal (unorganised) sectors. The Indian economy takes into consideration just the official parts of the nation's financial system, which is comprised of five pillars: regulators, financial institutions, financial markets, financial instruments, and financial services. The structure of the Indian financial system and the various components involved in the smooth and efficient flow of money among the various entities is presented in figure 3.1.

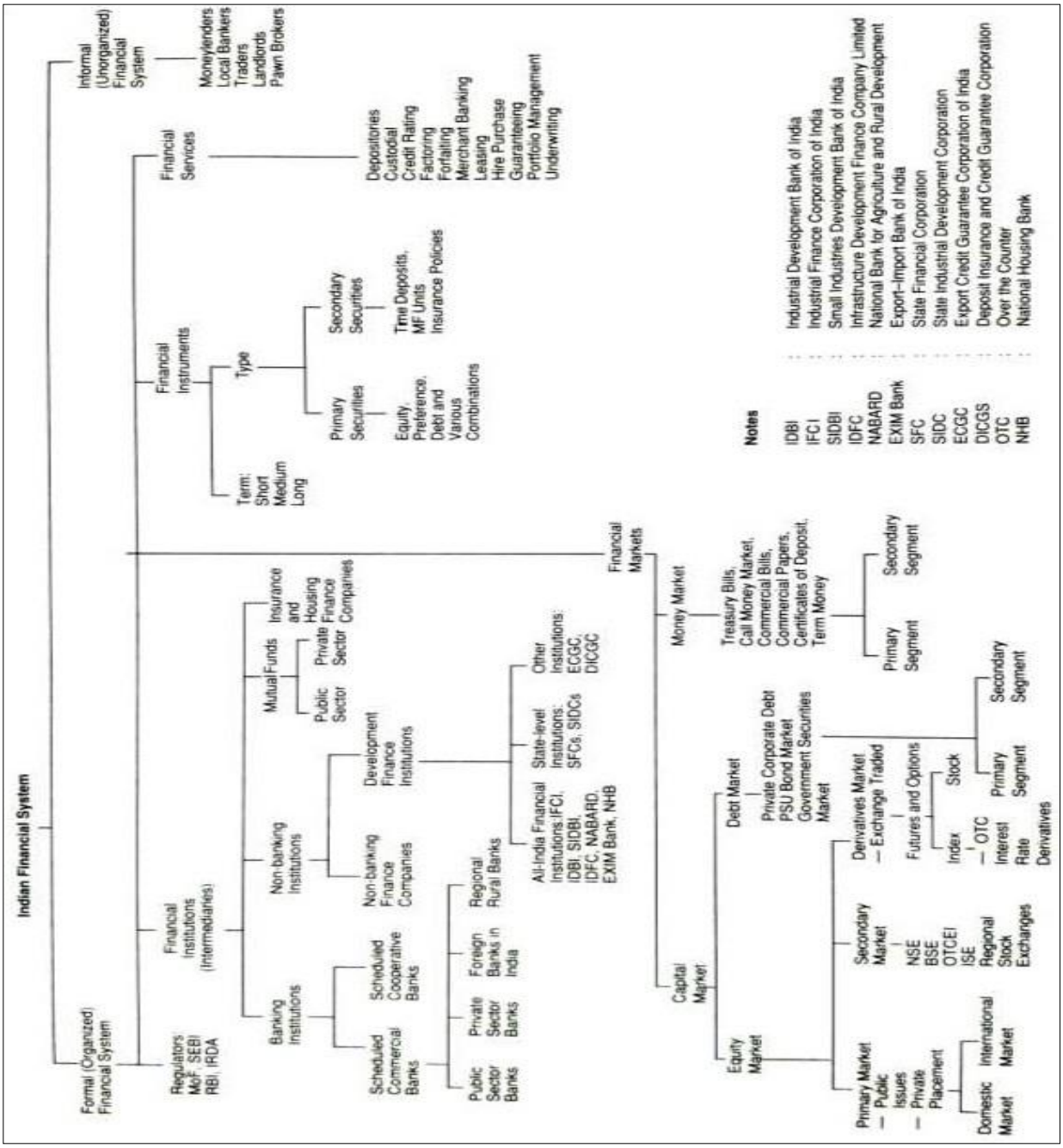


Figure 3.1
Indian financial system [Source: (Pathak, 2014)

A strong regulation is also need to have smooth, fair and efficient transactions in a systematic manner. The important regulatory bodies of the financial sector in India can be named as Ministry of Finance, Reserve Bank of India, Securities and Exchange Board of India, Insurance Regulatory and Development Authority. The Indian financial system can be broadly classified as formal and informal sector, in other words it can be said as organised and unorganised sector. The important foundation pillars upon which the financial system of India runs can be named as Regulators, Financial Institutions, Financial Markets, Financial instruments and financial services.

In any country the classification of financial institutions can be made as banking institutions, non-banking companies viz. mutual funds, insurance companies, and housing finance companies. The banking companies basically deals with mobilisation and disbursement of capital from savers to the borrowers where as non banking companies offer various financial services to the citizens of the country and also aid in capital formation through savings and investment in various forms of business.

Another important classification of the financial sector in any country is the operation of capital market and money market. Both have a different but very important and non separable role to be played in the flow of money in the economy. Money market helps in mobilizing and disbursement of short term money needs of the economy whereas the capital markets provide the necessary platforms to raise and supply the long term capital needs of the country and aid in the provision of huge long term capital requirements to the corporate.

Due to the advancements in financial sector and innovations in financial products various financial instruments are created by the financial institutions and majority of the borrowing and lending in the modern economy takes place through these financial instruments. These are also popularly called as financial products or financial assets. As per the requirement and different time horizons these financial instruments can be classified as short term, medium term and the long term products.

Business can issue securities named as primary securities and can raise the required capital and there can also be an arrangement to buy and sell such primary securities which are popularly called as secondary securities. Innovations in the

financial services have undoubtedly made the business transactions and investment alternatives very easy for the investors. Financial services organisations offer a wide range of services such as dematerialization, custodian services, credit rating, factoring, forfeiture, leasing, portfolio management and so on. The need of the day is the availability of such modern and innovative services to all the investors and business houses to operate well.

Indian Capital Market

As already discussed the capital market is a place where various institutions operate with an objective to make available the long term capital needs of the borrowers and investors. The capital market of India is also a place where the financial securities are bought and sold under the regulatory mechanism of SEBI. The long term capital raising instruments can be broadly dived as debt, equity and are supplied by financial institutions to raise capital by government, corporate. The supplies are generally the public, institutions and the important sources of supplier in the liberalised economy are the FIIs.

Entities which need to raise money can approach the markets and can offer to issue shares or debt through a mechanism called as IPO or FPO. Entities can also raise money in form of rights issue, preferential issue and so on. Entities can raise money not only through the offering in the domestic markets but they can also raise money from abroad through the mechanism set for the purpose. In other words money can be raised from any country in the world provided the law of the land allows the same. A well developed primary as well as the secondary markets are the pre requisites for the effective functioning of the capital markets in any county and India is no exception.

Indian stock market

An attempt is made in this section of the study to understand the origin and growth of the Indian stock markets. The origin of the Indian stock exchanges can be traced back to the year 1855. A few persons popularly called as stock brokers today assembled under a hugh tree popularly called as Banyan tree in Mumbai and started exchanging their business transactions. Gradually the number of person started growing at the place and the business transactions started growing up day after day.

As the persons trading on behalf of other business persons are popularly called as Dalals in India the place where these people used to gather and exchange the business transaction is named as Dalal Street. This is formed as the "Native Share & Stock Brokers Association" in the year 1875 and late changed the name as Bombay Stock Exchange. Later such stock broking houses are opened by the Government in accordance with the Securities Contracts Regulation Act in other cities of India.

In the early stages of their operations and till 1990s all the stock exchanges in India used to be small, entry restrictions and operated in a very small place with small reach to the local public in general. The stock exchanges suffered from the following demerits:

- No transparency and no efficient price determination mechanism.
- Uncertainty in buying, selling and settlement of traded securities.
- Hugh transaction costs.
- No total control of regulatory mechanism.
- No publicly traded mechanism as a result only few person could participate.

● Scams

One of the major reasons for very low participation of small investor in the capital markets in India is the lack of security and a sense of uncertainty towards the operations of the capital markets. The Indian capital markets have witnessed major scams and scandals which shook the confidence of the public in the system. However, with the proactive thinking of the Government in 1992 and in 1994 the Indian stock markets witnessed the operations of the NSE and OTCEI. Presently India has 23 stock exchanges, however the tow major exchanges where almost all the buying and selling in the stock markets takes place is the NSE and BSE. The number of stock exchanges India and their establishment is show in the Table 3.1

Table 3.1.

Stock Exchanges in India and their establishment

Name	**Address**	**Establishment**
The Bombay Stock Exchange(BSE)	Phiroze Jeejeebhoy Towers, Dalal Street, Mumbai- 400 001.	9th July 1875
The Ahmedabad Stock Exchange Association Ltd.	Manek Chowk, Ahmedabad – 380 001	1894
Bangalore Stock Exchange Ltd.	'M' Block, First Floor, Unity Building, J.C. Road, Bangalore - 560 002.	1963
Bhubaneswar Stock Exchange Association Ltd.	217, Budhraja Building, Jharpada Cuttack Road, Bhubaneswar, Orissa - 751 006.	17th April 1989
The Calcutta Stock Exchange Association Ltd.	7, Lyons Range, Calcutta – 700 001.	1908
Cochin Stock Exchange Ltd.	Veekshanam Road P.B. 3529 Ernakulam, Cochi - 682 035.	1978
The Delhi Stock Exchange Assn. Ltd.	3&4/4B, Asaf Ali Road, New Delhi 110 002.	1947
The Gauhati Stock Exchange Ltd.	Saraf Building Annexe A.T. Road, Guwahati - 781 001.	29th November 198 3
The Hyderabad Stock Exchange Ltd.	Bank Street, Hyderabad – 500 001.	1941
Jaipur Stock Exchange Ltd.	Rajasthan Chamber Bhawan, M.I. Road, Jaipur - 302 003.	1989

Mangalore Stock Exchange Ltd.	4th Floor, Rambhavan Complex, Kodialbail,Mangalore – 575 003.	31st July 1984
The Ludhiana Stock Exchange Assn. Ltd.	Lajpat Rai Market, Clock Tower, Ludhiana 141 008.	1983
Madras Stock Exchange Ltd.	'Exchange Building', Post Box No.183, 11, Second Line Beach, Chennai - 600 001	1937
Madhya Pradesh Stock ExchangeLtd.	67, Bada Sarafa, Indore - 452 002.	1919
The Magadh Stock Exchange Association Ltd.	Bihar Industries Assn. Premises, Sinha Library Road, Patna - 800 001.	1986
Pune Stock Exchange Ltd.	1177, Budhwar Peth, Bank of Maharashtra Bldg., 2nd Floor, Bajirao Road, Pune 411 002.	1982
Saurashtra Kutch Stock ExchangeLtd.	4, Swaminarayan Gurukul Bldg.,Dhebarbhai Road, Rajkot - 380 002.	1989
The Uttar Pradesh Stock ExchangeAssn. Ltd.	Padam towers, 14/113, Civil Lines, Kanpur - 208 001	27th August1982
Vadodara Stock Exchange Ltd.	101, Paradise Complex, Tilak Toad, Sayaji Gunj,Vadodara – 390 005.	1990

Coimbatore Stock Exchange	Chamber Tower, 8/732, Avvinashi Road, Coimbatore 641 018.	1991
Meerut Stock Exchange Ltd.	Kingsway Building, 345,Bombay Bazar, Meerut Cantonment - 250 001.	1956
Over The Counter Exchange of India.	Maker Towers "F" Cuffe Parade, Bombay - 400 005.	1990
National Stock Exchange of IndiaLtd. (NSE)	Mahindra Towers, A-Wing, RBC, Worli,Mumbai 18	1992
Inter-Connected Stock Exchangeof India Limited (Ise)	International Infotech Park, Tower No 7, 5th Floor, Sector 30-A Vashi, Navi Mumbai - 400 703.	January 1998
Metropolitan Stock Exchange ofIndia Limited (MSEI)	4th floor, Vibgyor Tower, Opposite Trident Hotel, Bandra-Kurla Complex, Mumbai, - 400098	21st December 2012

Source: "SEBI | Handbook of Statistics," June 12, 2018

As per the SEBI report ("SEBI | Handbook of Statistics," June 12, 2018) most of the regional stock exchanges are defunct. The Hyderabad Securities and Enterprises Ltd (erstwhile Hyderabad Stock Exchange), Coimbatore Stock Exchange Ltd, Saurashtra Kutch Stock Exchange Ltd, Mangalore Stock Exchange, Inter-Connected Stock Exchange of India Ltd, Cochin Stock Exchange Ltd, Bangalore Stock Exchange Ltd , Ludhiana Stock exchange Ltd, Gauhati Stock Exchange Ltd, Bhubaneswar Stock Exchange Ltd, Jaipur Stock Exchange Ltd, OTC Exchange of India , Pune Stock Exchange Ltd, Madras Stock Exchange Ltd, U.P.Stock Exchange Ltd, Madhya Pradesh Stock Exchange Ltd and Vadodara Stock Exchange Ltd have been granted exit by SEBI vide orders dated January 25, 2013, April 3, 2013, April 5, 2013, March 3,

2014, December 08, 2014, December 23, 2014, December 26, 2014, December 30, 2014, January 27, 2015, February 09, 2015, March 23, 2015, March 31, 2015, April 13, 2015, May 14, 2015, June 09, 2015 and November 09, 2015 respectively. Delhi stock exchange has been derecognized vide SEBI order dated November 19, 2014, whereas nowadays Ahmadabad Stock Exchange and Calcutta Stock Exchange are non- operational. Only NSE, BSE and MSEI are in functional in stock market operations.

In terms of a number of shares traded in Indian stock exchanges total 32,56,299 lakhs shares traded between Apr 2017 and Dec 2017. Out of which 26,96,125 lakh shares were traded in NSE, 5,60,033 lakh shares were traded in BSE and only 141 lakh shares traded in MSEI as per SEBI report. In terms of delivery based shares traded in Indian stock exchanges were in total of Rs. 17,66,115 crores between Apr 2017 and Dec 2017. Out of which Rs 14,70,711crore shares traded in NSE, Rs. 2,95,378 crore shares traded in BSE and only Rs. 26 crore shares traded in MSEI as per SEBI report. Thus it can be said that currently, only three stock exchanges i.e. NSE, BSE and MSEI are active in the Indian financial system for the exchangeof shares.

As discussed earlier BSE established on 9th July 1878, is the oldest stock exchange in Asia. Its market cap as in March 2019 is Rs. 151,970.87 billion (USD2.2 trillion). There are 5,439 companies listed on BSE. It provides a platform for trading in equity, currencies, debt instruments, derivatives, mutual funds. On 1st October 2018, BSE launched its commodity derivatives segment.

NSE is a comparatively young and dynamic stock exchange in India. It established in 1992 as the first demutualized electronic exchange in India. It's a market cap as in March 2019 is Rs. 1,49,342.27 billion (USD2.2 trillion). There are 1,952 companies listed on NSE. NSE is the leading stock exchange in India and the second largest in the world by nos. of trades in equity shares from January to June 2018, according to World Federation of Exchanges (WFE) report. NSE is called a pioneer for screen-based trading, derivative trading and internet trading.

Metropolitan Stock Exchange of India Limited (MSEI) is recognised by SEBI on December 21, 2012. It also provides an electronic platform for trading in the Cash Market of the equity market, Futures & Options (F&O) of equity market, Currency Derivatives and Debt Market segments. There are 1,779 companies listed on MSEI as on 4th September 2019.

As it is difficult to understand about ups and downs in the stock market with amounts in lakhs and crores in an absolute manner, as an indicator of stock markets, stock market indices play a significant role in comprehending stock market movements. Next session of the chapter discusses stock indices.

Stock Market Indices

Stock market indices are tools which are measured on the basis of a section of various stocks in the stock market. They are computed from the prices of selected stocks in a particular segment of stock markets. The weighted average method is used to calculate the index value. There are mainly two methods i.e. total market capitalisation and free-float market capitalisation. These segments are having various basis mainly based on capitalisation and sector-specific indices. Various indices are used by investors and portfolio managers to get an idea about stock market useful in investment decisions.

Stock market indices can play vital roles in various ways. Firstly, it can be used as a yardstick to evaluate the performance of individual stocks and/or portfolios. Secondly, in forecasting future using technical analysis and other forecasting methods it provides great help in judgement regarding movements in the stock market. Thirdly, sectorial indices help in comparative performance of various industries and intra comparison with past performance of sectoral indices. Fourthly, indices based on capitalisation also helps in analysing performances of various stocks. Lastly, at international level also can be compared the performance of the Indian stock market with other emerging economies as well as developed countries too, as it can be considered as one of the economic indicator (Pathak, 2014). Following table provides a list of various stock indices in BSE, NSE and MSEI.

Table 3.2
Stock Indices of Indian Stock Exchanges

BSE Indices	Introduced in
S&P CNX Sensex	1986
S&P BSE SENSEX 50 Index	December 2016
S&P BSE Smallcap Index	April 2003
S&P BSE Midcap Index	April 2003
S&P BSE SmallCap Select Index	July 2015
S&P BSE MidCap Select Index	July 2015
S&P BSE LargeCap Index	September 2005
S&P BSE Small Cap Index	September 2005
S&P BSE 100 Index	April 1984
S&P BSE 200 Index	January 1991
S&P BSE 500 Index	February 1999
S&P BSE BANKEX Index	January 2002
S&P BSE Auto Index	February 1999
S&P BSE Basic Materials Index	September 2005
S&P BSE Capital Goods Index	February 1999
S&P BSE Consumer Discretionary Goods & Services Index	September 2005
S&P BSE Consumer Durables Index	February 1999
S&P BSE Energy Index	September 2005
S&P BSE Finance Index	September 2005
S&P BSE FMCG Index	February 1999
S&P BSE Healthcare Index	February 1999
S&P BSE India Mfg Index	

S&P BSE Industrials Index	June 2015 September 2005
S&P CNX Sensex S&P BSE SENSEX 50 Index S&P BSE Smallcap Index S&P BSE Midcap Index S&P BSE SmallCap Select Index S&P BSE MidCap Select Index S&P BSE LargeCap Index S&P BSE AllCap Index S&P BSE 100 Index S&P BSE 200 Index S&P BSE 500 Index S&P BSE BANKEX Index S&P BSE Auto Index S&P BSE Basic Materials Index S&P BSE Capital Goods Index S&P BSE Consumer Discretionary Goods & Services Index S&P BSE Consumer Durables Index S&P BSE Energy Index S&P BSE Finance Index S&P BSE FMCG Index S&P BSE Healthcare Index S&P BSE India Mfg Index S&P BSE Industrials Index	1986 December 2016 April 2003 April 2003 July 2015 July 2015 September 2005 September 2005 April 1984 January 1991 February 1999 January 2002 February 1999 September 2005 February 1999 September 2005 February 1999 September 2005 September 2005 February 1999 February 1999 June 2015 September 2005

S&P BSE IPO Index S&P BSE IT Index S&P BSE Metals Index S&P BSE Oil and Gas Index S&P BSE Power Index S&P BSE PSU Index S&P BSE Realty Index S&P BSE TECK Index S&P BSE Telecom Index S&P BSE Utilities Index	May 2004 February 1999 February 1999 February 1999 January 2005 February 1999 January 2006 January 2000 September 2005 September 2005
NSE Indices	Base
Nifty 50 Index	November 1995
Nifty Next 50 Index	January 1997
Nifty 100 Index	June 2009
Nifty 200 Index	January 2004
Nifty 500 Index	January 1995
Nifty Midcap 150 Index	April 2005
Nifty Midcap 50 Index	January 2004
Nifty Full Midcap 100 Index	April 2005
Nifty Free Float Midcap 100 Index	January 2003
Nifty Smallcap 250 Index	April 2005
Nifty Smallcap 50 Index	April 2005
Nifty Free Float Smallcap 100 Index	January 2004
Nifty MidSmallcap 400 Index	April 2005
Nifty Auto Index	January 2004
Nifty Bank Index	January 2000
Nifty Financial Services Index	January 2004
Nifty FMCG Index	December 1995
Nifty IT Index	January 1996

Nifty Media Index	December 2005
Nifty Metal Index	January 2004
Nifty Pharma Index	January 2001
Nifty Private Bank Index	April 2005
Nifty PSU Bank Index Nifty Realty Index Nifty Energy Index Nifty Infra Index Nifty MNC Index Nifty PSE Index Nifty Service Sector Index	January 2004 December 2006 January 2001 January 2004 December 1995 December 1994 May 1999
MSEI Indices	Base
SX40 (Base Value 10000) Index SXBANK (Base Value 5000) Index	31st March 2010 31st March 2010

Though BSE and NSE have introduced a number of indices their major well-known indices are Sensex and Nifty 50 respectively. Normally people consider market ups and downs on the basis of these two indices. Nifty 50 is a diversified index of 50 stocks belongs to 12 different sectors of the economy. NIFTY 50 is owned and managed by NSE Indices Limited (formerly known as India Index Services & Products Limited) ("NSE - National Stock Exchange of India Ltd.," 2019). Sensex updates and calculations are provided by Asia Index Pvt. Ltd, which is having a 50-50 partnership between S&P Dow Jones Indices LLC and BSE Ltd. Sensex measures the performance of the thirty largest, most liquid and financially rigorous companies through important sectors of the Indian economy that are listed at BSE Ltd ("S&P BSE SENSEX - Asia Index Pvt. Ltd.," 2019).

Players in the Stock Market

In stock market operations mainly six players play important role i.e. Issuer, Investor, Broker, Bankers, Depositor and Regulator.

The issuer is an organisation, generally a company who issues securities for raising their capital. Investors are people who would like to park their savings

in various investment avenues. Investors may be an individual or institutional investor.

In the stock market for market operation investors have to choose a **broker** through whom only they can deal in stock markets. Brokers may provide the facility to buy or sell through their own terminal by receiving an order on the telephone or personally. They may also provide online facility to their client to perform market operation online using the internet.

Now a day it is compulsory to convert physical shares into dematerialized form i.e. demat. **Depository and depository participant** provide demat facility to convert physical share into dematerialized form and their electronic transfer.

For monetary transfer against share and securities **Banker** provide services of transfer of funds.

For proper regulation and to take care of the interest of investor government authority plays the role of **regulator**. The regulator provides guidelines to all other plays to deal in the stock market. It includes all the authorities which facilities trade for financial instruments. In the stock market, major regulators who play an important role in trading are SEBI, Stock exchanges and Clearing Corporation. The clearing corporations are responsible for the settlement of transactions dealt on respective stock exchanges.

Thus, **Investor** needs to open at least three accounts to operate in stock market i.e. bank account for fund transfer, demat account for electronic transfer of shares and for stock market operations account with brokers who are registered with specific stock exchanges. Investors can be bifurcated mainly into two categories 1) Individual investors and 2) Institutional investor. Individual investors are small investors who invest in their own personal account. They are comparatively non-professional and may lead by behavioural biases. Individual investors are less effective to influence the market as they have a limited amount of investment in the proportion of total market capitalisation and market turnover. Institutional investor category includes institutions like mutual funds, pension funds, hedge funds, insurance companies, commercial banks, portfolio managers, foreign institutional investor and so on. Institutional investors are more sophisticated and rational compared to individual investors, who invest on

behalf of their clients. They invest their huge amount of the fund and responsible for a major movement in the market.

In India stock market are significantly affected by institutional investors namely Domestic Institutional Investors (mainly includes Indian Mutual Funds) and Foreign Institutional Investors. In India, mutual funds and foreign institutional investors (FIIs) commenced their business the year 1963 and 1992 respectively. By the year 2002 most of the developments in Indian, the stock market took their shape and created India as an international platform for international investment. Following discussion emphasizes on milestones of Indian stockmarket.

Milestones and Current Mechanism of Indian Stock Market Operations

Establishment and Empowerment of SEBI:

SEBI established in 1988 and given statutory power in January 1992 through the SEBI Act, 1992. The basic function of SEBI is to protect the interests of investors in securities and to promote the development of, and to regulate the securities market and for matters connected therewith or incidental thereto.

During the 1980s, there was remarkable growth in the capital market due to the increasing participation of the public. This led to many misuses like Rigging of prices, an unofficial premium on new issues, violation of rules and regulations of stock exchanges and listing requirements, delay in delivery of shares etc. by the brokers, merchant bankers, companies, investment consultants and others involved in the securities market. It led to many investors grievances. Since there was not proper penal provision and legislation, the government and the stock exchanges were not able to equalize these grievances. This obliged a prerequisite for a separate regulatory body. (Kalpana, 2014). During the announcement of Budget 1987- 88 Shri Rajiv Gandhi, Prime Minister and his government also realised the need of a distinct regulatory board of Indian stock exchanges – Securities and Exchange Board of India (SEBI), suggested by Finance Secretary S Venkitaraman. Their initiative towards development of regulatory body gave a boost to capital issue from just Rs 500 crore in 1980- 81,

to Rs 5,000 crore in 1986-87 (Virkraman, April 5, 2017). It also becomes crucial for the development of Mutual Fund in India after first Mutual Fund launched by Unit Trust of India (UTI) in 1963 (UTI was an initiative of the Govt. of India and the RBI). SBI Mutual Fund becomes the first non-UTI mutual fund in India in 1987 ("Concept and Evolution of Mutual Funds in India," February 5, 2015). A committee consisting of members like S.A. Dave Ravi Narain, Chitra Ramakrishnan, G V Nageswara Rao and Pratip Kar, formed to determine structure and role of SEBI. After analysing the securities market governing model of the UK and USA, where the Financial Services Authority had just been designed, they toiled on a draft law. But still the statutory power was absent. In mid-1990 Prime Minister V.P.Singh appointed G.V.Ramrishan and gave him charge of SEBI. Initially, the Finance Ministry's powers concerning the capital market were vested mainly in the Controller of Capital Issues or CCI. After discussion between SEBI and the ministries of Finance and Company Affairs on January 30, 1992, the government issued an Ordinance giving SEBI statutory status. In February, G.V. Ramakrishna held the first Board meeting to formulate regulations for the capital market and its intermediaries i.e. stockbrokers and merchant bankers, which were approved by the Finance Ministry. SEBI ordinance become law in April 1992. In continuation role of SEBI become important after various scams in stock market described by Pathak (2014) in her book viz. in 1992 Harshad Mehta's scam, in March 1995 M. A. Shoes scam, in December 1997 issue Reliance share switching scam, in May 1997 scam of chartered accountant C. R. Bhansali, in 1998 price rigging in case of the BPL, Videocon and Sterlite scrips, insider trading by Anand Rathi and President of the BSE in March 2001 and scam of Ketan Parekh between up to 2001. Since various regulations followed by number of resistance from various players in Indian capital market, SEBI is emerged as successful regulator and facilitated a lot in terms of confidence of small investors as well as investment of foreign investor (Virkraman, April 5, 2017).

Introduction of National Stock Exchange (NSE):

Government found BSE had a monopoly in the stock market and its brokers were belonging only some close groups. It also led to very little use of technology, transparency and openness in the market. NSE was incorporated in 1992, with best of technology available and a much more open system of admitting brokers. It was recognised as a stock exchange by SEBI in the month of April of 1993 and initiated operations in the year 1994 with the unveiling of the wholesale debt market, followed shortly after by the introduction of the cash market segment ("NSE - National Stock Exchange of India Ltd.,").

Ban on Badla Trading:

Badla trading means allowing trades to be carried forward in the stock market without a settlement, it led to various scam and issues. It was also criticized by International Finance Commission and the then the esteemed firm of Arthur Andersen. Badla trading was banned by SEBI in 1993 effective from March 1994. But again permitted in 1996 with some restrictions, as BSE fell into deep with an argument of problem-related to liquidity. Finally, it again banned from July 2001 after the introduction of Derivative contracts initiated by NSE in the year 2000 which allowed trades without affecting liquidity (Maitra, March 11, 2013).

Commencement of Rolling Settlement:

SEBI introduced rolling settlement as a part of risk management and to bring efficiency in the market. The rolling settlement means each trading day is trading period in which all trades executed on that day considered to determine net obligation for that day only. In the rolling settlement, settlements are done on a T+2 basis i.e. on the 2nd working day after a trade.

S.No	Day	Time	Description of activity
1	T		Trade Day
2	T+1	By 1.00 pm	Confirmation of all trades (including custodial trades).
		By 2.30 pm	Processing and Downloading of obligation files to brokers/custodians
3	T+2	By 11.00 am	Pay-in of securities and funds
		By 1.30 pm	Pay-out of securities and funds

Figure 3.2. Rolling Settlement

Electronic Trading:

An electronic stock exchange refers to a stock bourse here the majority, if not all, trades take place through electronic trading platforms. As a part of reforms, the first electronic trading platform National Exchange for Automated Trading (NEAT) in India was launched by the National Stock Exchange (NSE) in 1994. BSE started its automated screen-based trading platform BSE online trading (BOLT) in 1995. Electronic trading has coined many benefits like more transparency in transactions, efficient information system, more efficient operations, better liquidity etc.

Dematerialization:

In 1996 dematerialization of shares and securities introduced in India. Dematerialization is converting a physical form of shares and securities into electronic form i.e. book entry of shares ownership at depository participants of any of two depositories National Security Depository Limited (NSDL) and Central Depository Service Limited. This has eliminated a few issues like theft, fake/forge transfers, transfer delays etc.

Circuit Breaker:

Circuit breaker is a halt in trading at equity and equity derivative market throughout the country. These breakers are based on SEBI Circular No. SMDRPD/Policy/Cir-37/2001 dated 28th June 2001 which modified with Circular no. CIR/MRD/DP/ 25 /2013 dated 3rd September. An index-based market-wide circuit breaker system at three stages of the index movement either way at 10%, 15% and 20% has been prescribed. The breakers are activated by the movement of either Nifty 50 or Sensex, whichever is breached earlier. For individual scrip, it is 2%, 5% and 10%. As securities which deal in the derivative market are not covered under it. But 20% price band is applicable in general.

Margin:

To provide against the risk of the fluctuation in the price of securities Brokers are charged a certain amount of margin. Margin is the equity amount invested against which limit for the financial transactions are determined. Clearing corporation determines the limit for brokers and clearing members and against their limit they determine the limit for their client. Margin amount is

determined on the basis of three types of margin Value at Risk (VaR) margin, Extreme loss margin and Mark to market margin. VaR margin is a margin proposed to cover the largest loss that can stumble upon on 99% of the days (99% Value at Risk). The methodology of the VaR margin calculation is suggested by Prof. J.R. Varma. The Extreme Loss Margin is the higher of 5% or 1.5 times the standard deviation of daily logarithmic returns of the security price in the last six months. Mark to market Margin is calculated by determining each transaction in security to the closing price of the security at the end of trading.

Derivative Market:

SEBI observed that due to the undesirable speculation in equity market genuine investors were losing their faith. To protect the interest of genuine investor SEBit is found that it was essential to separate speculative transactions from the equity market, but at the same time, these speculative transactions provide liquidity in the market. Thus, SEBI planned to segregate both of the markets and as an initiative, SEBI approved trading in the derivatives market after careful observation of Dr. L.C. Gupta committee in November 1996 and taking into consideration of recommendations of Prof. J. R. Varma committee. The index futures contracts trading approved followed by approval for trading in options which begun in June 2001. Options on individual securities instigated in July 2001. Futures contracts on individual stocks were flung in November 2001.

Foreign Institutional Investors:

Foreign investors are important to the Indian capital market towards matching the international standard of the financial market, to get the foreign fund for further development, to get the foreign exchange without fixed liabilities, to integrate with the international financial market as well as to motivate Indian corporates to enhance their corporate governance. Considering this holistic approach from September 14, 1992, with suitable restrictions, SEBI permitted FIIs to invest in financial instruments.

All these steps and initiatives of the Indian financial system has increased the confidence of small investors to invest in Indian capital market and attracted Foreign Investor to Invest inIndian financial markets.

Current State of Indian Capital Market

Capital market assists economic development through capital formation. This capital formation can be done through Primary and Secondary market of Equity, Debt and Mutual Funds. Investors invest through any of these financial instruments and industry gets the fund, directly or indirectly from them. The following discussion emphasizes on the recent mobilization of financial resources for capital formation in the Indian economy.

Performance of Primary Market

Primary market provides the long term fund to the industry and provides financial resource mobilisation through investment in different industrial securities chiefly equity shares.

Last year remained passive in resource mobilisation through the primary market. Indian primary market is dominated by **private placement**, as it is an easy and quick method to raise the capital. In the case of private placement during the period of April – December 2018 26% declined observed compared to the same period in the year 2017. In this period in 2018 Rs. 3.4 trillion were mobilized through 1,671 issues ("Indian Security Market, A Review (ISMR)," 2019).

During the period of April – December 2018, a 40% decline found in resource mobilisation through the **public and the** right issue in the primary market in India, compared to the same period in the year 2017. In this period only 124 companies used public and right issues to raise Rs. 444 billion, compared to 153 issues to raise Rs. 728 billion, during the same period in the year 2017.

In the last financial year, a significant downturn found in the case of IPOs. Throughout the year 2018-19, there were 42 IPOs through which Rs. 36,405 crores were mobilized, which was only 37 per cent of fund mobilized through IPO in the year 2017-18 i.e. Rs. 98,984 crores and 52 per cent of the number of IPOs of the year 2017-18 i.e. 81 IPOs ("SERVICES PROVIDED

UNDER PUBLIC ISSUES (IPOs, FPOs & OFS (SE))," 2019). The fund mobilisation in April month of 2019 was the uppermost, since July 2018, when two companies had raised Rs 3,925 crore from the primary market. In the financial year, 2018- 19 fundraising through IPOs dropped by 81 per cent to Rs 16,294 crore from Rs 83,767 crore in the previous financial year. (Korgaonkar & Wadhwa, 2019).

During the period of April – December 2018 resource mobilisation of Rs. 70 billion through 11 **Qualified Institutional Placements (QIPs)** done by Indian companies. At the same time emphasised on the debt, the market increased as during the same period resources mobilized through **public debt** issues increased by 600% to Rs. 286 billion compared to the same in the previous year ("Indian Security Market, A Review (ISMR)," 2019).

Performance of Secondary Market

The secondary market provides liquidity for investors to buy and sell securities in the primary market. The stock market as a secondary market provides the direction of preference of investors and reflection of the condition of the financial market.

During the year 2018-19 Indian stock market performed well. On the last day of March 2019, Sensex and Nifty 50 closed at 38,673 and 11,624 respectively. As per the record provided by BSE and RBI, BSE average market capitalisation during the year 2018-19 remained Rs. 1,51,08,711 crores with P/E of 27.58 on March 2019. The market capitalisation of NSE was Rs. 1,49,34,227 crores as on March 2019 as per the record of RBI. During the March 2019 turnover of BSE was Rs. 80,977 crores whereas the turnover of NSE was Rs. 6,97,224 crores(RBI, 2019).

During the period from April – December 2018, Sensex and Nifty 50 increased by 17% and 15% respectively, at the same time comparatively indices of emerging countries declined by 10% and all over the world stock markets increased by 2%. During this period volatility of the Indian equity market remained lowest compared to developed as well as emerging markets. NSE and BSE both found a position in the top 10 exchanges out of all WFI member's exchanges in terms of market capitalisation. In terms of the turnover, NSE

ranked second among all WFE member exchanges with 2.8 billion trades during the year 2018 and ranked 14th in terms of the value of shares traded for the same period ("Indian Security Market, A Review (ISMR)," 2019).

Swamy (2019) observed that in the month of April 2019 Nifty increased by 1.1 per cent and Sensex increased by 0.9 per cent, compared to 7.7 per cent and 7.8 per cent in March 2019 respectively. At the same time, she also found that P/E of Nifty 50 climbed to 29.3 times since 1990.

Table 3.3.

Domestic Market Capitalisation (USD millions)

Exchange	March 2019	% of total Capitalisation	Rank	Country
NYSE	23211054.50	28.05	1	USA
Nasdaq – US	11218242.90	13.56	2	USA
Japan Exchange Group	5608259.60	6.78	3	Japan
Shanghai Stock Exchange	5013731.00	6.06	4	China
Hongkong Exchanges and Clearing	4307771.30	5.21	5	Hong Kong
Euronext	4268405.70	5.16	6	Europe (Netherlands)
LSE Group	3965347.90	4.79	7	UK
Shenzhen Stock Exchange	3355375.90	4.06	8	China
TMX Group	2216349.70	2.68	9	Canada
BSE India Limited	**2179095.80**	**2.63**	**10**	**India**
National Stock Exchange of India Limited	**2156171.60**	**2.61**	**11**	**India**

Source: World Federation of Exchanges – Market Statistics

In domestic market capitalisation in March 2019, highest market capitalisation is of USA (approx. 41.6%), then China (approx. 10.1%), Japan (6.8%), and then India (5.24% i.e. BSE + NSE) followed by Hong Kong, Netherlands, UK and Canada.

In terms of various companies listed in various stock exchanges in the world, BSE is at the top with 5,479 companies listed in it which is followed by Japan Exchange Group Inc. with 3597 companies listed on January 2018 ("Number of Listed Companies," January 2018)

In terms of a number of trading, NSE is having the second-highest number of trades i.e. 26,86,49,100 during January 2018 and at first rank Shenzhen Stock Exchange with the highest number of equity trades i.e. 28,38,73,000 ("Equity Trades," January 2018).

Performance of Equity Derivative Market

In the financial year 2017-18, a total turnover of derivatives in NSE continued increasing and increased by 75% compared to the previous year and reached to Rs. 1,649 trillion. But after March 2018 growth slowed down during April – December 2018 might be due to national as well as international factors. In the financial year, 2017-18 total 1,913 million contracts were traded at NSE whereas at BSE 44,701 contracts were traded. Since 2010-11, total turnover in derivatives is about 3 times of total turnover in the cash segment of the equity market. In the year 2018-19 turnover of F&O segment (Rs. 225,700 billion) was 2.8 times of turnover of cash segment (Rs. 79,490 billion). Jency (2017) also observed the growth in Indian equity derivative market. She argued that both BSE and NSE shows the increasing trend in trading of equity derivatives throughout the period from 2011-12 to 2016-17. At the end of the year, 2017-18 at NSE was 3.8 million contracts (Rs. 2,749 billion) compare to 3.5 million contracts (Rs. 2,495 billion) at the end of the year 2016-17. ("Indian Security Market, A Review (ISMR)," 2019).

Performance of Mutual Fund Industry

Mutual fund providers are considered as collective investment vehicles (CIV), facilitates individual as well now SEBI allowed foreign institutional investors to invest in the Indian equity market. MF industry mobilised Rs. 1,318 billion in the year 2015-16, which was the highest since 2007-08. In the year 2016-17 MF industry mobilised Rs. 3,434 billion. In these public sectors, MFS increased from Rs. 875 billion to Rs. 2, 743 billion. In the year 2017- 18 net investment of MF industry declined to Rs 2, 343 billion.

There were 45 MFs registered with SEBI as on 31st March 2018, out of the 7 were of the public sector. As on 31st March 2017, there were 2,281 MF schemes, which were declined as on 31st March 2018 to 1,998 schemes. Out of these 1,357 were Income funds, 514 were growth funds, 31 were balanced funds, 52 were liquid funds, 38 were GILT funds and 72 were ELSS schemes. There were also 12 gold ETF, 56 other ETC and 28 schemes operating as funds of funds investing overseas.

AUM of equity Mutual Funds hoisted at a record high of Rs. 7,730 billion at the end of March 2019 as against Rs. 7,500 billion in March 2018, an increase of 3 per cent. Investors pushed in more than Rs. 1,110 billion in equity-based mutual fund (MF) plans in 2018-19, a decline of 35 per cent compared to Rs 1,710 billion inflows in 2017-18 (PTI, 2019).

Performance of Foreign Institutional Investors (FIIs)

As a result of industrial policy 1991 capital market opened the doors for the foreign investor to invest in the Indian capital market. Foreign institutional investors (FIIs) are the major foreign investors who are regulated by time to time guidelines provided the Indian apex regulatory bodies SEBI and RBI. SEBI introduced a new class of foreign investors in India known as the Foreign Portfolio Investors (FPIs) effective from June 2014. It was formed by merging the following existing classes of investors, namely, FIIs, QFIs, and sub-accounts of FIIs. FII investment is considered as hot money as many domestic and international factors affect their investment. At the same time, time to time FIIs has increased its investment in the Indian equity market. In the year 2018-19 FPIs dominated the Indian equity market by 28.9%.

In 2016-17 and 2017-18, FPIs invested Rs. 484.1 billion and Rs. 1450.7 billion in the Indian equity market but during the year 2018-19 FPIs became net sellers. During the period of April – December 2018 FPIs sold securities of Rs. 941.8 billion (Rs. 470,260 million in the equity market and Rs 470,260 million in debt market). The probable reasons for this sale are several macroeconomic factors including an increase in the US Fed rate, a decline in world economic growth, ongoing US-China trade war and a rise in the probability of no-deal Brexit. ("Indian Security Market, A Review (ISMR)," 2019).

Summary

Financial markets are the backbone of the economy of any country. Indian capital market facilitates mobilisation of financial resources leads to capital formation in India. These capital formation leads to feed the Indian economic growth. Due to this rigour financial system the Indian economy could move with effective growth rate compare to other developed as well other developing countries in the difficult phase of international challenges. In the capital market, the primary market provides direct support to capital mobilisation during the issue of securities but the stock market provides continuous indirect assistance to the overall financial market. It provides a measure to the performance of the various business through their major indicators of stock indices mainly Sensex and Nifty. Movement in Sensex and Nifty guide the investors to evaluate the performance of the Indian market as a whole. Sensex and Nifty gave 17% and 15% return respectively in the year 2018- 19, during which there was a heavy outflow of the FIIs. It signifies the study of FIIs Investment in the Indian equity market. Next chapter throws more light on literature reviewrelated to FII investment in the Indian equity market.

CHAPTER IV

FII'S INVESTMENT IN INDIA – TRENDS AND PATTERN

FII investment in the Indian equity market has a large amount of variation during a different time period. In the study of FII investment in the Indian equity market is essential to have an apprehension of the trend and pattern. To study the trend and pattern in FII investment in the Indian equity market, this chapter is divided into two sections i.e. Trends of FII investment in Indian equity market without breaks and the trend with the study of structural breaks in FII investment in India. In the first section to establish the time-series model initial check of unit root is done. Unit root test provides information about the stationarity without which further analysis of time-series is not possible. With stationarity, another important aspect is the normality which tested before the determination of ARIMA model. ARIMA model provided the equation to forecast FII investment trend. ARIMA model has limitation of not capturing the seasonal trend, hence for the more accuracy in the model a SARIMA model is established using expert-modeller of SPSS software. As it is observed that slop of the trend line of FII investment is varying during different phases of time an effort is made to capture the structural breaks in trend line of FII investment to identify the pattern of FII investment during different periods.

The last section of the chapter discusses the structural breaks in FII investment in the Indian equity market occurred due to various events within and outside India. To study the structural break two approaches were applied. In the first approach multiple structural tests are used to identify break period and then to identify the events associated to that break period; in another approach, various potential events cause the structural break were identified and then whether they were significant or not is checked.

Analysis of Time Series data of FII investment in the Indian equity market

Before analysis and data processing of time series data, series must be stationary and have the mean value zero (or nearer to zero) with minimum variance. Data transformation is used to make Time series data of FII investment in the Indian equity market stationary for the selected time period from March 1997 to March 2019. The following table shows the mean and variance of the original and transformed data series for the selected period.

Table 4.1.
Mean, Standard Deviation and Variance of various Transformed Time Series Data

	D_FIIs_EQ	D_LN_FIIs_EQ	LN_FIIs_EQ	CUM_FIIs_EQ
Mean	3251.4105	0.0271	11.8170	329027.6478
Std. Dev.	8439.6408	0.0743	1.7079	308279.9643
Variance	71227536.4867	0.0055	2.9169	95036536394.2128

Where,

CUM_FIIs_EQ = Cumulative flow of FIIs in the Indian equity market

LN_FIIs_EQ = Log value of Cumulative flow of FIIs in the Indian equity market

D_FIIs_EQ = First difference of Cumulative flow of FIIs in the Indian equity market D_LN_FIIs_EQ = First difference of Log value of Cumulative flow of FIIs in the Indian equity market

Looking at Table 4.1 it can be identified that comparatively, D_LN_FIIs_EQ have the mean value near to zero i.e. 0.0271 and having minimum standard deviation i.e. 0.0743. Hence the first difference of log transformation provides better time-series data for further analysis. But before conducting further study to check the stationarity of the data unit root test is conducted.

Unit Root Test

To check the stationarity unit root test is conducted. Augmented Dickey-Fuller (ADF) test is applied to check the following null hypothesis of a unit root.

H0 4.1. Time series data has a unit root

Table 4.2.

Augmented Dickey-Fuller (ADF) test statistic

	D_FIIs_ EQ	D_LN_FIIs_ EQ	LN_FIIs_ EQ	CUM_FIIs_ EQ
t-statistic	-9.859069	-8.621614	2.397479	3.767364
P-value	0.0000*	0.0000*	0.9962	1.0000
Null	**Rejected**	**Rejected**	Accepted	Accepted
DW	2.0597	2.0415		
AIC	20.8716	-3.1121		

* at 1% level of significant

From the Table 4.2, it can be observed that original time series data and log transformation time series data are not stationary and the null hypothesis cannot be rejected. First difference transformation and first difference of log transformation both are stationary at a 1% level of significance. As both of the series are stationary, the next consideration is of Durbin-Watson (DW) test and Akaike Information Criteria (AIC). Considering the DW test and AIC, it can be said that time-series data with the first difference of log transformation provides better time series to determine the model for forecasting.

After conducting a unit root test, it is advisable to check the normality of the residuals of identified time series data.

Normality Test

Following is the null hypothesis for the normality test of the first difference of log transformation of FII investment in the Indian equity market.

H0 4.2. Time series is normally distributed

From the Figure 4.1 and result of various normality test, it can be observed that P-value of Jarque-Bera all other tests of normality is very small, which is less than 0.05. Thus the null hypothesis of normally distributed data at 5% or even at a 10% level of significance cannot be accepted. But for sample sizes that are sufficiently large, violation of the normality assumption is virtually inconsequential (Brooks, 2008). Here monthly data is used from the initiation of FII investment in the Indian equity market separately made accessible by SEBI

from March 1997 to March 2019 i.e. 265 months' data of 22 years. It is appealing to a central limit theorem; the test statistics will asymptotically follow the appropriate distributions evenin the absence of error normality[1].

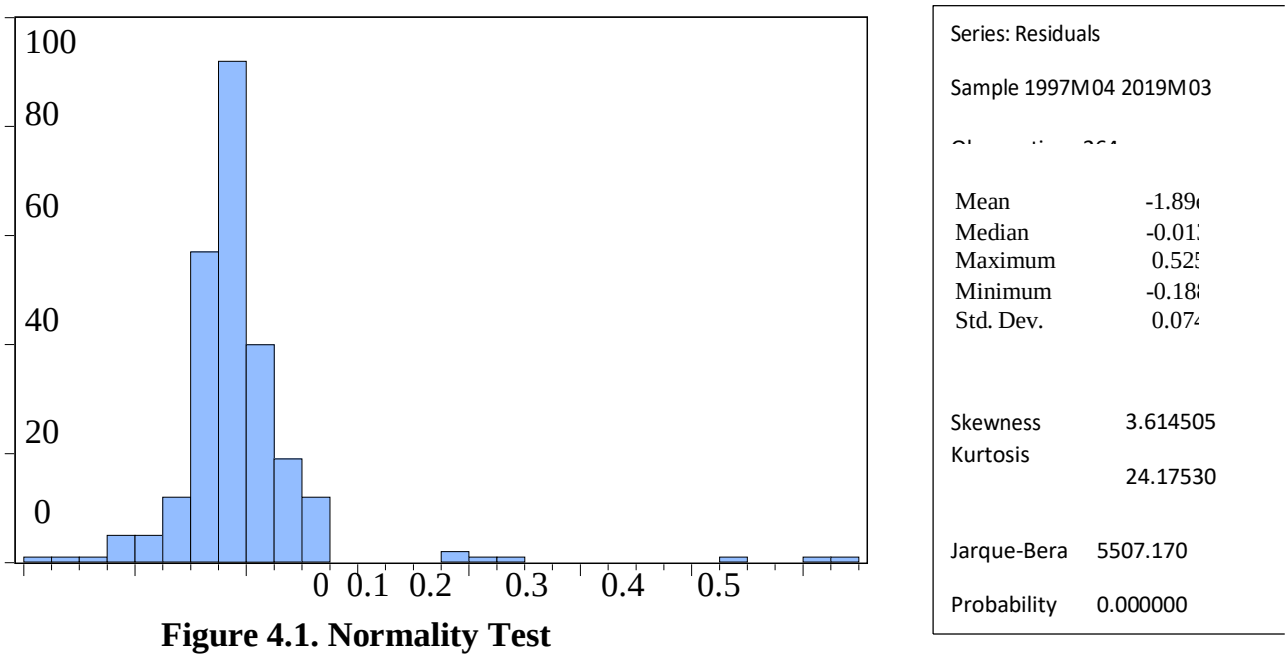


Figure 4.1. Normality Test

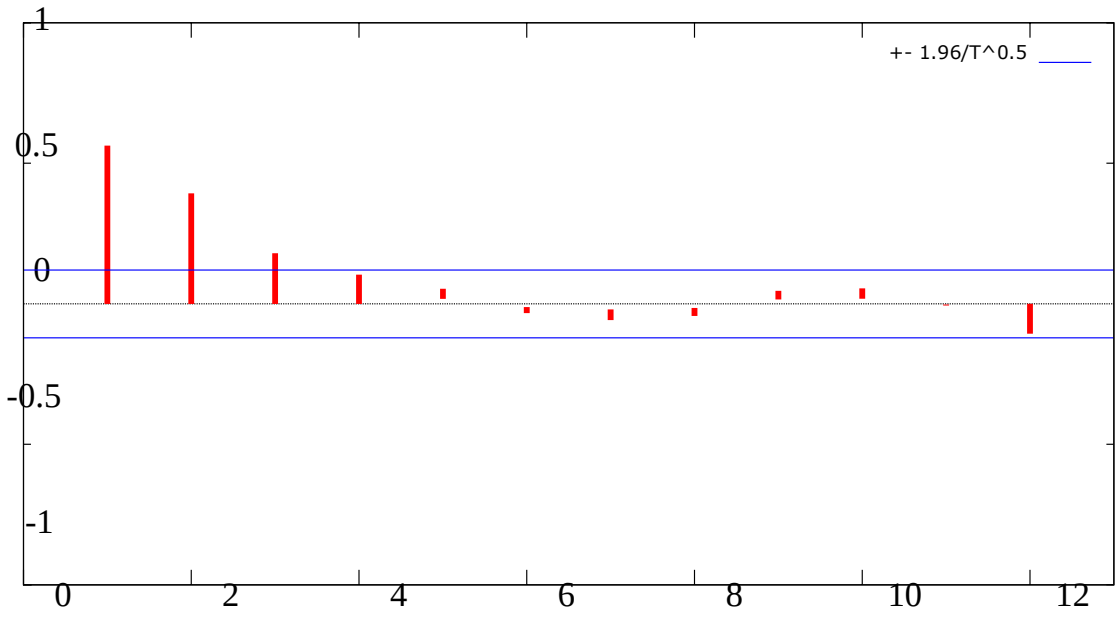
After all these basic checks it is needed to establish a time series model using Autoregressiveand Moving-average terms.

Forecasting Model (ARIMA)

In forecasting, a model is established, which will give me the best result. ARMA (Auto- Regressive Moving Average) model is useful to determine the time series model. As the first difference is taken in time series ARMA model is replaced with ARIMA (Auto-Regressive Integrated Moving Average) i.e. 1st level integrated model.

Correlogram can be used to know the AR lag and MA lag. In following Correlogram figure Autocorrelation Function (ACF) explains the lag of MA and Partial Autocorrelation Function (PACF) explains the lag of AR.

ACF for D_LN_FII_EQ



PACF for D_LN_FII_EQ

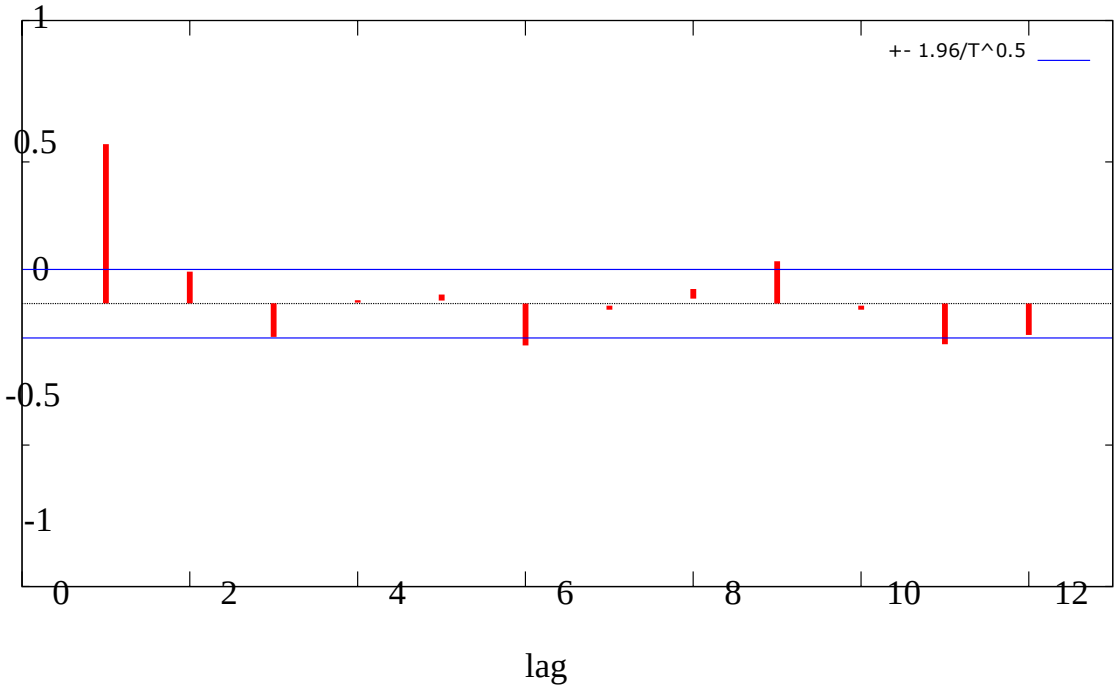


Figure 4.2
Auto Correlation Function and Partial Autocorrelation Function

Diagram of ACF (Autocorrelation Function) is the indicator of the lag of MA (Moving Average) and PACF (Partial Autocorrelation Function) is the indicator of lag AR (Auto- Regressive) process.

Looking to the Figure 4.2 of ACF and PACF it can be said that up to 3 lags of MA and up to 1 lag of AR determines the ARIMA model for giving series of D_LN_FIIs_EQ i.e. First difference of log value of FII investment in the Indian equity market.

Autocorrelation function for D_LN_FIIs_EQ ***, **, * indicate significance at the 1%, 5%,10% levels using standard error 1/T^0.5

Table 4.3 ACF and PACF

LAG	ACF	PACF	Q-stat. [p-value]
1	0.5631 ***	0.5631 ***	84.665 [0.000]
2	0.3938 ***	0.1123 *	126.2332 [0.000]
3	0.1804 ***	-0.1181 *	134.9937 [0.000]
4	0.1050 *	0.0172	137.9694 [0.000]
5	0.0730	0.0435	139.4156 [0.000]
6	-0.0436	-0.1472 **	139.9339 [0.000]
7	-0.0773	-0.0290	141.5677 [0.000]
8	-0.0579	0.0698	142.4865 [0.000]
9	0.0623	0.1499 **	143.5553 [0.000]
10	0.0749	-0.0287	145.1059 [0.000]
11	-0.0072	-0.1428 **	145.1205 [0.000]
12	-0.1058 *	-0.1107 *	148.2419 [0.000]

Source: Calculated SPSS Values from the secondary Data

Now to identify the best model it is needed to check the result of all possible ARIMA (p,d,q) models. Here p is AR lag, q is MA lag and d is at which level data is integrated. Here d is 1 which stands for the first difference. Following are possible models for forecasting using CLS method under Least squares (NLS and ARMA) Estimation setting with Optimization Method of Eviews legacy.

Table 4.4
ARIMA Models with various criteria

Models	Akaike Inf. Cr. (AIC)	SIC	Hannan-Quinn Criterion	Durbin-Watson
ARIMA (1,1,0)	-3.055911	-3.028747	-3.044994	2.367482
ARIMA (1,1,1)	-3.167272	-3.126525	-3.150896	1.898179
ARIMA (1,1,2)	-3.048689	-3.007942	-3.032313	2.348175
ARIMA (1,1,3)	-3.055331	-3.014584	-3.038956	2.39208
ARIMA (0,1,1)	-2.664926	-2.637836	-2.65404	1.733082
ARIMA (0,1,2)	-2.584884	-2.557794	-2.573999	1.062284
ARIMA (0,1,3)	-2.555073	-2.527983	-2.544187	1.239812

Source: Calculated SPSS Values from the secondary Data

ARIMA model with minimum AIC, SIC & HQn and DW value closest to 2 can be considered as the best model. From the above table, it can be said that ARIMA (1,1,1) model will give me the best forecast. It is with minimum AIC, SIC & HQn and DW is 1.898. Following tables provides a regression model for the forecasting under the following environment. ARIMA model is estimated with D_LN_FIIs_EQ as Dependent Variable. Method applied is ARMA Conditional Least Squares (Marquardt - EViews legacy) where Convergence is achieved after 13 iterations by E-views with MA Backcast of the period1997M04

Table 4.5
Regression model of AR(1) and MA(1)

Variable	Coeff.	Sd.Er	t-stat.	Prob.
C	0.019	0.006	3.198	0.002
AR(1)	0.726	0.037	19.859	0.000
MA(1)	-0.479	0.068	-7.025	0.000
R-sqred	0.460175	Mean dependent var		0.025053
Adjusted R-sqred	0.456023	S.D.dependent var		0.066949
S.E. of regression	0.049378	Akaike Inf. Cr.		-3.167272
Sum sqred resid1	0.633935	SIC		-3.126525
Log-likelihood	419.4962	Hannan-Quinncriteria.		-3.150896
F-stat.	110.8190	DW Statistic		1.898179
Inverted AR Roots	.73			
Inverted MA Roots	.48			

Source: Calculated SPSS Values from the secondary Data

From the above result, it can be identified that AR(1) and MA (1) both are significant. P- value of F-statistics is also significant; it means the overall regression model is significant for the forecasting. Adjusted R-sqred is 45.60% i.e. regression model explains about 45.60% change in an independent variable. Durbin-Watson is 1.898 which is near to 2, it means no existence of serial autocorrelation problem. Thus, the ARIMA (1,1,1) model can be written in the following way

D_LN_FIIs_EQ = 0.019 + 0.726[AR(1)] - 0.479[MA(1)]

Forecasting Model (SARIMA)

Applied ARIMA, but due to Seasonal effect seasonal effect also must be integrated. Hence simple ARIMA is not useful and SARIMA i.e. Seasonal Auto-Regressive Moving Average is introduced. It can be explained with ARIMA(p,d,q)(P,D,Q). Here (p,d,q) stands for simple Autoregressive Integrated Moving average term, whereas (P, D, Q) stands for seasonal autoregressive (SAR) and seasonal moving average (SMA) terms for monthly or quarterly data with systematic seasonal (Box and Jenkins,1976). Processes with SAR and SMA terms are ARMA models constructed using products of lag polynomials. These products produce higher-order ARMA models with nonlinear restrictions on the coefficients. It is difficult to check with all probable combinations hence expert-modeller in SPSS to identify best SARIMA model is used. Followings are the results of the application of expert-modeller.

Model identified for the dependent variable FIIs_Cum_Eq is ARIMA (1,1,0)(1,0,1).

Following tables show the model statistics, SARIMA model parameters and Outliersrespectively.

Table 4.6
Model Statistics

Model Fit statistics					Ljung-Box Q(18)			Number of Outliers
Stationary R-sqred	R-sqred	MAPE	Max APE	Normalized BIC	Statistics	DF	Sig.	
.186	0.999	3.273	24.841	18.000	11.231	15	.736	1

Source: Calculated SPSS Values from the secondary Data

Table 4.7
SARIMA Model Parameters

					Estimate	SE	t	Sig.
FIIs_Cum_Eq-Model_1	FIIs cum Eq	Square Root	Constant		3.404	.799	4.260	.000
			AR	Lag 1	.385	.058	6.644	.000
			Difference		1			
			AR, Seasonal	Lag 1	.956	.215	4.435	.000
			MA, Seasonal	Lag 1	.925	.259	3.566	.000

Source: Calculated SPSS Values from the secondary Data

Table 4.8
Outliers

			Estimate	SE	t	Sig.
FIIs_Cum_Eq-Model_1	Jul 2007	Additive	18.130	3.530	5.136	.000

Source: Calculated SPSS Values from the secondary Data

In the table of model statistics, R-sqred present percentage change in forecasting explained by the model, which is very high i.e. 99.9% as this model is identified by SPSS itself. Mean Absolute Percent Error (MAPE) i.e. the average possibility of error in the prediction is 3.273, it means the model has the power to predict at 96.727% accurately. Ljung-Box Q test has a null hypothesis of H0: Residuals are normally distributed. P-value is 0.736 which is greater than 0.05. Hence he null hypothesis is accepted, residuals are normally distributed.

In the next table parameters of AR, SAR and SMA are found significant as p-values of t- statistic are less than 0.05.

In the last table, the model has also identified the outlier i.e. on Jul 2007, which is also significant as a p-value of its t-statics is also less than 0.05.

Following figures talk about Auto Correlation Function and Partial Auto Correlation function.

As both of the ACF and PACF are under their respective limits, so there is no problem of serial autocorrelation. Following the line, charts show the actual and forecasted value of FIIinvestment in the Indian equity market.

Thus, a SARIMA model i.e. ARIMA (1,1,0) (1,0,1) model can be written as follows:

FIIs_Cum_Eq = 3.404 + 0.385[AR(1)] + 0.956 [SA(1)] + 0.925[SMA(1)]

Using the above equation, the values of FII investment in the Indian equity market can be forecasted.

Structural Breaks in FIIs' Investment in Indian Equity Market

This section of the chapter discusses the structural breaks in FII investment in the Indian equity market due to various events within and outside India. In this chapter first of all CUSUM and CUSUM of Square test are applied to check the stability of coefficient of time series data of FII investment in the Indian equity market. The structural break also causes stationarity related issues in time series data. The existence of structural break is checked through unit root test, Augmented Dicky-Fuller test. In later part for unknown and known causes of the structural break, Bai-Perron test and Chow test are applied.

Structural Break

Structural breaks are useful econometric tools to understand the paradigm shift in trend and change in the slop of any time-series data. A structural break appears when an unexpected shift in a time series data is observed. It's called a structural break when a time series abruptly changes at a point in time. This change could involve a change in mean or a change in the other parameters of the process that produce the series. This can lead to huge forecasting errors and unreliability of the model in general. This change could involve a change in mean or a change in the other parameters of the process that produce the series. Structural break tests help me to determine when and whether there is a significant change in the data (Gupta, 2008). Following a section of this chapter discuss the cognition of structural breaks in FII investment in the Indian equity market.

Cognition of Structural Breaks in FII investment in Indian Equity Market

The simplest way to study any data is to study through their chart. A structural break can also be observed primarily through observing the line chart of time series data. The following figure shows the line chart of the cumulative value of FII investment in the Indian equity market (CUM_FIIs_EQ).

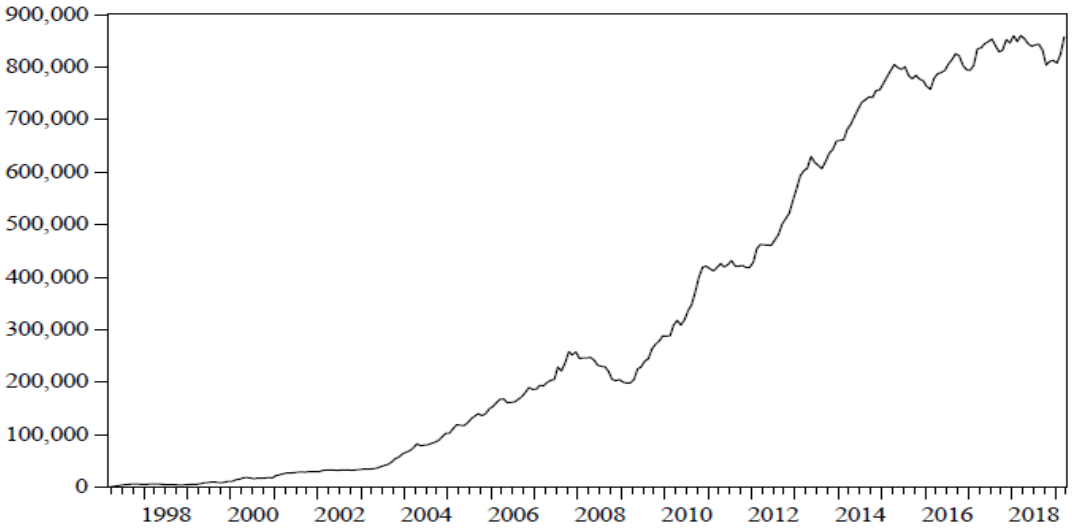


Figure 4.10.
Line chart of CUM_FIIs_Eq

Looking at the Figure 4.10 trend line of FIIs flow in the Indian equity market it can be said that the flow of FIIs has a high amount of fluctuations and variations. During a different time period, even the trend also varies. Not only variation in trend but even the slop of the same trend is also differing from time to time. For instance, up to 2008 there is a continuous upward trend can be observed, but from 2008 to mid of 2009 there is a downward trend. Again from mid-2009 to 2011 trend is upward but slop is different from the earlier upward trend. During the period from 2011 to 2012 stagnancy can be observed. But again from 2012 to 2015, there is an upward trend following a downward trend and high fluctuation of ups and downs in the last four-five years. These changes in the trend make the coefficient of time-series model instable. This instability of the coefficient of time-series leads to structural breaks. Following a discussion of the chapter throws light on the test of the stability of the coefficient of time-series data of FII investment in the Indian equity market.

Cumulative Sum (CUSUM) test and CUSUM of Squares test:

As discussed earlier if the coefficients of the time-series model are not stable, there is a possibility of structural breaks(s) in time-series data. the CUSUM test (Brown, Durbin and Evans, 1975) and the CUSUM of Squares test help to check whether coefficients of the model are stable or not. The CUSUM test (Brown, Durbin and Evans, 1975) is based on the cumulative sum of the recursive residuals. It plots the cumulative sum with the 0.05 level of significance line. If the line of the cumulative sum goes outside the two significant lines, it can be said that the parameter of the time-series data is not stable. The CUSUM of the square test (Brown, Durbin and Evans, 1975) is based on the movement of residual variance. It also plots the residual variance with the 0.05 level of significance line. If the line of the cumulative sum of the square goes outside two significant lines, it can be said that residual variance may not be stable.

First of all, original data series of cumulative FII investment in Indian Equity Market (CUM_FIIs_EQ) is checked through the CUSUM test and the CUSUM of Square test. As data transformation is useful to make time-series data stationary. Transformation of time- series data can be done by taking a difference of value or taking the log value of the time- series data. The first difference of log value could be the best transformation to minimize variance and to bring meaningful value near to zero and make time-series stationary. Hence later Xthe CUSUM test and the CUSUM of Square test is applied on transformed time-series data of the first difference of log value of cumulative FII investment in the Indian equity market (D_LN_FIIs_EQ). Following is the hypothesis to conduct these two tests of thestability of the coefficients of the model.

H0 4.3. Coefficients of the model are stable

H1 4.3: Coefficients of the model are not stable

The following figure shows the result of the CUSUM test for CUM_FIIs_EQ.

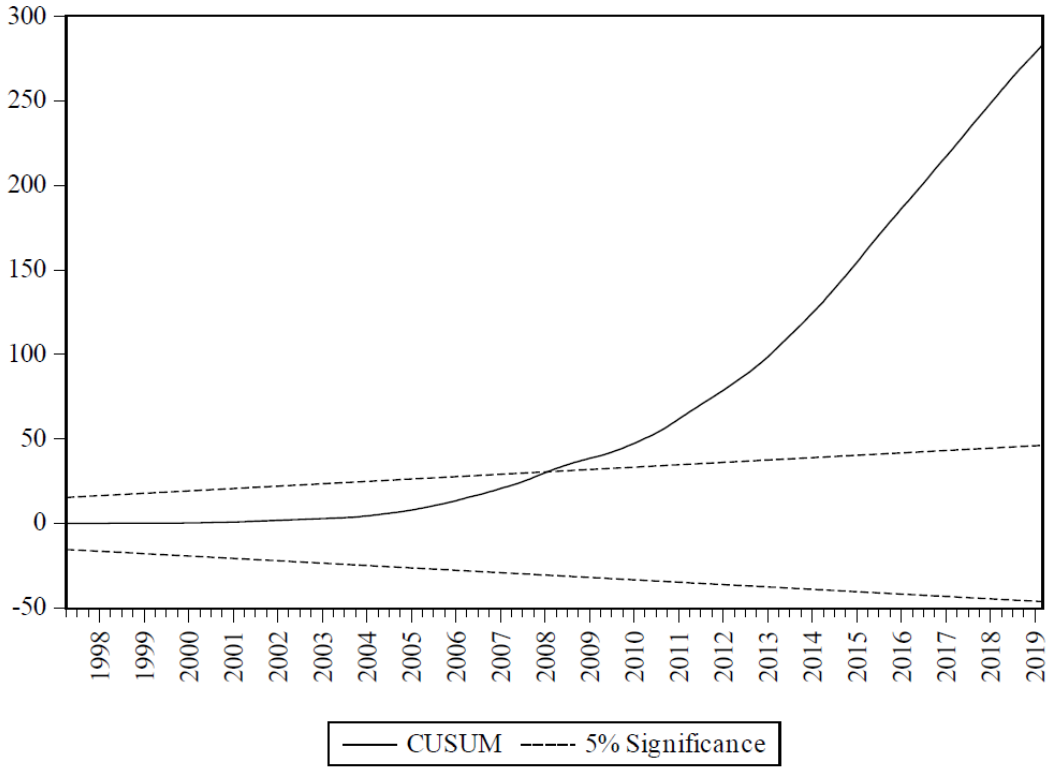


Figure 4.11
CUSUM test for CUM_FIIs_EQ

From the Figure 4.11, it can be said that the coefficient of CUM_FIIs_EQ time-series model is not constant. As the CUSUM line is not lying between 5% significant line the null hypothesis of the stable coefficient of the time-series model cannot be accepted. To check to make the time-series stationary and make their coefficient stable the various transformation of original time-series data can be taken. The first difference of log value of time-series data has a good probability to make time-series stable. Hence for the next step, the first difference of log-transformed data i.e. D_LN_FIIs_EQ to conduct the CUSUM testis taken.

The following figure shows the result of the CUSUM test for transformed data seriesD_LN_FIIs_EQ.

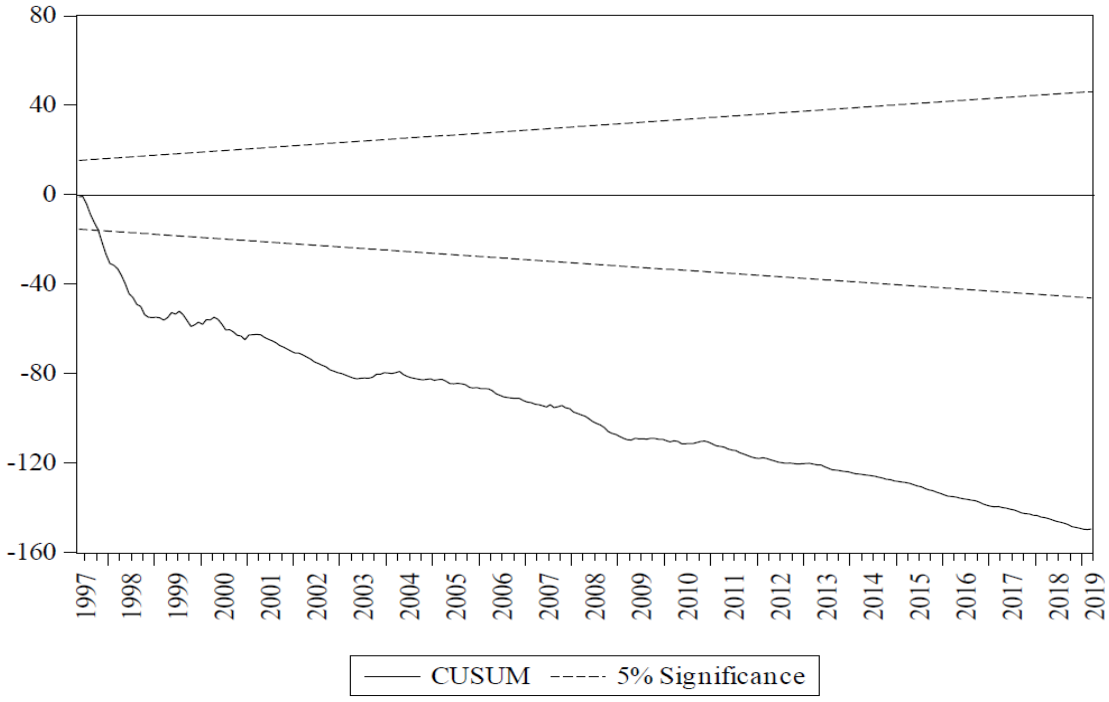


Figure 4.12
CUSUM test for D_LN_CUM_FIIs_EQ

From both of the above figure, Figure 4.11 and Figure 4.12, it can be said that even after taking the first difference of log transformation the coefficient of the model could not be stabilized. As the line of the CUSUM is crossing two lines of 5% level of significance, the null hypothesis of the coefficient of the model are stable cannot be accepted. Hence in conclusion coefficient of the model is changing systematically. After conducting the CUSUM test it is needed to apply the CUSUM of Square test to check the stability of variance of residuals.

The following figure shows the result of the CUSUM of Square test on original data series i.e. CUM_FIIs_EQ.

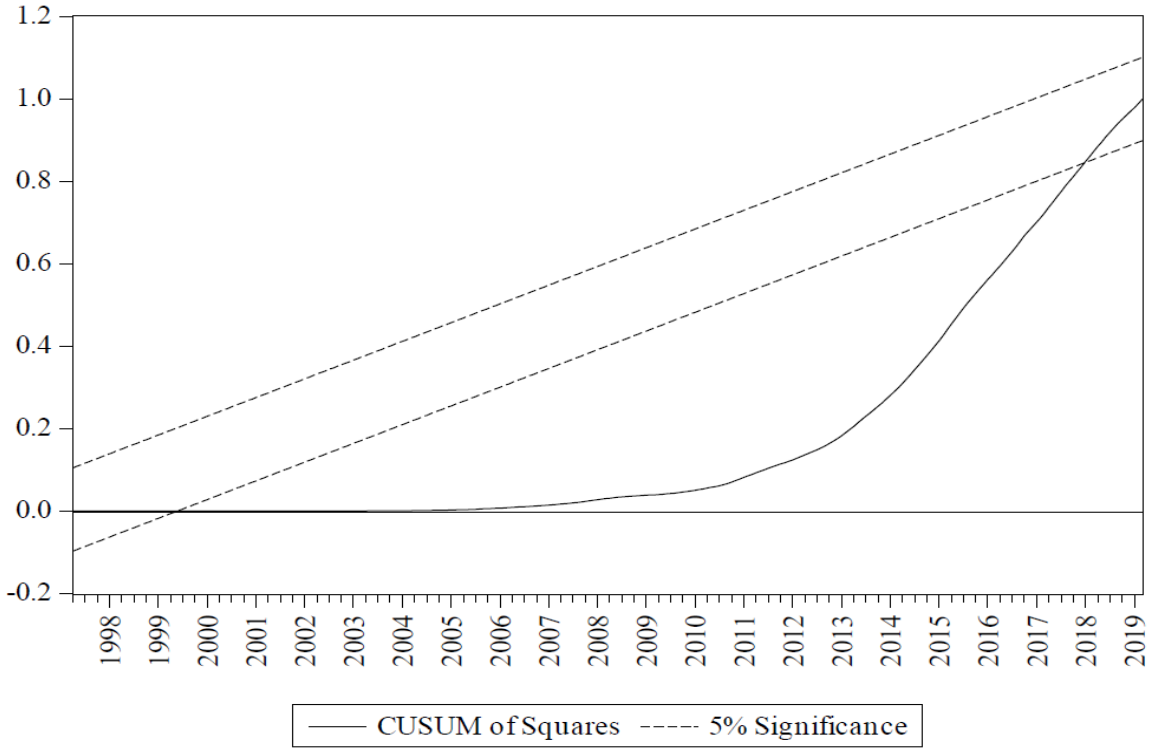


Figure 4.13.
CUSUM of Square test for CUM_FIIs_EQ

From the Figure 4.13, it can be observed that line of the CUSUM of Square crosses the area of two lines of 5% significance. Hence, it can be said that the null hypothesis of a stable coefficient of time-series CUM_FIIs_EQ can not be accepted. To test further stability of coefficient the CUSUM of squares test is applied on transformed data series D_LN_FIIs_EQ to check the stability of variance of residuals.

Following the CUSUM of squares show the test of the first difference of log-transformed time-series i.e. D_LN_FIIs_EQ.

From the Figure 4.14, it can be observed that even after taking the first difference of log transformation of cumulative FII investment in the Indian equity market, line of the CUSUM of Square crosses two lines of 5% level of significance. It leads me to fail in accepting the null hypothesis of stability in the coefficient of transformed time-series data of D_LN_FIIs_EQ.

Hence from the CUSUM Test and the CUSUM of Squares Test, it can be said that coefficients of the time-series model are not stable, they are changing systematically as well as suddenly, so the null hypothesis of coefficients of the model are stable cannot be accepted.

It implies that structural breaks are existing in time-series data of FIIs flow in the Indianequity market.

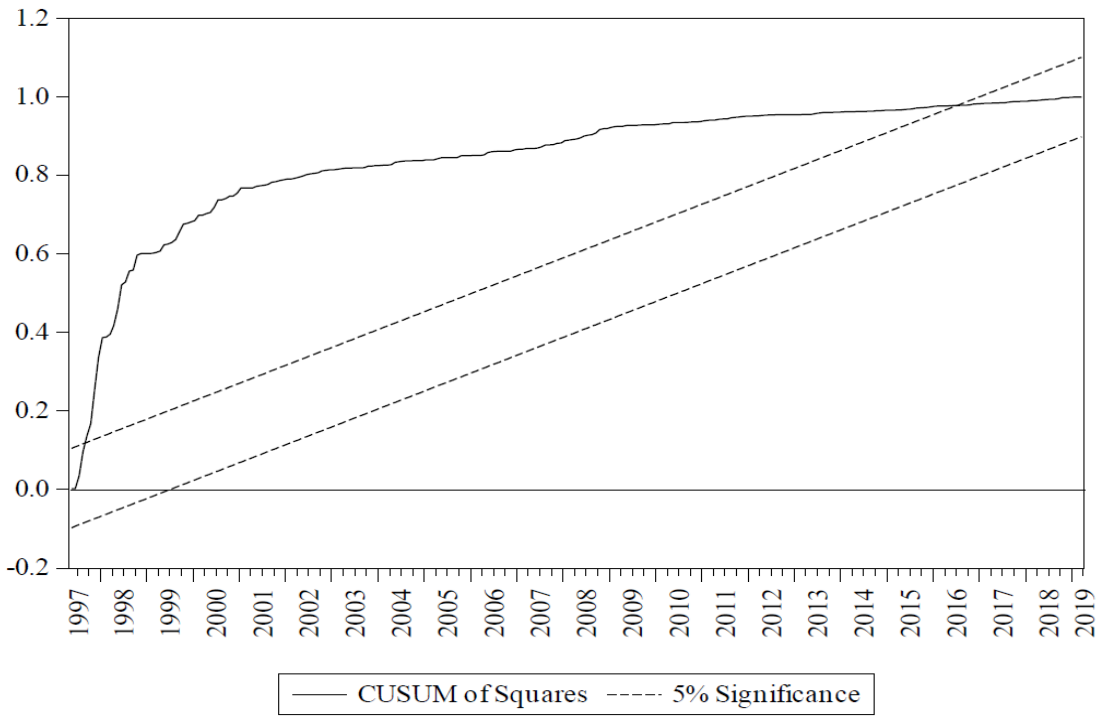


Figure 4.14.
CUSUM of Square test for D_LN_CUM_FIIs_EQ

Augmented Dicky-Fuller (ADF) test

A structural break can be confirmed with Unit root test, applying the Augmented Dicky- Fuller test to check whether the stationarity related issue is due to a structural break or not. The following result shows the outcome of this test.

H0 4.4. Time-series (CUM_FIIs_EQ) has a unit root
H1 4.4: Time-series (CUM_FIIs_EQ) has no unit root

Following is the output of the ADF test conducted with trend specification and structural break specification with intercept only under Least Square method. Break type is an innovational outlier. Selection of break is based on minimizing Dicky-Fuller t-statistics. Lag length is based on automatic selection of Schwarz Information Criterion with a maximum lag of 12.

Table 4.14.

ADF test statistics with adjusted Sample: 1997M05 2019M03

	t-stat.	Prob.*
Test statistic of ADF	-2.639949	0.8544206
Test critical values: 1% level	-4.949133	
5% level	-4.443649	
10% level	-4.193627	

*Vogelsang (1993) asymptotic one-sided p-values.

Augmented Dickey-Fuller Test Equation				
Variable	**Coeff.**	**Sd.Er**	**t-stat.**	**Prob.**
CUM_FIIs_EQ(-1)	0.991556	0.003199	310.0008	0.0000
D(CUM_FIIs_EQ(-1))	0.275067	0.060935	4.514091	0.0000
C	1695.628	715.595	2.369536	0.0185
INCPTBREAK	7585.04	2010.983	3.771808	0.0002
BREAKDUM	-6409.63	7964.768	-0.80475	0.4217
R-sqred	0.999371	Mean dependent var		330274.2
Adjusted R-sqred	0.999361	S.D. dependent var		308200.4
S.E. of regression	7791.477	Akaike Inf. Cr.		20.77828
Sum sqred residl	1.57E+10	SIC		20.84619
Log-likelihood	-2727.34	Hannan-Quinn criteria.		20.80557
F-stat.	102422.3	DW Statistic		1.964125
Prob(F-stat.)	0			

Source: Calculated SPSS Values from the secondary Data

From the Table 4.14, it can be observed that the P-value of the ADF test is 0.85 which is not less than 0.05, so null hypothesis is accepted. Coefficient of the first difference and second difference are significant as the P-value are less than 0.05, so there is a probability of autocorrelation, which could be a cause for unit root. Coefficient of incepting break is also significant as its value is 0.0002 which less than 0.05, it suggests the existence of structural break in time-series model. Dickey-fuller t-statistics figure and Dickey-fuller autoregressive

coefficients figure also suggested the existence of structural break during March 2009. Existence of structural break also disturbs the stationarity of series.

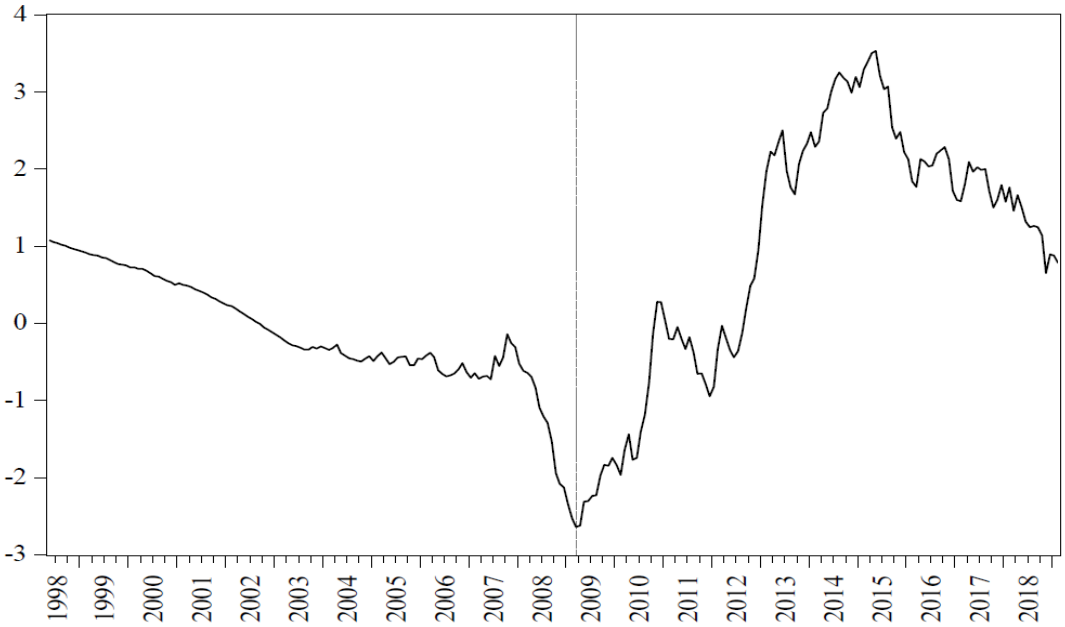


Figure 4.15. Dickey-Fuller t-statistics (Break Date: 2009M03)

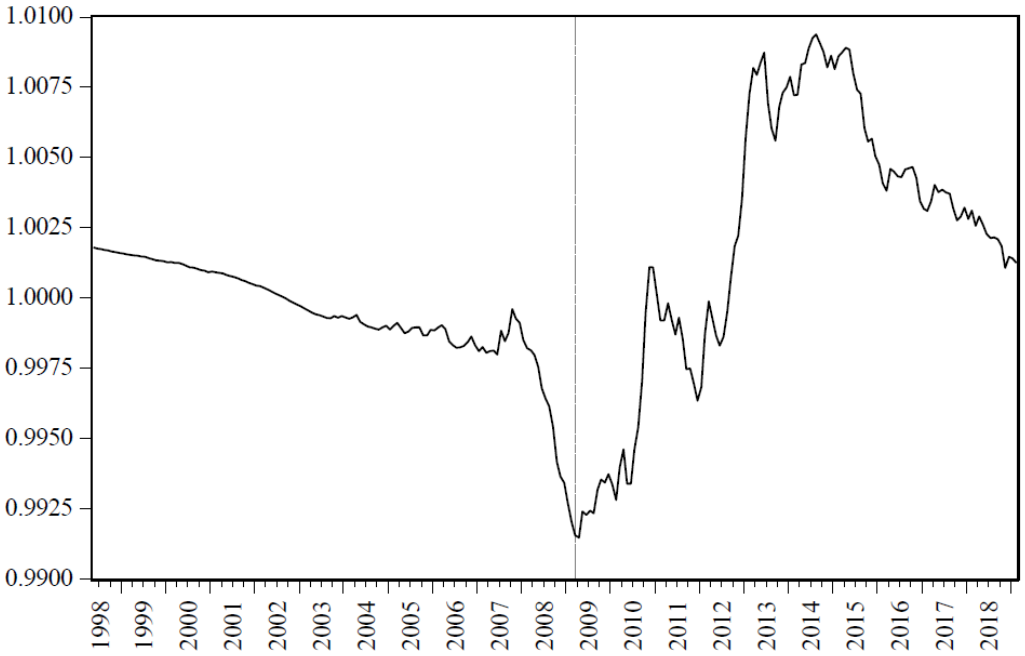


Figure 4.16. Dickey-Fuller autoregressive coefficients (Break Date: 2009M03)

Thus, the CUSUM test, the CUSUM of square test and ADF test suggested the existing structural breaks. For further investigation about the structural breaks, various tests need to applied to identify structural breaks in time-series data.

Structural breaks can be studied by applying two alternative approaches. In one of the approaches, it can be done initially by identify a significant change in time-series data through the appropriate test and then find the cause for the same. In an alternative approach, when after being aware of the events, its significant effect on the trend of time-series data can be confirmed. Both of the approaches were applied to identify major reasons for changes in FII investment in the Indian equity market. In the first approach, the Bai-Perron (1996, 2003) test is applied to identify multiple structural breaks without being aware of causing the events. In the alternative approach, the Chow (1960) test is applied to confirm the significance of time period for the identified events, causing structural breaks in the time- series data of FII investment in the Indian equity market.

The following discussion of the chapter discusses the first of all about the major events which are the probable causes of structural breaks in time-series data

of FII investment in the Indian equity market. Then in the later part, the Bai-Perron test and the Chow test is discussed for the study of the structural breaks.

Structural Breaks in FIIs Investment in India: Identification and Causes

Before applying appropriate test for the structural breaks discussion about various events which may cause the structural break in time-series data of FII investment in the Indian equity market helps me in better understanding of the behaviour of time-series data of FII investment.

Since the opening of the Indian economy, there has been a continuous flow of Foreign Institutional Investors investment in the Indian equity market. As discussed earlier in the year 2016-17 FIIs turnover in cash segment of equity market was 21% of total turnover of NSE and BSE and 13.7% of equity-based derivative market, in recent time FIIs have emerged as the most dominant groups of investors with ownership of significant component of the total trade volume in the Indian equity market. As the influence of FII investment significantly affects the Indian stock market, it is important to study causes affecting FII investment in the Indian equity market. These causes lead to change in FII investment flow can be grouped together on the basis of major factors related to the internal and external environment of the country. Internal factors can be further group together as i) FIIs related Regulatory measures by the Indian government, ii) Lok Sabha election, and iii) Problems of the Indian equity market (scams). Factors related to the external environment are due to internal exposure which includes viz. The global crisis, Remedial action to such crisis, Change in value of the foreign currency, Trade war, Petroleum issue etc.

On the basis of a literature review of various research papers as well as newspaper articles, a few such events were identified, which are potential to affect the FII investment in India. Following is the list of such national and international events which are potentially significant for FII investment in the Indian equity market:

- ✓ Harshad Mehta Scam (1992)
- ✓ Mexican Peso Crisis (1994)
- ✓ Asian Financial Crisis (1998)
- ✓ Ketan Parekh Scam (2001)
- ✓ P-Notes Issues (2003)
- ✓ FIIs limit related announcement in Budget (2006)
- ✓ Eurozone Crisis (2007)
- ✓ Subprime Crisis (2008)
- ✓ Bail-out program of Europe, Satyam Scam, End of Subprime in the US (2009)
- ✓ Announcement of GAAR (2012)
- ✓ Petroleum Issue (2014)
- ✓ Declaration of MAT, Greece Crisis, Chinese Yuan devaluation (2015)

After the exploration of this significant national and international events to FII investment in the Indian equity market following discussion is done about the check of structural breaks applying two different approaches discussed earlier. In the next section of the chapter initial discussion is done about application of the Bai-Perron test and in the latter part of the section discussion about the application of the chow, a test is done.

Bai-Perron test for Structural Break

Bai and Perron (1998) had considered issues related to multiple structural changes, occurring at unknown dates, in the linear regression model estimated by least squares. The main aspects were the properties of the estimators, including the estimates of the break dates, and the construction of tests that allow inference to be made about the presence of structural change and the number of breaks. They considered the general case of a partial structural change model where not all parameters were subject to shifts. They studied both fixed and shrinking magnitudes of shifts and obtain the rates of convergence for the estimated break fractions. Bai and Perron (2003) supplemented the set of critical values to check multiple structural breaks.

In the study, to find a number of structural breaks in time-series data of FII investment in the Indian equity market, the Bai-Perron test is applied. The first condition to apply this test is that there should be at least 100 observations. In the study, 264 observations available. So the Bai-Perron test can be applied to find a structural break in FIIs flow in the Indian equitymarket.

E-views software is used to apply the Bai-Perron test. In this application the first of all, the equation is estimated using specification using the least square (LS) method. In the regression equation, the first difference of cumulative FII investment is considered in the Indian equity market (D_FIIs_EQ) as the dependent variable and single regressor i.e. C. To perform the Bai-Perron tests Global L break vs. none method and *l* globally optimized breaks along with the corresponding *UDmax* and *WDmax* tests are considered. Following is the null hypothesis to apply Bai-Perron test.

H0 4.5. There are no structural breaks

H1 4.5: There are structural breaks

In multiple breakpoint tests, during the period from March 1997 to March 2019 having 264 observations, 5 maximum structural breaks are selected. The test also permits to determining trimming percentage i.e. 100(h/T). Here h determines the minimum segment permitted length. Trimming is done at 0.15, which default setting in Eviews software considering the optimality of the result. The significant level is also set as per default setting of 0.05 in the software. The following table shows the statistics of multiple structural break test.

Table 4.15.
Multiple Structural Breaks

		Scaled	Weighted	Critical
Breaks	**F-stat.**	**F-stat.**	**F-stat.**	**Value**
1 *	16.6296	16.6296	16.6296	8.58
2 *	20.9114	20.9114	24.8504	7.22
3 *	14.649	14.649	21.0887	5.96
4 *	11.1062	11.1062	19.0965	4.99
5*	8.40723	8.40723	18.4486	3.91
UDMax statistic* 20.91142039013124				
UDMax critical value** 8.880000114440918				
WDMax statistic* 24.85041420578056				
WDMax critical value** 9.90999984741211				

* Significant at the 0.05 level.
** Bai-Perron (Econometric Journal, 2003) critical values.
Source: Calculated SPSS Values from the secondary Data

In the application of the multiple structural break test with five Sequential F-stat. determined breaks, all five F-stat were found. largest breaks are significant at 5% level of significance. But UDmax statistics and WDmax statistics determined 2 breaks, which are significant at 5% level of confidence as well as significant as per Bai-Perron (2003) critical values.

F-stat., Scaled F-stat. and Weighted F-stat. provides individual values for each break. Here all these statistics found exceeding their respective critical value, hence the null hypothesis of no structural break is rejected.

The UDmax and WDmax results show the number of breakpoints as determined by the application of the unweighted and weighted maximized statistics. As both of the maximized statistics values exceed critical values and they are significant, both indicate the presence of multiple breaks. They suggest optimum structural breaks dates out of all following estimated structural break dates found in 5 sequential estimated breaks.

Estimated break dates:

1: 2009M04

2: 2009M04, 2015M05

3: 2003M06, 2009M04, 2015M05

4: 2002M10, 2006M01, 2009M04, 2015M05

5: 2000M07, 2003M10, 2008M11, 2012M02, 2015M05

Above result of Bai-Perron test produced major 9 event periods during which potential structural break occurred. An effort is made to find the major events happened during those9 time period as follow.

1. 2000M07: FIIs developed confidence in the Indian equity market as Derivative marketinitiated,
2. 2002M10: October is best for FIIs flow(Mudgill, 2016a),
3. 2003M06: Uptrend started. Using P-Notes FIIs could pump a huge amount of funds inthe Indian stock market)
4. 2003M10: October is best for FIIs flow (Mudgill, 2016a),
5. 2006M01: The FIIs net investment was highest during the month of December 2005, when they made a net purchase for a peak of Rs. 83, 610 million. ("Indian Securities Market A Review," 2006)
6. 2008M11: October 2008 While going over the External Commercial Borrowing policy, the Government raised the cumulative debt investment limits from the USD 3 billion to the USD 6 billion for FIIs investments in Corporate Debt. Elimination of regulation for FIIs relating to limit of 70:30 ratio of investment in equity and debt respectively. Elimination of Restrictions on Overseas Derivatives Instruments (ODIs) ("Indian Securities Market A Review," 2009).
7. 2009M04: End of Subprime in US and Bailout program of Europe,
8. 2012M02: In January 2012, the Government expanded this scheme to allow Qualified Foreign Investors to directly invest in the Indian equity markets ("Indian Securities Market A Review," 2014)) and
9. 2015M05: India’s taxmen sent a number of notices to FPIs on minimum alternate tax (MAT) (Dave & Pandey, 2015; Patel, Chowdhry, & Associates,

2015). Downtrend started. the Indian equity market was perceived overpriced and FIIs found other betteropportunities in the world (Sriram, 2015).

All the estimated breaks are significant at 5% level of significance according to Bai-Perron (2003) critical values. The UDmax statistic, as well as WDmax, is also significant at 5% level of significance which suggests major two estimated breaks of 2009M04 and 2015M05. Hence the null hypothesis of no structural break is rejected.

After identification of structural break, an effort is made to prepare a line chart of the first difference of cumulative FII investment in the Indian equity market (D_FIIs_EQ), cumulative FII investment in the Indian equity market (CUM_FIIs_EQ) and Structural Breaks. The following figure shows those two major estimated structural breaks of 2009M04 & 2015M05 suggested by Bai-Perron testing the trend line of FIIs cumulative investment in the Indian equity market.

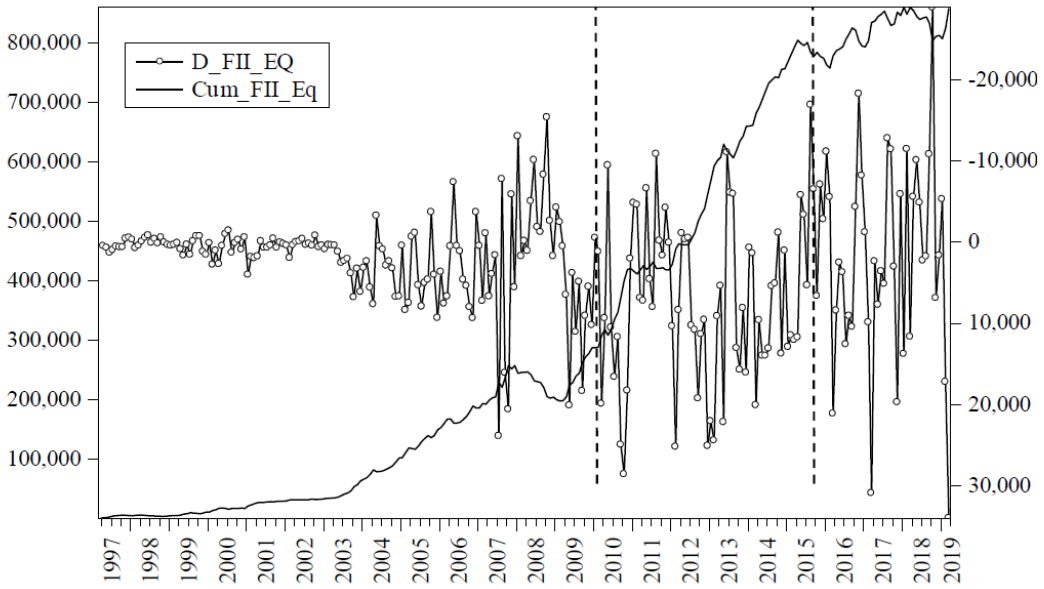


Figure 4.17.

Line chart of D_FIIs_EQ, CUM_FIIs_EQ and Structural Breaks

Considering these major two structural breaks in the time-series model, two dummy variables are introduced i.e. SB_2009M04 (structural break of April 2009) andSB_2015M05 (structural break of May 2015).

Time-series model introducing Structural Breaks suggested by Bai-Perron (2003)

Following estimated time-series model suggests the value of Net Monthly FIIs flow in the Indian equity market (D_FIIs_EQ) in relation to structural breaks suggested by Bai-Perron (2003) test.

D_FIIs_EQ = 1421.246 + 6816.735*SB_2009M04 - 6975.938*SB_2015M05

The estimated equation for the dependent Variable D_FIIs_EQ using least squares method considering the adjusted sample of 1997M04 2019M03 having 264 observations after adjustments produced following results.

Table 4.16.
Statistics of the estimated regression equation

Variable	Coeff.	Sd.Er	t-stat.	Prob.
C	1421.247	656.1044	2.166190	0.0312**
SB_2009M04	6816.73	1121.102	6.080389	0.0000*
SB_2015M05	-6975.93	1447.336	-4.81984	0.0000*

R-sqred	0.13653	Mean dependent var	3251.41
Adjusted R-sqred	0.12992	S.D. dependent var	8439.64
S.E. of regression	7872.32	Akaike Inf. Cr.	20.7913
Sum sqred residl	1.62E+1	SIC	20.8320
Log-likelihood	-2741.46	Hannan-Quinn criteria.	20.8077
F-stat.	20.6357	DW Statistic	1.49441
Prob(F-stat.)	0.00000		

* Significant at 1%, ** Significant at 5%
Source: Calculated SPSS Values from the secondary Data

From the above test statistics, it can be observed that the P-value of F-stat. is less than 0. 05, so the suggested time-series model is significant. the P-value of both of the structural breaks are also less than 0.05, so they are also significant. Hence it can be concluded that both of the dummy variables are significant to estimate time-series model. But still, the stability of these significant coefficients of the time-series model need to be checked.

In order to check the stability of the coefficient of the time-series model, again CUSIM and the CUSUM of Square test are applied after introducing dummy variables of structural breaks. Following figures present the result of these tests.

From the Figure 4.18, it can be observed that the line of the CUSUM is passing through two lines of 5% significance. From this, it can be infered that coefficients of the time-series model after introducing dummy variables are

stable.

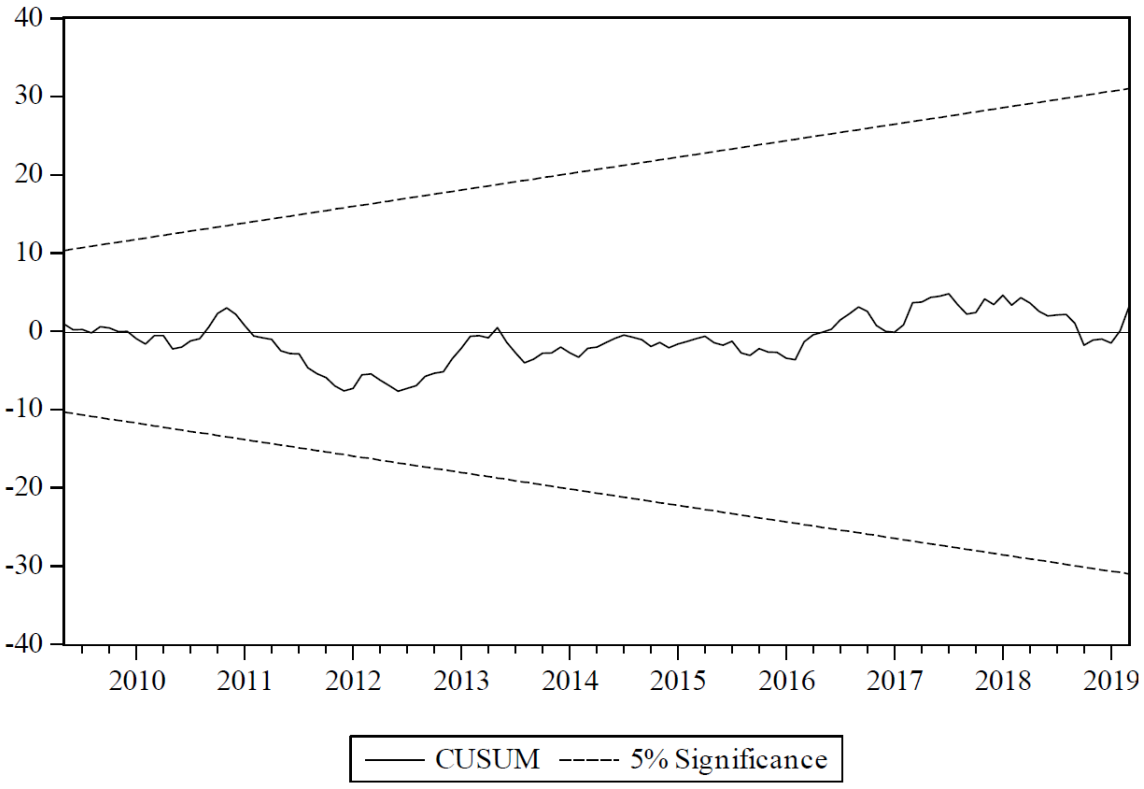


Figure 4.18.

CUSUM test for D_ FIIs_EQ with structural breaks

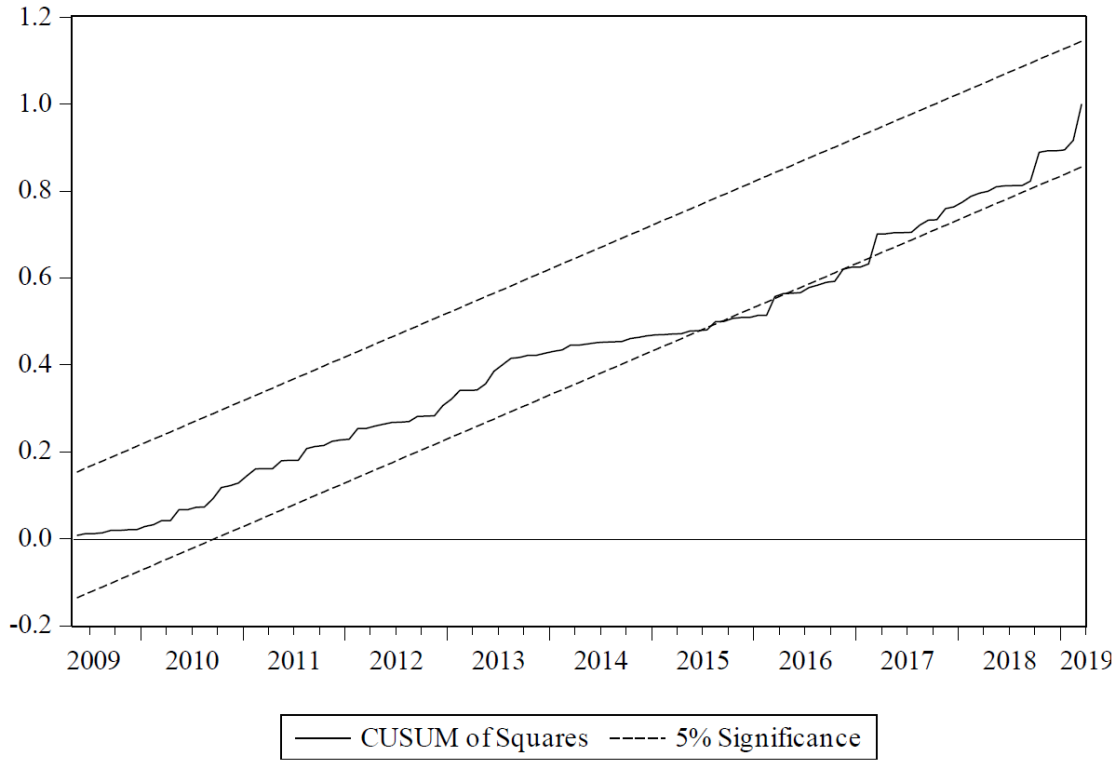


Figure 4.19.

CUSUM of Square test for D_ FIIs_EQ with structural breaks

From the Figure 4.19, it can be observed that the line of the CUSUM of Squares passes through two lines of 5% significance. From this it can be inferred that variance of residual of time-series after introducing dummy variables for structural breaks are also stable. Thus, from the CUSUM and the CUSUM of Squares test it can be concluded that after the introduction of two new dummy variables of two major structural breaks (April 2009 and May 2015) suggested by Bai-Perron, the model is almost stable, though exactly not at 5% significant level as line of residual variance still crosses line of 5% significance in the case of the CUSUM of Squares test.

From the above analysis, it could be found that Bai-Parron (2003) test is useful to identify structural breaks, especially when the time period for these structural breaks are not identified. In a study of the time-series model of FII investment in the Indian equity market through the CUSUM and the CUSUM of Square test, it is found that the time-series model was not stable in terms of their coefficients. Without a stable coefficient, time-series model cannot be used for forecasting and for further statistical analysis as well. Bai-Perron test provided assistance to find major two structural breaks during the periods of April 2009 and May 2015. Introduction of the dummy variable for these time period structural breaks made the coefficient of the time-series model stable. But structural breaks are not always unknown or with unidentified. As discussed earlier some events are potential to affect time-series model significantly. Whether such events are significant or not it can be checked through applying Chow test.

Chow test for Structural Break

The Chow (1960) test is mainly used to test the presence of structural breaks in the time- series model. The Chow test is a statistical test to check whether the coefficients in two linear regressions on different data sets are equal. It is commonly used in the time-series analysis to test the presence of structural break's presence. The chow test estimates two regression models – one using the data set of all observation and the other using a long subperiod sample. When the results are different for the models, the stability of the estimated relation over the sample period is doubtful.

To identify a structural break in time-series data of FII investment in the Indian equity market using the chow test, the first of all, major events have to be identified and their respective time periods. Following is the list of events to be checked for their significance.

Table 4.17
Events and their respective time period

Events	Time Period
13th Lok Sabha Election	Oct-99
The boom in IT and Telecom companies in the US	Dec-99
Ketan Parekh Scam	Feb-01
Increased in Investment through P-Notes	May-03
14th Lok Sabha Election	May-04
P-Note Crisis, Subprime Crises and Financial Crisis of 2007-08	Oct & Dec-07
Satyam Scam, Lok Sabha Election	Jan-09
Bailout Program of Europe and End of Subprime Crisis of US	Jun-09
FIIs infused a record Rs 24,978.40 crore in Indian Equity Market	Sep-10
15th Lok Sabha Election	Oct – Nov 2011

Facilitation of inflation, relaxing on restrictions of foreign investors and the RBI's monetary policy	Feb-12
Announcement of General anti-avoidance rules of taxation (GAAR)	Mar-12
QFIs were allowed to invest in the schemes of Indian mutual funds and Indian equity shares	Jun-12
16th Lok Sabha Election	Apr-May 2014
Declaration of Minimum Alternate Tax (MAT)	May-15
Greece Crisis	Aug-15
Uri attack by militants and Surgical Strike by Indian Army	Sep-16
Demonetization	Nov-16
Uri attack and Surgical Strike by the Indian military	Sep-16
Budget 2018-19 with Long-term Capital Gain Tax and Conflict about SGX Nifty	Feb-18
US-China Trade ware	Jul-18
BJP Government Budgets from July 2014 Feb 2018	2014-2018
GST Council revised tax rates	Dec-18
Militant attack in Pulwama, Airstrikes by IAF at Balakot in Pakistan & Interim Budget 2019-20	Feb-19

Events	Time Period
13th Lok Sabha Election	Oct-99
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14th Lok Sabha Election	May-04
P-Note Crisis, Subprime Crises and Financial Crisis of 2007-08	Oct & Dec-07
Satyam Scam, Lok Sabha Election	Jan-09
Bailout Program of Europe and End of Subprime Crisis of US	Jun-09
FIIs infused a record Rs 24,978.40 crore in Indian Equity Market	Sep-10
Facilitation of inflation, relaxing on restrictions of foreign investors and the RBI's monetary policy	Feb-12

Announcement of General anti-avoidance rules of taxation (GAAR)	Mar-12
QFIs were allowed to invest in the schemes of Indian mutual funds and Indian equity shares	Jun-12
Declaration of Minimum Alternate Tax (MAT)	May-15
Greece Crisis	Aug-15
Uri attack by militants and Surgical Strike by Indian Army	Sep-16
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GST Council revised tax rates	Dec-18
Militant attack in Pulwama, Airstrikes by IAF at Balakot in Pakistan & Interim Budget 2019-20	Feb-19

To apply the chow test following is the null hypothesis to be checked, followed by details ofthe events with the result of chow test.

H0 4.6. There are no breaks at specified breakpoints

H1 4.6. There are breaks at specified breakpoints

October 1999: 13th Lok Sabha Election

On Oct 6, 1999, Vajpayee got a majority in 13th Lok Sabha Election. The stock market was rising before the election results were ready and once it was formally announce, the market countered with 5% move on the election date and mounting almost 12% before the top wasmade on 14 Oct (Bramesh, 2014).

Following is the alternative hypothesis to be checked.

H1 4.6.1. There is a break at 1999M10

The following table shows the result of the chow test applied to check the significance of a structural break during October 1999 due to the result of the 13th Lok Sabha Election.

Table 4.14
Chow Breakpoint Test: 1999M10

F-stat.	4.271306	Prob. F(1,262)	0.0397**
Log-likelihood ratio	4.269205	Prob. Chi-Square(1)	0.0388**
Wald Statistic	4.271306	Prob. Chi-Square(1)	0.0388**

** Significant at 5%
Source: Calculated SPSS Values from the secondary Data

As p-value of F-test, log likelihood ratio and wald test are less than 0.05, null hypothesis cannot be accepted. So it can be said that structural break during the period of Oct 1999 is significant. It leads to infer that the effect of 13th Lok Sabha Election is significant on FII investment in the Indian equity market.

December 1999: Boom in IT and Telecom sector in the US.

The Dow Jones industrial average moved up by 44.26 points to 11,497.12, crossing the record set on last Wednesday of December 1999. The Nasdaq composite index increased from 32.44 to 4,069.31, also highest noticeable on that day, while the S&P 500 index increased 4.78 to 1,469.25, the third straight record close for the indicator. But only dot.com, high- tech or telecom stock of New York Stock Exchange gained, 64 per cent of the socks declined with an average of 28 per cent. On the Nasdaq, 50 per cent of stocks moves back an average of 32 per cent (Bebar, 1999). Following is the alternative hypothesis to be checked.

H1 4.6.2. There is a break at 1999M12

The following table shows the result of the chow test applied to check the significance of a structural break during December 1999 due to the result of Boom in IT and Telecom sectorin the US.

Table 4.15
Chow Breakpoint Test: 1999M12

F-stat.	4.606303	Prob. F(1,262)	0.0328*
Log-likelihood ratio	4.601136	Prob. Chi-Square(1)	0.0320*
Wald Statistic	4.606303	Prob. Chi-Square(1)	0.0319*

** Significant at 5%
Source: Calculated SPSS Values from the secondary Data

As p-value of F-test, log likelihood ratio and wald test are less than 0.05, the null hypothesis cannot be accepted. So it can be said that structural break during the period of December 1999 is significant. It leads to infer that the effect of Boom in IT and Telecom sector in the US is significant on FII investment in the Indian equity market.

February 2001: Ketan Parekh Scam

Ketan Parekh scam created a historical impact on the financial status of the Bombay Stock Exchange and also on the trust of the investors in its working. Securities and Exchange Board of India (SEBI) was highly condemned as being reactive rather than proactive. The market regulator was attributed for being careless in supervising the issue of uncommon price movement and terrific volatility in shares over an 18-month period prior to February 2001(T. Singh, 2010). Following is the alternative hypothesis to be checked.

H1 4.6.3. There is a break at 2001M02

The following table shows the result of the chow test applied to check the significance of a structural break during February 2001 due to Ketan Parekh rig the Indian stock market.

Table 4.16
Chow Breakpoint Test: 2001M02

F-stat.	6.267109	Prob. F(1,262)	0.0129**
Log-likelihood ratio	6.240605	Prob. Chi-Square(1)	0.0125**
Wald Statistic	6.267109	Prob. Chi-Square(1)	0.0123**

** Significant at 5%
Source: Calculated SPSS Values from the secondary Data

As p-value of F-test, log likelihood ratio and wald test are less than 0.05, the null hypothesis cannot be accepted. So it can be said that structural break during the period of February 2001 is significant. It leads to infer that the effect of Ketan Parekh Scam is significant on FIIinvestment in the Indian equity market.

May 2003: FIIs Initiated to invest through the P-Notes:

FIIs were allowed to invest in the Indian capital market since 1992. As the Know-Your- Investor or Know-Your-Client (KYC) norms were pertinent for these foreign funds, the FIIs initiated to issue P-Notes, which helped the end-user to persist unidentified. P-Notes are, in essence, overseas derivatives instruments (ODIs), which have Indian stocks and derivatives as their underlying securities ("P-Notes require more stringent monitoring," 2015). The investments through P-Notes were permitted by SEBI in 2002 when D. R. Mehta was the Chairman of the capital market regulator. Total FIIs inflow of Rs 10,097 crore in October and November 2003, out of which Rs 5,756 crore came through P-Notes. In 2003 most of the FII investment done through P-Notes, which was initiated in the month of May. ("What are participatory notes?," 2004). Following is the alternative hypothesis to be checked.

H1 4.6.4. There is a break at 2003M05

The following table shows the result of the chow test applied to check the significance of a structural break during May

2003 due to FIIs started investment through P-notes.

Table 4.17
Chow Breakpoint Test: 2003M05

F-stat.	11.3936	Prob. F(1,262)	0.0008*
Log-likelihood ratio	11.23795	Prob. Chi-Square(1)	0.0008*
Wald Statistic	11.3936	Prob. Chi-Square(1)	0.0007*

* Significant at 1%
Source: Calculated SPSS Values from the secondary Data

As p-value of F-test, log likelihood ratio and wald test are less than 0.05, the null hypothesis cannot be accepted. So it can be said that structural break during the period of May 2003 is significant. It leads to infer that the effect of FIIs initiated investment through P-Notes is significant on FII investment in the Indian equity market.

May 2004: 14th Lok Sabha Election

The influence of FIIs on the movement of the Sensex became apparent after the 2004 general elections in India when the sudden reversal of FIIs flows resulted in very high volatility in the Indian stock market. During this period, the Sensex experienced the worst single-day decline in its history. In the three months between April and June 2004, the index declined by about 17 per cent (Pal, 2005). Following is the alternative hypothesis to be checked.

H1 4.6.5. There is a break at 2004M05

The following table shows the result of the chow test applied to check the significance of a structural break during May 2005 due to results of 14th Lok Sabha Election.

Table 4.18
Chow Breakpoint Test: 2004M05

F-stat.	9.554989	Prob. F(1,262)	0.0022*
Log-likelihood ratio	9.456521	Prob. Chi-Square(1)	0.0021*
Wald Statistic	9.554989	Prob. Chi-Square(1)	0.0020*

* Significant at 1%
Source: Calculated SPSS Values from the secondary Data

As p-value of F-test, log likelihood ratio and wald test are less than 0.05, null hypothesis cannot be accepted. So it can be said that structural break during the period of May 2004 is significant. It leads to infer that the effect of 14th Lok Sabha Election is significant on FII investment in the Indian equity market.

October 2007: P-Note Crisis, Subprime Crises and Financial Crisis of 2007-08

On the 16th of October, 2007, SEBI (Securities & Exchange Board of India) proposed controls on participatory notes which accounted for roughly 50% of FII investment in 2007. SEBI was not happy with P-Notes because it is not possible to know who owns the underlying securities and hedge funds acting through PNs might, therefore, cause volatility in the Indian markets. However, the proposals of SEBI were not clear and this led to an immediate crash when the markets opened on the following day October 17, 2007. Within a minute of opening trade, the Sensex crashed by 1744 points or about 9% of its value - the biggest intra-day fall in Indian stock-markets in absolute terms. ("Participatory note," 2016)

According to the US National Bureau of Economic Research (the official arbiter of US recessions) the recession, as experienced in that country, began in December 2007 and ended on June 2009, thus extending over 19 months. Greece Recession was related to the financial crisis of 2007–08 and U.S. subprime mortgage crisis of 2007–09. Greece Recession has resulted in the scarcity of valuable assets in the market and the collapse of the financial sector in the world economy. Following is the

alternative hypothesis to be checked.

H1 4.6.6. There is a break at 2007M10

The following table shows the result of the chow test applied to check the significance of a structural break during October and December 2007 due to the P-Note Crisis, Subprime Crisis and Financial Crisis of 2007-08.

Table 4.19
Chow Breakpoint Test: 2007M10 and 2007M12

	2007M10	2007M12		2007M10	2007M12
F-stat.	6.526945	5.900118	Prob. F(1,262)	0.0112**	0.0158**
Log-likelihood ratio	6.496185	5.879204	Prob. Chi-Square(1)	0.0108**	0.0153**
Wald Statistic	6.526945	5.900118	Prob. Chi-Square(1)	0.0106**	0.0151**

** Significant at 5%
Source: Calculated SPSS Values from the secondary Data

As p-value of F-test, log likelihood ratio and wald test are less than 0.05, the null hypothesis cannot be accepted. So it can be said that structural break during the period of October and December 2007 is significant. It leads to infer that the effect of P-Note Crisis, Subprime Crises and Financial Crisis of 2007-08 is significant on FII investment in the Indian equity market.

April – May 2009: 15th Lok Sabha Election

The Election commission of India held 15th Lok Sabha Election between 16th April 2009 and 13th May 2009 in five phases. The result of the election announced on 16th May 2009, in which the United Progressive Alliance (UPA) led by the Indian National Congress won the election by 322 seats out of 543 seats in total. Following is the alternative hypothesis to be checked.

H1 4.6.7. There are breaks at 2009M04 and 2009M05

The following table shows the result of the chow test applied to check the

significance of a structural break during April-May 2009 due to 15th Lok Sabha Election.

Table 4.20
Chow Breakpoint Test: 2009M04 and 2007M05

	2009M04	2009M05		2009M04	2009M05
F-stat.	16.62956	16.23188	Prob. F(1,262)	0.0001**	0.0001**
Log-likelihood ratio	16.24621	15.86914	Prob. Chi-Square(1)	0.0001**	0.0001**
Wald Statistic	16.62956	16.23188	Prob. Chi-Square(1)	0.0000**	0.0001**

** Significant at 5%
Source: Calculated SPSS Values from the secondary Data

As p-value of F-test, log likelihood ratio and wald test are less than 0.05, the null hypothesis cannot be accepted. So it can be said that structural break during the period of April – May 2009 is significant. It leads to infer that the effect of 15th Lok Sabha Election is significant on FII investment in the Indian equity market.

January & June 2009: Satyam Scam, Bailout Program of Europe and Endof Subprime Crisis of US

In the first week of January 2009, B Ramalinga Raju, founder and chairman of SCSL, confesses to fudging of accounts to the extent of about Rs 7,000-crore in a letter to the board (PTI, 2015). Foreign portfolio investor (FPI) inflows into Indian equities increased abruptly after the 2009 Lehman crisis, as the US central bank went on a money-pumping spree to avert a global slowdown (Kant & Modak, 2018).

When, as a negative repercussion of the Greece Recession, the relatively fragile banking sector had suffered large capital losses, most states in Europe had to bail out several of their most affected banks with some supporting recapitalization loans, because of the strong linkage between their survival and the financial stability of the economy. As of January 2009, a group of 10 central and eastern European banks had already asked for a bailout. According to the US National Bureau of

Economic Research, the recession ended in June 2009 after 19 months' subprime crisis. Following is the alternative hypothesis to be checked.

H1 4.6.8. There are breaks at 2009M01 and 2009M06

The following table shows the result of the chow test applied to check the significance of astructural break during January and June 2009.

Table 4.21
Chow Breakpoint Test: 2009M01 and 2009M06

	2009M01	**2009M06**		**2009M01**	**2009M06**
F-stat.	14.56947	14.16416	Prob. F(1,262)	0.0002*	0.0002*
Log-likelihood ratio	14.28703	13.89985	Prob. Chi-Square(1)	0.0002*	0.0002*
Wald Statistic	14.56947	14.16416	Prob. Chi-Square(1)	0.0001*	0.0002*

* Significant at 1%
Source: Calculated SPSS Values from the secondary Data

As p-value of F-test, log likelihood ratio and wald test are less than 0.05, the null hypothesis cannot be accepted. So it can be said that structural break during the period of January & June 2009 is significant. It leads to infer that the effect of Satyam Scam, Lok Sabha Election, Bailout Program of Europe and End of Subprime Crisis of US is significant on FII investment in the Indian Equity Markets.

Pauli Laursen, who was managing Indian equities at SydInvest Asset Management in Copenhagen opine that FIIs found Indian financial market more lucrative compared to other emerging countries. By the 10th day of the month of September 2010, FIIs have net-bought shares worth almost USD 5 billion (Rs. 22,700 crores). Helping make India the best performer within the emerging market pack in this month (M. Shah, 2010). Major FIIs belongs to the USA. Gyntelberg and King (2010) found that up to August 2010 US debt market was at its lowest (Two-year government bonds, Ten-year government bonds) and value of the USD/JPY was also lowest at least from 1996. Return of US investors in Bonds was highest in the segment of return from an emerging market.

Compare to China, Brazil, Hungary, Mexico and Russia Equity Market Performance, Interest Expectation and a Real effective exchange rate of India was highest. Mudgill (2016b) noted that September has seen heavy foreign inflows in 11 out of the past 14 years. FIIs infused a record Rs 24,978.40 crore in Indian Equity. Following is the alternative hypothesis to be checked.

H1 4.6.9. There is a break at 2010M09

The following table shows the result of the chow test applied to check the significance of a structural break during September 2010 due to the result of the perception of FIIs that they found Indian financial market more lucrative compared to other emerging countries.

Table 4.22
Chow Breakpoint Test: 2010M10

F-stat.	5.488592	Prob. F(1,262)	0.0199**
Log-likelihood ratio	5.473357	Prob. Chi-Square(1)	0.0193**
Wald Statistic	5.488592	Prob. Chi-Square(1)	0.0191**

** Significant at 5%

Source: Calculated SPSS Values from the secondary Data

As p-value of F-test, log likelihood ratio and wald test are less than 0.05, the null hypothesis cannot be accepted. So it can be said that structural break during the period of September 2010 is significant. It leads to infer that the effect of the perception of FIIs that Indian financial market found more lucrative compared to other emerging countries is significant on FII investment in the Indian equity market.

February 2012: Facilitation of inflation, a relaxing of restrictions on foreign investors and the RBI's monetary policy

Stock market inflows in the first 17 days of February of 2012, at Rs. 13,867 crores (USD 2.81 billion), were greater than that for the entire month of January 2012. Market analysts recognized strong FIIs inflow in the native market to the setback in RBI's monetary policy and the consequent effect of improved liquidity position (PTI, 2012). CNI

Research Head Kishor Ostwal opined that in 2012, FIIs infused money into the Indian equity market mainly due to the facilitation of inflation, a relaxing of restrictions on foreign investors and moves in the RBI's policy. Following is the alternative hypothesis to be checked.

H1 4.6.10. There is a break at 2012M02

The following table shows the result of the chow test applied to check the significance of a structural break during February 2012 due to the result of facilitation of inflation, a relaxing of restrictions on foreign investors and the RBI's monetary policy.

Table 4.23
Chow Breakpoint Test: 2012M02

F-stat.	5.585863	Prob. F(1,262)	0.0188**
Log-likelihood ratio	5.569343	Prob. Chi-Square(1)	0.0183**
Wald Statistic	5.585863	Prob. Chi-Square(1)	0.0181**

** Significant at 5%
Source: Calculated SPSS Values from the secondary Data

As p-value of F-test, log likelihood ratio and wald test are less than 0.05, the null hypothesis cannot be accepted. So it can be said that structural break during the period of February 2012 is significant. It leads to infer that the effect of Facilitation of inflation, a relaxing of restrictions on foreign investors and the RBI's monetary policy is significant on FII investment in the Indian equity market.

March 2012: Announcement of GAAR

General anti-avoidance rules of taxation (GAAR) were introduced by the finance minister Pranab Mukherjee in his budget speech in March 2012. On 16th March 2012 Finance Minister, Pranab Mukherjee takes a tough stand and announces that the government will take action on tax avoidance effective from the fiscal year 2012–13 ("General anti-avoidance rule(India)," 2016). Following is the alternative hypothesis to be checked.

H1 4.6.11. There is a break at 2012M03

The following table shows the result of the chow test applied to check the significance of a structural break during March 2012 due to the result of the Announcement of GAAR.

Table 4.24
Chow Breakpoint Test: 2012M03

F-stat.	4.077189	Prob. F(1,262)	0.0445**
Log-likelihood ratio	4.076674	Prob. Chi-Square(1)	0.0435**
Wald Statistic	4.077189	Prob. Chi-Square(1)	0.0435**

** Significant at 5%
Source: Calculated SPSS Values from the secondary Data

As p-value of F-test, log likelihood ratio and wald test are less than 0.05, the null hypothesis cannot be accepted. So it can be said that structural break during the period of March 2012 is significant. It leads to infer that the effect of Announcement of GAAR is significant on FII investment in the Indian equity market.

June 2012: Effect of Policy Announcement related FIIs

Revision in framework for qualified foreign investor(QFI)s' investment in equity shares and mutual fund schemes (SEBI Circular dated June 7, 2012): Vide the SEBI circulars dated August 09, 2011 and January 13, 2012, QFIs were allowed to invest in the schemes of Indian mutual funds and Indian equity shares, subject to the terms and conditions mentioned therein. Subsequently, vide the SEBI circular dated January 25, 2012, the eligibility criteria for a qualified DP were revised. Following is the alternative hypothesis to be checked.

H1 4.6.12. There is a break at 2012M06

Following table shows the result of the test of chow test applied to check the significance of a structural break during June 2012 due to the circular of SEBI regarding QFIs allowed to invest in mutual funds.

Table 4.25
Chow Breakpoint Test: 2012M06

F-stat.	4.345959	Prob. F(1,262)	0.0381**
Log-likelihood ratio	4.343211	Prob. Chi-Square(1)	0.0372**
Wald Statistic	4.345959	Prob. Chi-Square(1)	0.0371**

** Significant at 5%

Source: Calculated SPSS Values from the secondary Data

As p-value of F-test, log likelihood ratio and wald test are less than 0.05, the null hypothesis cannot be accepted. So it can be said that structural break during the period of June 2012 is significant. It leads to infer that the effect of Policy Announcement related FIIs is significant on FII investment in the Indian equity market.

April – May 2014: 16th Lok Sabha Election

Election commission of India held 16th Lok Sabha Election during the period of 7th April 2014 to 12th May 2014 in different 9 phases. On 16th May 2014 result of the election was declared in which the Bharatiya Janata Party won the election with a clear majority with 282 seats out of 543. Following is the alternative hypothesis to be checked.

H1 4.6.13. There are breaks at 2014M04 and 2014M05

The following table shows the result of the chow test applied to check the significance of a structural break during April and May 2014 due to the result of 16th Lok Sabha Election andits result.

Table 4.26
Chow Breakpoint Test: 2014M04 and 2014M05

	2014M04	2014M05		2014M04	2014M05
F-stat.	0.100117	0.184344	Prob. F(1,262)	0.7519	0.6680
Log-likelihood ratio	0.100862	0.185686	Prob. Chi-Square(1)	0.7508	0.6665
Wald Statistic	0.100117	0.184344	Prob. Chi-Square(1)	0.7517	0.6677

Source: Calculated SPSS Values from the secondary Data

As p-value of F-test, log likelihood ratio and wald test for both of the periods 2014M04 and 2014M05 are greater than 0.10, the null hypothesis is accepted. So it can be said that structural breaks during the periods of April & May 2014 are not significant. It leads to infer that the effect of 16th Lok Sabha Election is not significant on FII investment in the Indian equity market.

May 2015: Declaration of Minimum Alternate Tax (MAT) on interestincome of FIIs

On the announcement of MAT on interest income of FIIs leads to net outflows of Rs. 817 crores till April 27. Due to tax notices asking for tax at 20 per cent on the interest income, as conflicting to 5 per cent without MAT, FIIs outflows come in the wake (Reporter, 2015). Following is the alternative hypothesis to be checked.

H1 4.6.14. There is a break at 2015M05

The following table shows the result of the chow test applied to check the significance of a structural break during May 2015 due to the result of the declaration of MAT**.**

Table 4.27
Chow Breakpoint Test: 2015M05

F-stat.	3.596886	Prob. F(1,262)	0.0590***
Log-likelihood ratio	3.599690	Prob. Chi-Square(1)	0.0578***
Wald Statistic	3.596886	Prob. Chi-Square(1)	0.0579***

Source: Calculated SPSS Values from the secondary Data

As p-value of F-test, log likelihood ratio and wald test are less than 0.10, the null hypothesis cannot be accepted. So it can be said that structural break during the period of May 205 is significant. It leads to infer that the effect of a declaration of MAT is significant on FII investment in the Indian equity market.

July & August 2015: Greece Crisis and Yuan Clashes

June 2015: In the first week of June 2015 Greece asks the IMF to postpone the installment due until the end of the month. In the last week of June 2015 the prime minister, Alexis Tsipras announced that Greek banks will remain closed for a while; he also announced the imposition of capital controls (€60/day withdrawal limit; most foreign transfers banned). At the end of June month, Greece misses a payment on an IMF loan and falls into arrears.

August 2015: In the first week of August 2015 the Greek Stock Exchange reopened after being closed since June 25, 2015, and fell more than 16% with bank stocks losing an average of 30% in a single day's trading. In the last week of June 2015, the Chinese stock market crash affects Greece and the Greek Stock Exchange fell 10.54%. On 11th August China slashes the yuan's fixing by a record 1.9 per cent, sparking the biggest selloff since 1994 ("A Timeline: The Chinese Yuan's Journey to Global Reserve Status - Bloomberg," 2015). Following is the alternative hypothesis to be checked.

H1 4.6.15. There are breaks at 2015M07 and 2015M08

The following table shows the result of the chow test applied to check the significance of a structural break during July and August 2015 due to the Greece Crisis.

Table 4.28
Chow Breakpoint Test: 2015M07 and 2015M08

	2015M07	2015M08		2015M07	2015M08
F-stat.	2.631184	2.8152	Prob. F(1.262)	0.1060	0.0946***
Log-likelihood ratio	2.638045	2.821558	Prob. Chi-Square(1)	0.1043	0.0930***
Wald Statistic	2.631184	2.8152	Prob. Chi-Square(1)	0.1048	0.0934***

*** Significant at 10%

Source: Calculated SPSS Values from the secondary Data

In the case of the period during July 2015, a p-value of F-test, log likelihood ratio and Wald test are greater than 0.10, the null hypothesis is accepted. So it can be said that structural break during the period of July 2015 is not significant. It leads to infer that the effect of the Greece Crisis is not significant on FII investment in the Indian equity market.

In the case of the period during August 2015, As p-value of F-test, log likelihood ratio and wald test are less than 0.10, the null hypothesis can not be accepted. So it can be said that structural break during the period of August 2015 is significant. It leads to infer that the effect of the Greece Crisis is significant on FII investment in the Indian equity market.

September 2016: Uri attack by militants and Surgical strike by the Indian army

On 18th September 2016 four heavily armed militant attack at Uri in which 19 Indian soldiers martyred. Against this attack, the Indian Army did surgical strike on 29th September 2016 against militant's launch pad across LOC in Pakistan administered Kashmir. Following is the alternative hypothesis to be checked.

H1 4.6.16. There is a break at 1999M10

The following table shows the result of the chow test applied to check the significance of a structural break during September 2016 due to Uri attack by militants and Surgical strike bythe Indian army.

Table 4.29
Chow Breakpoint Test: 2016M09

F-stat.	1.697612	Prob. F(1,262)	0.1937
Log-likelihood ratio	1.705052	Prob. Chi-Square(1)	0.1916
Wald Statistic	1.697612	Prob. Chi-Square(1)	0.1926

Source: Calculated SPSS Values from the secondary Data

As p-value of F-test, log likelihood ratio and wald test are greater than 0.10, the null hypothesis is accepted. So it can be said that structural break during the period of September 2016 is not significant. It leads to

infer that the effect of Uri attack by militants and Surgical strike by the Indian army is not significant on FII investment in the Indian equity market.

November 2016: Demonetization On 8th November 2016

The Government of Indian announced the demonetisation of all Rs. 500 and Rs. 1000 currency notes. Following is the alternative hypothesis to be checked.

H1 4.6.17. There is a break at 2016M011

The following table shows the result of the chow test applied to check the significance of a structural break during November 2016 due to Demonetization.

Table 4.30
Chow Breakpoint Test: 2016M11

F-stat.	1.776934	Prob. F(1,262)	0.1837
Log-likelihood ratio	1.784454	Prob. Chi-Square(1)	0.1816
Wald Statistic	1.776934	Prob. Chi-Square(1)	0.1825

Source: Calculated SPSS Values from the secondary Data

As p-value of F-test, log likelihood ratio and wald test are greater than 0.10, the null hypothesis is accepted. So it can be said that structural break during the period of November 2016 is not significant. It leads to infer that the effect of Demonetisation is not significant on FII investment in the Indian equity market.

February 2018: Budget 2018-19 with Long-term Capital Gain Tax and Conflict about SGXNifty:

In a move to confine shifting of volumes to abroad markets after the obligation of long-term capital gains tax (LTCG), Indian stock exchanges have decided to cease providing data to bourses in Singapore and Dubai (P. Shah, 2018). Historical data suggests a positive correlation between FIIs inflows in India and the volume of Nifty contracts traded on the Singapore Stock Exchange (SGX) (Kant & Modak, 2018). SGX

Nifty futures volumes are down 27 per cent since February 2018, when Indian bourses the first announced their plan to end data sharing and licensing pact with their global counterparts. The move was aimed at curbing overseas trading of Indian securities (Modak, 2019). Following is the alternative hypothesis to be checked.

H1 4.6.18. There is a break at 2018M02

The following table shows the result of the chow test applied to check the significance of a structural break during February 2018 due to Budget 2018-19 with Long-term Capital Gain Tax and Conflict about SGX Nifty.

Table 4.31
Chow Breakpoint Test: 2018M02

F-stat.	2.34303	Prob. F(1,262)	0.1271
Log-likelihood ratio	2.350422	Prob. Chi-Square(1)	0.1252
Wald Statistic	2.343030	Prob. Chi-Square(1)	0.1258

Source: Calculated SPSS Values from the secondary Data

As p-value of F-test, log likelihood ratio and wald test are greater than 0.10, the null hypothesis is accepted. So it can be said that structural break during the period of February 2018 is not significant. It leads to infer that the effect of Budget 2018-19 with Long-term Capital Gain Tax and Conflict about SGX Nifty is not significant on FII investment in the Indian equity market.

July 2018: US-China Trade War:

The US Customs and Border Protection initiated collecting a 25 % tariff on 818 imported Chinese products i.e List 1 valued at USD 34 billion – giving effect to the first round of tariffs, which were revised and announce on June 15, 201, and implemented on July 6, 2018. Following is the alternative hypothesis to be checked.

H1 4.6.19. There is a break at 2018M07

The following table shows the result of the chow test applied to check the significance of a structural break during July 2018 due to US-China Trade War.

Table 4.32
Chow Breakpoint Test: 2018M07

F-stat.	0.175769	Prob. F(1,262)	0.6754
Log-likelihood ratio	0.177052	Prob. Chi-Square(1)	0.6739
Wald Statistic	0.175769	Prob. Chi-Square(1)	0.6750

Source: Calculated SPSS Values from the secondary Data

As p-value of F-test, log likelihood ratio and wald test are greater than 0.10, the null hypothesis is accepted. So it can be said that structural break during the period of July 2018 is not significant. It leads to infer that the effect of the US-China Trade War is not significant on FII investment in the Indian equity market.

July 2014, February 2015 February 2016, February 2017, February 2018: Last Five Years' Union Budgets of BJP Govt.

The first budget of BJP government presented by Finance Minister Mr Arun Jaitley on 10th July 2014; In 2015 he presented Budget 2015-16 on 28th February 2015; In 2016 he presented Budget 2016-17 on February 29, 2016. From the year 2017, Budget started declaring on 1st February in place of 28th Feb. The same Finance Minister, Mr Arun Jaitely announced Budget 2017-18 on 1st February 2017 and Budget 2018-19 on 1st February 2018. There was an important announcement of Long term Capital Gain Tax in budget 2018. Following is thealternative hypothesis to be checked.

H1 4.6.20. There are breaks at 2014M07, 2015M02, 2016M02, 2017M02 and 2018M02

The following table shows the result of the chow test applied to check the significance of a structural break during July 2014, February 2015 February 2016, February 2017 and February 2018 due to Last Five Years' Union Budget of BJP Govt.

Table 4.33.
Chow Breakpoint Test: Respective Months of Budget

	2014M07	2015M03	2016M03	2017M02	201802
F-stat.	0.665561	2.360674	0.166445	0.232349	2.343030
Log-likelihood ratio	0.669791	2.368042	0.167662	0.234018	2.350422
Wald Statistic	0.665561	2.360674	0.166445	0.232349	2.343030

	2014M07	2015M03	2016M03	2017M02	2018M2
Prob. F(1,262)	0.4153	0.1256	0.6836	0.6302	0.1271
Prob. Chi-Square(1)	0.4131	0.1238	0.6822	0.6286	0.1252
Prob. Chi-Square(1)	0.4146	0.1244	0.6833	0.6298	0.1258

Source: Calculated SPSS Values from the secondary Data

As in all the above cases, a p-value of F-test, log likelihood ratio and wald test are greater than 0.10, the null hypothesis is accepted. So it can be said that structural break during the period of July 2014, February 2015 February 2016, February 2017, February 2018 are not significant. It leads to infer that the effect of the Last Five Years' Union Budgets of BJP Govt. is not significant on FII investment in the Indian equity market.

December 2018: GST Council revised tax rates

31st GST Council Meeting held on December 22, 2018, in New Delhi reduced rates on a host of commonly used products, handing assistance to the common man. The new tax rates were planned to take into effect from 1st January 1, 2019 (Das, 2018). Following is the alternative hypothesis to be checked.

H1 4.6.21. There is a break at 2018M12

The following table shows the result of the chow test applied to check the significance of a structural break during December 2018 due to GST council revised tax rates.

Table 4.34
Chow Breakpoint Test: 2018M12

F-stat.	4.320604	Prob. F(1,262)	0.0386**
Log-likelihood ratio	4.318078	Prob. Chi-Square(1)	0.0377**
Wald Statistic	4.320604	Prob. Chi-Square(1)	0.0377**

** Significant at 5%

Source: Calculated SPSS Values from the secondary Data

As p-value of F-test, log likelihood ratio and wald test are less than 0.05, the null hypothesis cannot be accepted. So it can be said that structural break during the period of December 2018 is significant. It leads to infer that the effect of the GST Council revised tax rates is significant on FII investment in the Indian equity market.

February 2019: Militant attack in Pulwama, Airstrike by Indian Air Forceat Balakot in Pakistan and Interim Budget 2019:

Shri Piyush Goyal, acting the Finance Minister presented the interim budget for 2019-20 on 1st February 2019. The foreign investors took the announcement of results of Lok Sabha Election 2019 very positively particularly when domestic investors were waiting for improvement even before the elections. The week from May 24, 2019, till June 13, 2019, Nifty saw a return of 1.4 per cent that was reinforced by inflows in FIIs via ETFs largely ("'FII inflows for 6 months after election results could be around Rs 60,000-70,000 crore',"). But at the same time looking at the last five years' data Budget speech is not significant to affect FIIs flow in the Indian equity market.

On February 14, 2019 convoy of vehicles of Indian arm to on the Jammu-Srinagar national highway attached by a militant with a vehicle collision in Pulwama. Against which the Indian Air Force (IAF) conducted airstrikes at Balakot in Pakistan on February 26, 2019. Following is the alternative hypothesis to be checked.

H1 4.6.22. There is a break at 2019M02

The following table shows the result of the chow test applied to check the significance of a structural break during February 2019 due to Militant attack in Pulwama, Airstrike by Indian Air Force at Balakot in Pakistan and Interim Budget 2019.

Table 4.35
Chow Breakpoint Test: 2019M02

F-stat.	13.96360	Prob. F(1,262)	0.0002*
Log-likelihood ratio	13.70806	Prob. Chi-Square(1)	0.0002*
Wald Statistic	13.96360	Prob. Chi-Square(1)	0.0002*

* Significant at 1%
Source: Calculated SPSS Values from the secondary Data

As p-value of F-test, log likelihood ratio and wald test are less than 0.05, the null hypothesis cannot be accepted. So it can be said that structural break during the period of February 2019 is significant. It leads to infer that the effect of Militant attack in Pulwama, Airstrike by Indian Air Force at Balakot in Pakistan and Interim Budget 2019 is significant on FII investment in the Indian equity market.

At the end of the chapter, the following table provides a summary of major finds of the major events studied for they are significant to affect the trend of FIIs Investment in the Indian equity market using the chow test.

Summary of all events and their effect on FIIs net flow in the Indian equity market

Following table provides the crux of all the events tested through the chow test for a structural break in the Indian equity market.

Table 4.36
Summary of application Chow Breakpoint Test

Events (Null Hypothesis: No break at the specified time period of the event)	Time Period	Significant or not	Null Hypothesis
13th Lok Sabha Election	Oct-99	**Significant****	Rejected
The boom in IT and Telecom companies in the US	Dec-99	**Significant****	Rejected
Ketan Parekh Scam	Feb-01	**Significant****	Rejected
Increased in Investment through P-Notes	May-03	**Significant***	Rejected
14th Lok Sabha Election	May-04	**Significant***	Rejected
P-Note Crisis, Subprime Crises and Financial Crisis of 2007-08	Oct & Dec-07	**Significant****	Rejected
Satyam Scam, Lok Sabha Election	Jan-09	**Significant***	Rejected
15th Lok Sabha Election	Apr - May-09	**Significant***	Rejected
Bailout Program of Europe and End of Subprime Crisis of US	Jun-09	**Significant***	Rejected
FIIs infused a record Rs 24,978.40 crore in Indian Equity Market	Sep-10	**Significant****	Rejected
Facilitation of inflation, relaxing on restrictions of foreign investors and the RBI's monetarypolicy	Feb-12	**Significant****	Rejected
Announcement of General anti-avoidance rules of taxation (GAAR)	Mar-12	**Significant****	Rejected
QFIs were allowed to invest in the schemes of Indian mutual funds and Indian equity shares	Jun-12	**Significant****	Rejected
16th Lok Sabha Election	Apr-May 14	**Not Significant**	Accepted
Declaration of Minimum Alternate Tax (MAT)	May-15	**Significant*****	Rejected
Greece Crisis	Aug-15	**Significant*****	Accepted
Uri attack by militants and Surgical Strike by Indian Army	Sep-16	**Not Significant**	Accepted
		Not Significant	

Demonetization	Nov-16		Accepted
Uri attack and Surgical Strike by the Indian military	Sep-16	**Not Significant**	Accepted
Budget 2018-19 with Long-term Capital Gain Tax and Conflict about SGX Nifty	Feb-18	**Not Significant**	Accepted
US-China Trade ware	Jul-18	**Not Significant**	Accepted
BJP Government Budgets from July 2014 Feb 2018	2014-2018	**Not Significant**	Accepted
GST Council revised tax rates	Dec-18	**Significant****	Accepted
Militant attack in Pulwama, Airstrikes by IAF at Balakot in Pakistan & Interim Budget 2019-20	Feb-19	**Significant***	Accepted

* Significant 1%, ** Significant at 5%, ***Significant at 10%

Summary

In this chapter, it is found that structural breaks disturb the stationarity of time-series. For better estimation of time-series model introduction of a structural break in essential. Through the application of the CUSUM and the CUSUM of Square tests, it is found that coefficients of time-series of FII investment in Indian equity market were not stable, but after introducing dummy variables of structural breaks they become stable. To identify structural breaks to be introduced in time-series of FII investment the Bai-Perron (2003) test is applied. In the application of Bai-Perron (2003) test it is found that optimally there are two structural breaks in time-series data from March 1997 to March 2019. These two major structural breaks are for the period of April 2009 and May 2015. it can be observed that in April 2009 subprime crises of the US ended and it was the period of Bailout program of Europe leads to change the trend from down to upward. In May 2015 MAT introduced by India's taxmen which adversely affected FIIs flow and it turns to the negative trend. Bai-Perron (2003) test helped to identify major break periods. The chow (1960) suggested the test to check the breakpoint for a specific event in the time-series model. In the last part of this chapter, the chow test is applied on

various national and international potential events, which is identified in the literature review. In this part of the study, it is found that Loc Sabha Election, Major changes in the International economy (especially related the US), Various scams in Indian stock market and Indian government announcement about various regulatory-related issues are the major events cause the structural break in FII investment in the Indian equity market.

CHAPTER V

FACTORS AFFECTING THE FIIs INVESTMENT DECISIONS IN INDIA – AN OVERVIEW

In order to study the FII investment in the Indian equity market, it is essential to study which major national and international factors affect FII investment in the Indian equity market. Out study towards the factors affecting FII investment in the Indian equity market, is majorly divided into two parts. The first part discusses the analysis of primary data collected from sub-brokers, and their employees as representative of individual investors in the Indian equity market. In this section on the basis of a perception of respondents, major factors affecting FII investment decision in Indian stock market were identified. To analyse these factors, first of all, a reliability test is done to check the reliability of the instrument (questionnaire) used in primary data collection. After the reliability check, factor analysis is applied to reduce these factors and group them into fewer factors. In the second part of the chapter, causality study is done between FII investment and various factors identified through primary data and literature review. Factors considered for these causal studies are Domestic Institutional Investor (DIIs) net investment, DIIs purchase, DIIs sale, Gross Domestic Product (GDP), Index of Industrial Production (IIP), US Dollar, Call money Rate and Foreign Exchange Reserve. Data related to all these factors were collected (or converted) into monthly data except GDP. As GDP data is available quarterly, FIIs net investment, Purchase and Sale are converted into quarterly data for the study. In the time-series analysis, it assumed that the series is stationary. As it is prerequisite of causality study stationarity- check is done. After stationarity-check, the causality between FIIs net investment, FIIs purchase and FIIs sell and all those factors are studied. At the end of the chapter, a summaryis depicted.

Perception about the factors affecting FIIs Investment decision in India

In the span of 22 years (1997-98 to 2018-19) FIIs has emerged to be a dominant market player, who can influence stock prices significantly in India. In an earlier chapter, it is also described that recently 21% of the Indian equity market is led by FIIs turnover which is increasing year by year. FIIs is perceived to be very large and sophisticated investors with very high impact on stock market returns in the Indian equity market. As FIIs are professional and leading investors, it is identified through the literature that they are very cautious in investing in the Indian capital market and even in selecting companies for their investment. Many investors and market players tend to make their stock market strategy based on investment pattern of FIIs and based on their perception about factors considered by FIIs in their investment decision in India. Hence the perception of investors about FII investment decision in the Indian equity market is studied. To conduct the study, the primary data related to these factors are collected through the structured questionnaire.

To analysed the primary data, first of all, the reliability of the instrument (questionnaire) is checked as a new structured questionnaire is prepared. To check the reliability, Cronbach's Alpha is used. The following sub-section of the chapter throws light on the reliability test.

Reliability Test

Cronbach (1951) suggested the value of Cronbach's Alpha, the level of acceptance to check the instrument reliability. To do further analysis of perception about the factors affecting FII investment decision, it is important to check its reliability. To check the reliability, Cronbach's Alpha is calculated using SPSS software. Table 5.1 shows the value of the Cronbach's Alpha and a number of variables taken into consideration for the reliability test.

Table 5.1.
Reliability Statistics

Cronbach's Alpha	N of Items
.720	19

Cronbach's Alpha suggests that if the value of Cronbach's Alpha is greater than 0.7, then it can be said that the instrument used for the data collection is reliable. In the study the value of Cronbach's Alpha is 0.720, which is more than the accepted level of 0.70, hence it can be said that the instrument is reliable and the data collected through this instrument can be usedfor further analysis.

Perception of the relationship between FII investment and Indices of Indianstock market

Before the study of perception about the factors affecting FII investment decision in India the relationship between FII investment and Indian stock market indices study was done. Table 5.1 presents the perception of investors about how strongly movement in Sensex and Nifty are positively or negatively related to FIIs flow in India

Table 5.2.
Perception of the relationship between FII investment and Indices of Indian stock market

	Frequency	**Per cent**	**Cumulative Percent**
Highly Negative	0	0	0
Negative	11	5.5	5.5
No relation	43	21.5	27.0
Positive	84	42.0	69.0
Highly positive	62	31.0	100.0
Total	200	100.0	

The result of Table 5.1 shows that 21.5% of respondents perceive that there is no relation between FIIs flow and Indian stock market fluctuations

(Sensex and Nifty being major representatives). While 78.5% of respondents believe that there is a relation between FIIs flow and Indian stock markets. Out of this 73%, respondents believe that there is positive (31% highly positive) relation between FIIs flow and the Indian stock market. Joshi and Desai (2015) have also found that the correlations between FII investment and the Indian equity market are varying in different phases. They emphasised that FIIs Investment and Sensex are having strong positive correlation during bullish trend than correlation during the bearish trend. Thus, it is essential to study the behaviour of FIIs to understand the movement and reasons for the movement in the Indian stock market. Following results show various factors affecting FII investment behaviour.

Perception about the factors affecting FII investment decision for selecting Companies in the Indian stock market:

Towards the study of various factors affecting FII investment decision for selecting companies in the Indian stock market, perceptions on the bases of the rating responded is bifurcated. The factors are the most important if the average rating on 5 points scale is more 4.25 and having standard deviation very less that is less than 1. To identify the second level of importance, other important factors are bifurcated into an average rating less than 4.25 but more than 3.5 and a standard deviation of less than 1. In the last category of the least important factors average rating is less than 3.75 with the standard deviation of more than 1.

On the bases of above categorisations, the following factors were found the most important factors perceived by the investors that FIIs considers in selecting companies for investing inthe Indian stock market.

Table 5.3
Most Important Factors

	Mean	**S.D.**
Companies belong to Financial Services Sector	4.37	.791
Large Cap Stocks	4.36	.890
Companies belong to Oil & Gas Sector	4.32	1.005
Companies belong to IT Sector	4.31	.829
Companies belong to Banking Sectors	4.29	.835
Earnings Per Share (EPS) of the company	4.29	.915
Dividend Per Share (DPS) of the company	4.27	.872

Source: Authors own calculations

Out cum of Table 5.3 advocates that FIIs have preferences over certain sector-specific companies while selecting the stock in India. The result of Table 5.3 suggests that the most preferred sectors for FIIs are Financial Services, Oil & Gas, IT and Banking. With sector- specific stocks, FIIs also prefer to select large-cap stocks. FIIs take into note the EPS and DPS of companies while selecting them for investment. Other researchers have also acknowledged similar results. Chen et al. (2008) have also found QFlls (Qualified Financial Institutional investors) select the stocks, they herd on securities classified in specific industries and they also prefer the stocks with high past returns and large firm size. K. P. Prasanna (2008) has also studied that among the financial performance variables earnings per share is a significant factor influencing their investment decision. Other factors which are considered by FIIs, which has mean value up to 3.7 and standard deviation around 1 or lesser, are listed in Table 5.4.

Table 5.4
Other Important Factors

	Mean	S.D.
Companies with a long history	4.10	.954
Companies belong to Pharmaceuticals Sector	4.01	1.035
Companies belong to Telecom Services Sector	3.92	1.097
Liquid Firms	3.73	.981
Companies with Low Stake of DIIs	3.71	.980
Young Companies	3.70	.898

Source: Authors own calculations

Factors listed in Table 5.4 are again advocating preference of FIIs towards certain sectors- specific stocks. Other important factors also include a long history of companies, liquidity of the company, low DIIs stake and comparatively newly established companies. Factors which have mean values less than 3.7 and their standard deviations around one are perceived by the investors less important for FIIs to select companies while investing in the Indian stock market. Such factors are as shown in Table 5.5.

Table 5.5
Other Factors

	Mean	S.D.
Corporate Governance of the company	3.66	1.054
High Volatile Stocks	3.65	1.060
Mid Cap Stocks	3.63	1.004
Companies belong to Manufacturing Sectors	3.61	.976
Highly Levered Firms	3.61	.907
Small-Cap Stocks	3.56	1.030
Companies with High Stake of DIIs	3.47	1.056
Low Volatile Stock.	3.38	1.000
Companies belong to Aviation	3.35	1.079
Companies belong to Real Estate.	3.17	1.272
Companies belong to Tourism & Hospitality.	3.04	1.181

Source: Authors own calculations

Perception of Economic and Global Factors

FIIs take investment decisions not only on the basis of microeconomic factors which are stock-specific but also macroeconomic factors as well as international factors. In the study, factors viz. purchasing power parity (Amita, 2014), GDP growth rate, inflation-related indices as suggested by Rai and Bhanumurthy (2004) and Amita (2014) are studied. Consumer price index, Wholesale price index, Index of industrial production, Fiscal deficit, Interest rate in FII's domestic country, Problems in domestic country of FIIs, fundamentals of economy suggested by S Kumar (2001) like Growth opportunity in domestic country of FIIs, Growth rate in other developed nations, Growth potentials and Problems in other emerging economies, factors related to new government depicted by Anand (2015a), Anand (2015b) and Anand (2015c) like Make in India campaign, Increase in Investment limit in various sectors for FIIs, Approach of Prime Minister MODI towards relations with other nations, Ease in tax structure for FIIs, GST bill, FIIs limit and Bureaucracy.

As a number of factors affecting FII investment decision in India are considered, they are grouped them into few factors for better understanding. Factor analysis helped to reduce these 19 factors into fewer meaningful groups of factors. Following discussion throws light on the results of factors analysis.

Factor Analysis

Factor analysis is useful to reduce the number of factors into fewer factors. To conduct factor analysis, certain steps are followed. First of all, to check the adequacy of the sample Kaiser- Meyer-Olkin (KMO) and Bartlett test are used. After adequacy check to reduce factors up to a particular number, a scree plot is used. Finally, in the factor analysis component matrix is used to find similar factors together and grouping them to reduce the number of factors into fewer factors.

KMO and Bartlett's Test

To conduct the factor analysis Kaiser-Meyer-Olkin (KMO) is a measure of sampling adequacy and its value should be greater than 0.6 for the sample to be adequate for undertaking factor analysis. At the same time, the p-value of Bartlett (1950) test of sphericity should be less than 0.05. Following table shows the result of KMO and Bartlett's Test.

Table 5.6

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.696
Bartlett's Test of Sphericity	Approx. Chi-Square	1465.666
	Df	171
	Sig.	.000

Above table displays, KMO and Bartlett's Test's the results for the adequacy of data for factor analysis. Since the value of KMO test is 0.696 which is higher than 0.6 and the p-value of Bartlett's test is significant, as it is less than 0.05, it is confirmed that factor analysis can be undertaken considering these data.

After confirming the adequacy, it is needed to identify a number of factors up to which can be reduced the factors. Scree plot is one of the technique to identify a possible number of factors to be reduced. Following discussion provides details about it.

Scree Plot

The Scree Plot is used to determine the optimal number of components. The component beyond the point at which the curve changes its direction and becomes horizontal contributes very little to variation and therefore they can be eliminated.

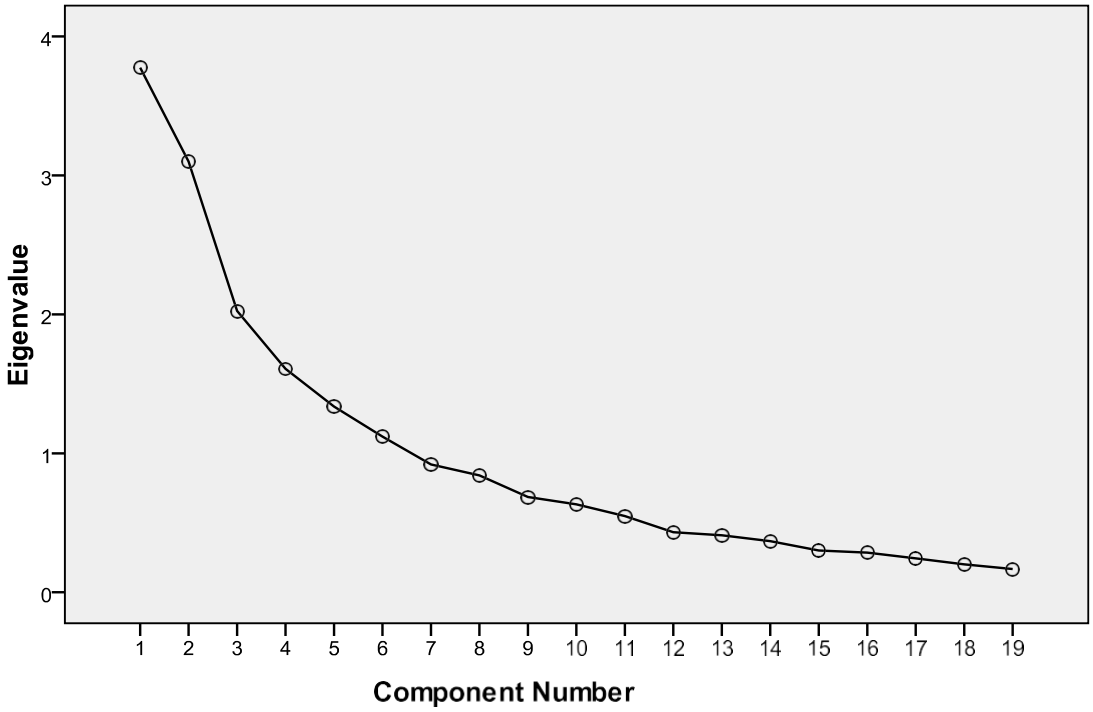

Figure 5.1.
Scree plot

From Figure 5.1, it is found that only six components lie on the steeper side of the curve and all other lies on the flat portion of the curve. Therefore, the scree plot suggests that in the study an optimal number of components are six. After identifying an optimal number, to group together similar kind of factors component matrix is used.

Rotated component matrix

Rotated component matrix is the key output of principal components analysis. It contains estimates of the correlations between each of the factors and the estimated reduced numberof components.

Table 5.7
Rotated Component Matrix

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.						
a. Rotation converged in 7 iterations.						
	Component					
	1	2	3	4	5	6
1 Purchasing power parity [currency value]			.392			
2 Economic growths. [GDP]						.648
3 Consumer price index [inflation]			.849			
4 Wholesale price index [inflation]			.801			
5 Index of industrial production [IIP]			.776			.315
6 Fiscal deficits	.324					.617
7 Interest rate in FII's domestic country.				.739		
8 Problems in the domestic country of FIIs.				.875		
9 Growth opportunity in the domestic country of FIIs.				.699		
10 Growth rate in other nations.		.868				
11 Growth in the economy of other developing countries.		.889				

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.						
12 Problems in other developing countries.		.842				
13 Make in India campaign.					.793	
14 Increase in limit of Investment limit in various sectorsfor FIIs.					.418	.611
15 Approach of Prime Minister MODI towards relationswith other nations.					.808	
16 Ease in tax structure for FIIs. [MAT]					.329	.630
17 Unable to pass goods and service tax [GST] bill.	.800					
18 Revision in the FII investment limit in Governmentsector. [G sec.]	.892					
19 Highly bureaucratic system.	.885					

Source: Authors own calculations

From the above table of the rotated component matrix using principal component analysis, the number of factors could minimize from 19 to 6 factors. Those 6 factors derived out of 19 factors are as follow 1. Ineffective implementation of economic policy. 2. The challenges posed by the international environment. 3. The purchasing power of Indian rupee i.e. Inflation related Issues (Rai & Bhanumurthy, 2004), (Amita, 2014), (Anand, 2015c), 4. Opportunities and challenges in the domestic country of FIIs (Rai & Bhanumurthy, 2004) 5. The attractiveness of economic policy (Bose & Coondoo, 2004) and 6. The financial ease initiated by the government.

Summary of Perception about FII investment

Considering FIIs as professional investors it is found that they are very cautious in investing in the Indian equity market and even in selecting companies for their investment. It is observed that FIIs prefers large-cap companies considering their EPS and DPS. They also prefer to invest in Oil & Gas, Information Technology and Banking related scrip than other sectors

in the Indian equity market. It is summarized that major six factors with which FIIs are the more concern while investing in India are i) Bureaucracy related issues in Economy / Slow decision making, ii) Issues related to other developing (competitor) countries, iii) Inflation related Issues, iv) Issues related to origin country of FIIs and v) Initiatives of new government and Current burnings issues related to Indian Economy.

In the first part of this chapter analysis of factors affecting FII investment in India is done through the primary data, in the latter part of this chapter certain factors affecting FII investment in the Indian equity market are confirmed using secondary data. For this analysis of the factors affecting FII investment in the Indian equity market, such factors are identified from the earlier study of primary data as well as through further literature review. In literature, it is also found that there could be bidirectional causality between these factors and FII investment. Thus, following discussion of the chapter is about the causality betweenFII investment and various factors affecting.

Causality between FIIs' Investment and Various Factors

In order to confirm the influence of factors identified in the previous section, first of all the correlation of these factors is checked and then to understand types of relation causality of these factors with FII investment is checked.

In order to identify various factors affecting the Indian equity market, primary data is collected and summarized through factors analysis. Various factors are identified throughout the literature. In this section to confirm the relationship between those factors and FII investment in the Indian equity market, secondary data are collected from websites of RBI, moneycontrol.com (provided by SEBI). All those factors for which secondary data are collected as follows:

1. Net investment is done by DIIs in the Indian equity market
2. Purchase of by DIIs in the Indian equity market
3. Sale of by DIIs in the Indian equity market
4. Index of Industrial Production (Base year 2011-12)

5. Wholes Price Index (Base year 2011-12) as a proxy of inflation
6. Exchange rate of US dollar
7. Gross Domestic Product (Base year 2011-12)
8. Call rate
9. Average foreign exchange reserve of US dollar

Before the study of causality between FII investment and various factors, **stationarity-check** is done through the unit root test. To check the stationarity of the time-series data, the Augmented Dickey-Fuller test is applied as a unit root test. Unit root test provides information about the condition in which errors in time-series data are correlated called a stochastic trend. If there is an existence of unit root in time series, it does not allow for furtherstudy of time series as it may adversely affect the result of the analysis.

Causality study between FII investment and individual factors is discussed in further sub- sections of this section. In the process of checking causality, the first, there is a need to find lag at which causality is possible. To check lag order, **VAR lag order selection** criteria are used. For checking causality each identified factor with FII investment, values of different selection criteria (SqLR: sequential modified LR test statistic (each test at 5% level), FPEr.: Final prediction error, AIC: Akaike information criterion, SIC: Schwarz information criterion and HQn: Hannan-Quinn information criterion) are generated based on which lag order is selected to check the causality. This process is done and represented in this chapter for each of the factors selected for checking causality with FII investment.

Causality between FIIs and Domestic Institutional Investors (DIIs)

Causality between FII investment and DIIs investment in the Indian equity market can be studied by bifurcating them into the net purchase, sale and net investment. Following variables stands for various time series data for their causality study between FIIs and DIIs.

FIIs_NET_EQ: FIIs Net Investment in Indian Equity Market

FIIs_PUR_EQ: FIIs Purchase in Indian Equity Market

FIIs_SAL_EQ: FIIs Sell in Indian Equity Market

DIIs_NET_EQ: DIIs Net Investment in Indian Equity Market

DIIs_PUR_EQ: DIIs Purchase in Indian Equity Market

DIIs_SAL_EQ: DIIs Sale in Indian Equity Market

These segregated data of FIIs and DIIs for their Net Investment, Purchase and Sale were collected from moneycontrol.com (collected from SEBI) for the period of January 2006 to March 2019. Data related to DIIs investment is provided in terms of Mutual Fund (MF) Investment in the Indian equity market. Here Net investment means Purchase minus sales. As an elementary check of the relationship between FII investment and DIIs investment in the Indian equity market, the correlation is used. The following table shows the correlation matrix for FIIs and DIIs investment.

Table 5.8
Correlation Matrix of FIIs and DIIs flow

	DIIs_NET_EQ	DIIs_PUR_EQ	DIIs_SAL_EQ
FIIs_NET_EQ	-0.567543	-0.180845	-0.006611
FIIs_PUR_EQ	0.485924	0.761990	0.765410
FIIs_SAL_EQ	0.693302	0.827514	0.767131

From Table 5.8, it can be observed that there is a negative relationship between the net investment of FIIs and the net investment of DIIs. It means when there is a net purchase of FIIs in the Indian equity market DIIs goes for net sale and vice versa. But at the same time, there is a strong positive correlation among all purchase and sale of FIIs and DIIs related data. Which is difficult to interpret, but from the negative correlation between the net investment of FIIs and DIIs it can be said that FIIs purchase lead DIIs sale and DIIs sale leads to FIIs purchase and vice versa. To understand the direction of FII investment and DIIs investment, Figure 5.2 could be useful. It shows the line chart of FIIs net flow and DIIs net flow in the Indian equity market during the period of January 2006 to March 2019.

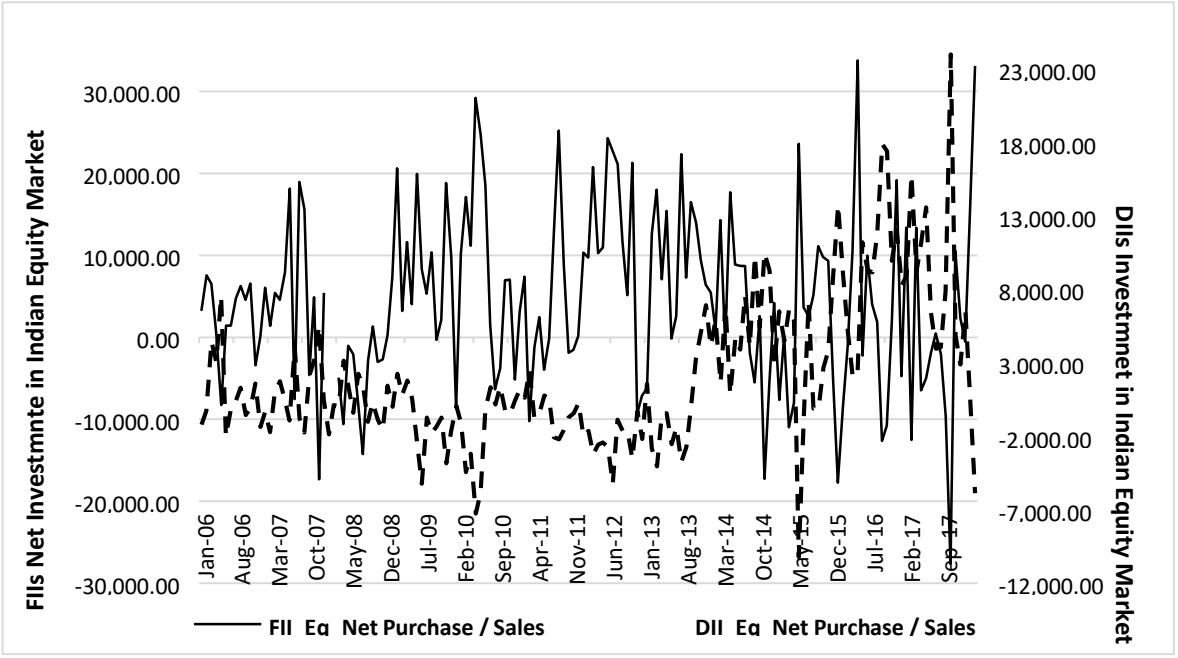

Figure 5.2
FIIs & DIIs Investment in Indian Equity Market

As it can be observed from Figure 5.2 that FIIs and DIIs have a negative relationship among them. Even the coefficient of calculation of -0.56754 also suggests the same. But correlation does not show the direction of causality between the FIIs flow and the DIIs flow.

In order to identify whether FII investment causes to DIIs investment or vice versa causality study can be applied. To know these causalities Granger causality is used. To apply the Granger causality all times series data must be stationary. To check the stationarity of all time-series data viz. FIIs_Net_Eq, FIIs_Pur_Eq and FIIs_Sal_Eq and DIIs_Net_Eq, DIIs_Pur_Eq and DIIs_Sal_Eq, unit root test is applied.

Unit Root Test

To check the stationarity of the time-series data, the Augmented Dickey-Fuller test is applied. To check the stationarity of FIIs and DIIs time-series data, the following is the nullhypothesis.

H0 5.2.1 All time-series data (FIIs_Net_Eq, FIIs_Pur_Eq, FIIs_Sal_Eq, DIIs_Net_Eq, DIIs_Pur_Eq, DIIs_Sal_Eq) have a unit root.

Table 5.9
Test statistic of ADF for FIIs_Net_Eq

Variable	Exogenous	t-statistics	Prob.
FIIs_Net_Eq	None	-7.734634	0.0000*
	Constant	-8.857318	0.0000*
	Constant, Linear Trend	-8.82856	0.0000*
FIIs_Pur_Eq	None	0.143032	0.7261
	Constant	-2.003266	0.2853
	Constant, Linear Trend	-4.459023	0.0024
FIIs_Sal_Eq	None	0.185520	0.7388
	Constant	-1.706539	0.4259
	Constant, Linear Trend	-2.710153	0.2341
	None	-12.83464	0.0000*
	Constant	-12.85102	0.0000*

D(FIIs_Pur_Eq) (First Difference)	Constant, Linear Trend	-8.002393	0.0000*
D(FIIs_Sal_Eq) (First Difference)	None	-15.11177	0.0000*
	Constant	-15.12111	0.0000*
	Constant, Linear Trend	-15.07016	0.0000*
DIIs_Net_Eq	None	-2.740218	0.0063*
	Constant	-2.971464	0.0399**
	Constant, Linear Trend	-6.142986	0.0000*
DIIs_Pur_Eq	None	0.455923	0.8118
	Constant	-0.645113	0.8559
	Constant, Linear Trend	-1.712318	0.7414
DIIs_Sal_Eq	None	1.159539	0.9363
	Constant	0.066433	0.9622
	Constant, Linear Trend	-1.223925	0.9016
D(DIIs_Pur_Eq) (First Difference)	None	-21.11594	0.0000*
	Constant	-21.14993	0.0000*
	Constant, Linear Trend	-21.13318	0.0000*
D(DIIs_Sal_Eq) (First Difference)	None	-21.35386	0.0000*
	Constant	-21.44917	0.0000*
	Constant, Linear Trend	-21.54373	0.0000*

* Significant at 1% and ** Significant at 5% level of Significance

From the above test, it can be said that the null is rejected in the cases of FIIs_Net_Eq and DIIs_Net_Eq. Thus both of the series are stationary. While in case of FIIs_Pur_Eq, FIIs_Sal_Eq, DIIs_Pur_Eq and DIIs_Sale_Eq null is accepted and they are having unit root i.e. these time series data are not stationary. While taking the first difference of them, the result shows rejecting the null and all series are stationary at the first difference.

To study the causality between FIIs and DIIs a total of 9 causalities among Net investment,Purchase and Sales of FIIs and DIIs must be studied as follow.

1. Causality between Net Investment of FIIs in the Indian Equity Market (FIIs_Net_Eq)and Net Investment of DIIs in Indian Equity Market (DIIs_Net_Eq)
2. Causality between Purchase of FIIs in Indian Equity Market (FIIs_Pur_Eq) and Netinvestment of DIIs in Indian Equity Market (DIIs_Net_Eq)
3. Causality between Sale of FIIs in Indian Equity Market (FIIs_Sal_Eq) and Netinvestment of DIIs in Indian Equity Market (DIIs_Net_Eq)
4. Causality between Net Investment of FIIs in Indian Equity Market (FIIs_Net_Eq)and Purchase of DIIs in Indian Equity Market (DIIs_Pur_Eq)
5. Causality between Purchase of FIIs in Indian Equity Market (FIIs_Pur_Eq) andPurchase of DIIs in Indian Equity Market (DIIs_Pur_Eq)
6. Causality between Sale of FIIs in Indian Equity Market (FIIs_Sal_Eq) and Purchaseof DIIs in Indian Equity Market (DIIs_Pur_Eq)
7. Causality between Net Investment of FIIs in Indian Equity Market (FIIs_Net_Eq)and Sale of DIIs in Indian Equity Market (DIIs_Sal_Eq)
8. Causality between Purchase of FIIs in Indian Equity Market (FIIs_Pur_Eq) and Saleof DIIs in Indian Equity Market (DIIs_Sal_Eq)
9. Causality between Sale of FIIs in Indian Equity Market (FIIs_Sal_Eq) and Sale ofDIIs in Indian Equity Market (DIIs_Sal_Eq)

Following the discussion in this chapter describes all the above potential causality. Before applying causality test optimal lag length needed to be identified under the VAR model. Hence in the following section of the chapter, optimal lag length order is identified under the VAR model which is followed by Granger Causality test.

Causality between Net Investment of FIIs in the Indian Equity Market (FIIs_Net_Eq) and Net Investment of DIIs in Indian Equity Market (DIIs_Net_Eq)

The following table shows the statistics of VAR lag selection criteria to study the causality between Net Investment of FIIs in Indian Equity Market (FIIs_Net_Eq) and Net Investment of DIIs in Indian Equity Market (DIIs_Net_Eq).

Table 5.10.
VAR Lag Order Selection Criteria

Lag	LgLk	SqLR	FPEr.	AIC	SIC	HQn
0	-2726.654	NA	2.27e+15	41.0324	41.0758	41.0500
1	-2669.833	111.0795	1.02e+15	40.2380	40.3684*	40.2910
2	-2660.647	17.68129	9.47e+14	40.1601	40.3774	40.2484*
3	-2655.717	9.342048	9.34e+14*	40.1461*	40.4503	40.2697
4	-2653.921	3.347208	9.66e+14	40.1792	40.5704	40.3382
5	-2653.009	1.673310	1.01e+15	40.2257	40.7038	40.4199
6	-2651.450	2.813812	1.05e+15	40.2624	40.8274	40.4920
7	-2649.984	2.600640	1.09e+15	40.3005	40.9524	40.5654
8	-2644.805	9.033980	1.07e+15	40.2827	41.0216	40.5830
9	-2639.197	9.615004*	1.05e+15	40.2586	41.0844	40.5941
10	-2637.327	3.149104	1.08e+15	40.2906	41.2033	40.6615
11	-2632.474	8.026817	1.07e+15	40.2778	41.2774	40.6840
12	-2630.792	2.732265	1.11e+15	40.3126	41.3992	40.7541

* indicates lag order selected by the respective criterion in their column

SqLR: sequential modified LR test statistic (each test at 5% level)FPEr.: Final prediction error

AIC: Akaike information criterion SIC: Schwarz information criterion

HQn: Hannan-Quinn information criterion

From the above VAR lag order selection criteria, it can be observed that out of five criteria two criteria suggest checking causality at lag order of 3. Following table shows the result of Pairwise Granger Causality Tests at a lag length of 3.

Table 5.11.
Pairwise Granger Causality Tests at Lag length of 3

Null Hypothesis:		Obs	F-Statistic	Prob.
H0 5.2.2	DIIs_NET_EQ does not Granger Cause FIIs_NET_EQ	151	1.15983	0.3273
H0 5.2.3	FIIs_NET_EQ does not Granger Cause DIIs_NET_EQ		4.92095	0.0028

Source: SPSS calculated values from secondary data

From the above result of Granger Causality Tests, it can be said that there is a unidirectional relationship between FIIs net investment and DIIs net investment in the Indian equity market. DIIs net flow in the Indian equity market does not cause the FIIs net flow in the Indian equity market. But at a 95% level of confidence, it can be said that the FIIs net flow in the Indian equity market causes the DIIs net flow in the Indian equity market.

Causality between Purchase of FIIs in Indian Equity Market (D(FIIs_Pur_Eq))and Net investment of DIIs in Indian Equity Market (DIIs_Net_Eq)

The following table shows the statistics of VAR lag selection criteria to study the causality between Purchase of FIIs in Indian Equity Market (D(FIIs_Pur_Eq)) and Net investment of DIIs in Indian Equity Market (DIIs_Net_Eq).

Table 5.12
VAR Lag Order Selection Criteria

Lag	LgLk	SqLR	FPEr.	AIC	SIC	HQn
0	-2799.38	NA	1.29e+16	42.7692	42.8131	42.7870
1	-2738.04	119.869	5.36e+15	41.8938	42.0255*	41.9473
2	-2731.64	12.3090	5.17e+15	41.8572	42.0767	41.9464
3	-2721.28	19.6173	4.69e+15	41.7600	42.0673	41.8849*
4	-2718.89	4.46038	4.81e+15	41.7846	42.1796	41.9451
5	-2710.55	15.2648	4.50e+15	41.7184	42.2013	41.9146
6	-2706.79	6.77670	4.52e+15	41.7221	42.2927	41.9539
7	-2703.00	6.72057	4.54e+15	41.7252	42.3836	41.9927
8	-2697.86	8.93774	4.47e+15	41.7079	42.4541	42.0111
9	-2689.74	13.8898*	4.20e+15*	41.6449*	42.4789	41.9838
10	-2689.18	0.93579	4.43e+15	41.6975	42.6193	42.0720
11	-2687.63	2.55666	4.61e+15	41.7349	42.7445	42.1451
12	-2684.42	5.19304	4.67e+15	41.7469	42.8443	42.1929

* indicates lag order selected by the respective criterion in their column
Source: SPSS calculated values from secondary data

From the above VAR lag order selection criteria, it can be observed that out of five criteria three criteria suggest checking causality at lag order of 9. Following table shows the result of Pairwise Granger Causality Tests at a lag length of 9.

Table 5.13. Pairwise Granger Causality Tests at Lag length of 9

Null Hypothesis:	Obs	F-Statistic	Prob.
H0 5.2.4 D(FIIs_PUR_EQ) does not Granger CauseDIIs_NET_EQ	137	2.47211	0.0128
H0 5.2.5 DIIs_NET_EQ does not Granger Cause D(FIIs_PUR_EQ)		1.78953	0.0772

Source: SPSS calculated values from secondary data

From the above result of Granger Causality Tests, it can be said that there is a unidirectional relationship between FIIs purchase in the Indian equity market and DIIs net investment. At a 95% level of confidence, it can be said that FIIs purchase in the Indian equity market cause DIIs net investment in the Indian equity market. But DIIs net investment does not cause FIIs purchase in the Indian equity market.

Causality between Sale of FIIs in Indian Equity Market (D(FIIs_Sal_Eq)) and Net investment of DIIs in Indian Equity Market (DIIs_Net_Eq)

The following table shows the statistics of VAR lag selection criteria to study the causality between Sale of FIIs in Indian Equity Market (D(FIIs_Sal_Eq)) and Net investment of DIIs in Indian Equity Market (DIIs_Net_Eq).

Table 5.14. VAR Lag Order Selection Criteria

Lag	LgLk	SqLR	FPEr.	AIC	SIC	HQn
0	-2784.16	NA	1.02e+16	42.5368	42.5807	42.5546
1	-2720.38	124.629	4.09e+15	41.6242	41.7559	41.6777
2	-2703.74	32.0223	3.38e+15	41.4311	41.6506*	41.5203
3	-2696.73	13.2673	3.22e+15	41.3852	41.6925	41.5101*
4	-2694.32	4.48049	3.31e+15	41.4095	41.8046	41.5701
5	-2685.21	16.7036	3.06e+15	41.3314	41.8143	41.5276
6	-2680.31	8.81196	3.02e+15	41.3178	41.8885	41.5497
7	-2678.28	3.59561	3.11e+15	41.3479	42.0063	41.6154
8	-2669.83	14.7064*	2.91e+15	41.2799	42.0262	41.5832
9	-2665.20	7.92502	2.89e+15*	41.2703*	42.1043	41.6092
10	-2664.81	0.65497	3.05e+15	41.3254	42.2472	41.6999
11	-2663.27	2.54554	3.18e+15	41.3629	42.3725	41.7731
12	-2660.94	3.76104	3.27e+15	41.3885	42.4859	41.8344

* indicates lag order selected by the respective criterion in their column

Source: SPSS calculated values from secondary data

From the above VAR lag order selection criteria, it can be observed that out of five criteria two criteria suggest checking causality at lag order of 9. Following table shows the result ofPairwise Granger Causality Tests at a lag length of 9.

Table 5.15
Pairwise Granger Causality Tests at Lag length of 9

Null Hypothesis:		Obs	F-Statistic	Prob.
H0 5.2.6	D(FIIs_SAL_EQ) does not Granger Cause DIIs_NET_EQ	137	2.83754	0.0047
H0 5.2.7	DIIs_NET_EQ does not Granger Cause D(FIIs_SAL_EQ)		1.17947	0.3144

Source: SPSS calculated values from secondary data

From the above result of Granger Causality Tests, it can be said that there is a unidirectional relationship between FIIs sell in the Indian equity market and DIIs net investment in the Indian equity market. At a 95% level of confidence**,** it can be said that FIIs sell in the Indian equity market cause DIIs net investment in the Indian equity market. But DIIs net investmentdo**es** not cause FIIs sell in the Indian equity market.

Causality between Net Investment of FIIs in Indian Equity Market(FIIs_Net_Eq) and Purchase of DIIs in Indian Equity Market (D(DIIs_Pur_Eq))

The following table shows the statistics of VAR lag selection criteria to study the causality between Net Investment of FIIs in Indian Equity Market (FIIs_Net_Eq) and Purchase of DIIsin Indian Equity Market (D(DIIs_Pur_Eq)).

Table 5.16
VAR Lag Order Selection Criteria

Lag	LgLk	SqLR	FPEr.	AIC	SIC	HQn
0	-2739.74	NA	3.77e+15	41.5415	41.5852	41.5593
1	-2712.40	53.4325	2.65e+15	41.1879	41.3189*	41.2412
2	-2705.23	13.7981	2.52e+15	41.1399	41.3583	41.2286*
3	-2700.43	9.08183	2.49e+15*	41.1278*	41.4336	41.2521
4	-2699.05	2.57863	2.59e+15	41.1675	41.5606	41.3272
5	-2695.30	6.86994	2.61e+15	41.17133	41.6518	41.3665
6	-2689.81	9.89718	2.55e+15	41.1487	41.7165	41.3795
7	-2689.67	0.25437	2.70e+15	41.2072	41.8623	41.4734
8	-2687.96	2.97830	2.80e+15	41.2419	41.9844	41.5436
9	-2681.62	10.8555	2.71e+15	41.2064	42.0363	41.5436
10	-2678.99	4.42568	2.77e+15	41.2271	42.1444	41.5999
11	-2671.89	11.7317*	2.65e+15	41.180	42.1847	41.5883
12	-2668.69	5.17439	2.68e+15	41.192	42.2843	41.6361

* indicates lag order selected by the respective criterion in their column
Source: SPSS calculated values from secondary data

From the above VAR lag order selection criteria, it can be observed that out of five criteria two criteria suggest checking causality at lag order of 3. Following table shows the result of Pairwise Granger Causality Tests at a lag length of 3.

Table 5.17. Pairwise Granger Causality Tests at Lag length of 3

Null Hypothesis:	Obs	F-Statistic	Prob.
H0 5.2.8 D(DIIs_PUR_EQ) does not Granger CauseFIIs_NET_EQ	150	4.07229	0.0082
H0 5.2.9 FIIs_NET_EQ does not Granger Cause D(DIIs_PUR_EQ)		4.14680	0.0075

From the above result of Granger Causality Tests, it can be said that there is a bidirectional relationship between DIIs purchase in the Indian equity market and FIIs net investment in the Indian equity market. At a 95% level of confidence, it can be said that DIIs purchased in the Indian equity market cause FIIs net investment in the Indian equity market, as well as FIIs net investment cause DIIs, Purchase in the Indian equity market.

Causality between Purchase of FIIs in Indian Equity Market (D(FIIs_Pur_Eq)) and Purchase of DIIs in Indian Equity Market(D(DIIs_Pur_Eq))

The following table shows the statistics of VAR lag selection criteria to study the causality between Purchase of FIIs in Indian Equity Market (D(FIIs_Pur_Eq)) and Purchase of DIIs in Indian Equity Market (D(DIIs_Pur_Eq)).

Table 5.18.
VAR Lag Order Selection Criteria

Lag	LgLk	SqLR	FPEr.	AIC	SIC	HQn
0	-2786.00	NA	1.05e+16	42.5650	42.6089	42.5828
1	-2752.86	64.7775	6.72e+15	42.1200	42.2516	42.1735
2	-2742.75	19.4322	6.13e+15	42.0268	42.2463*	42.1160
3	-2736.09	12.6250	5.88e+15	41.9861	42.2933	42.1109*
4	-2734.96	2.08966	6.15e+15	42.0300	42.4251	42.1905
5	-2729.78	9.48996	6.04e+15	42.0120	42.4948	42.2082
6	-2723.93	10.5475	5.87e+15	41.9837	42.5543	42.2155
7	-2721.70	3.94615	6.04e+15	42.0107	42.6692	42.2783
8	-2718.83	4.98902	6.15e+15	42.0280	42.7743	42.3312
9	-2710.14	14.8725*	5.73e+15*	41.9563*	42.7903	42.2952
10	-2708.13	3.36459	5.92e+15	41.9868	42.9086	42.3614
11	-2705.16	4.90442	6.02e+15	42.0024	43.0120	42.4127
12	-2702.51	4.29341	6.16e+15	42.0230	43.1204	42.4689

* indicates lag order selected by the respective criterion in their column
Source: SPSS Calculated values using secondary data.

From the above VAR lag order selection criteria, it can be observed that out of five criteria three criteria suggest checking causality at lag order of 9. Following table shows the result of Pairwise Granger Causality Tests at a lag length of 9.

Table 5.19. Pairwise Granger Causality Tests at Lag length of 9

Null Hypothesis:	Obs	F-Statistic	Prob.
H0 5.2.10 D(FIIs_PUR_EQ) does not Granger CauseD(DIIs_PUR_EQ)	137	0.85729	0.5654
H0 5.2.11 D(DIIs_PUR_EQ) does not Granger Cause D(FIIs_PUR_EQ)		0.85159	0.5705

Source: SPSS calculated values using secondary data

From the above result of Granger Causality Tests, it can be said that there is no causality between FIIs Purchase in the Indian equity market and DIIs Purchase in the Indian equity market.

Causality between Sale of FIIs in Indian Equity Market (D(FIIs_Sal_Eq)) and Purchase of DIIs in Indian Equity Market (D(DIIs_Pur_Eq))

The following table shows the statistics of VAR lag selection criteria to study the causality between Sale of FIIs in Indian Equity Market (D(FIIs_Sal_Eq)) and Purchase of DIIs in Indian Equity Market (D(DIIs_Pur_Eq)).

Table 5.20.

VAR Lag Order Selection Criteria

Lag	LgLk	SqLR	FPEr.	AIC	SIC	HQn
0	-2752.23	NA	6.26e+15	42.0493	42.0932	42.0671
1	-2718.31	66.2809	3.97e+15	41.5926	41.7242	41.6461
2	-2700.78	33.7287	3.23e+15*	41.3859*	41.6054*	41.4751*
3	-2697.50	6.20240	3.26e+15	41.3970	41.7043	41.5218
4	-2697.01	0.91094	3.44e+15	41.4506	41.8457	41.6111
5	-2693.93	5.65464	3.49e+15	41.4645	41.9474	41.6607
6	-2685.86	14.5311*	3.28e+15	41.4025	41.9731	41.6343
7	-2683.84	3.57662	3.39e+15	41.4327	42.0911	41.7003
8	-2680.92	5.07572	3.45e+15	41.4492	42.1955	41.7525
9	-2676.00	8.41891	3.40e+15	41.4351	42.2692	41.7740
10	-2675.16	1.40469	3.58e+15	41.4834	42.4053	41.8580
11	-2674.58	0.96703	3.78e+15	41.5356	42.5452	41.9458
12	-2668.79	9.36299	3.68e+15	41.5083	42.6057	41.9542

*indicates lag order selected by the respective criterion in their column
Source: SPSS Calculated values using secondary data

From the above VAR lag order selection criteria, it can be observed that out of five criteria four criteria suggest checking causality at lag order of 2. Following table shows the result of Pairwise Granger Causality Tests at a lag length of 2.

Table 5.21. Pairwise Granger Causality Tests at Lag length of 2

Null Hypothesis:	Obs	F-Statistic	Prob.
H0 5.2.12 D(FIIs_SAL_EQ) does not Granger Cause D(DIIs_PUR_EQ)	151	0.03620	0.9645
H0 5.2.13 D(DIIs_PUR_EQ) does not Granger Cause D(FIIs_SAL_EQ)		0.05875	0.9430

Source: SPSS Calculated values using secondary data

From the above result of Granger Causality Tests, it can be said that there is no causality between FIIs sell in the Indian equity market and DIIs Purchase in the Indian equity market.

Causality between Net Investment of FIIs in Indian Equity Market (FIIs_Net_Eq) and Sale of DIIs in Indian Equity Market (D(DIIs_Sal_Eq))

The following table shows the statistics of VAR lag selection criteria to study the causality between Net Investment of FIIs in Indian Equity Market (FIIs_Net_Eq) and Sale of DIIs inIndian Equity Market (D(DIIs_Sal_Eq)).

Table 5.22.
VAR Lag Order Selection Criteria

Lag	LgLk	SqLR	FPEr.	AIC	SIC	HQn
0	-2718.50	NA	2.73e+15	41.2198	41.2635	41.2375
1	-2689.71	56.2738	1.88e+15	40.8442	40.9752*	40.8974
2	-2682.67	13.5606	1.79e+15	40.7980	41.0164	40.8867*
3	-2677.64	9.52122	1.76e+15	40.7824	41.0882	40.9067
4	-2674.97	4.97667	1.80e+15	40.8026	41.1957	40.9623
5	-2668.20	12.4048	1.73e+15*	40.7607*	41.2411	40.9559
6	-2664.96	5.85137	1.75e+15	40.7721	41.3399	41.0028
7	-2662.06	5.13978	1.78e+15	40.7888	41.4439	41.0550
8	-2661.25	1.41257	1.87e+15	40.8371	41.5796	41.1388
9	-2658.30	5.03845	1.90e+15	40.8531	41.6830	41.1903
10	-2656.28	3.39759	1.96e+15	40.8831	41.8004	41.2558
11	-2650.12	10.1850*	1.90e+15	40.8503	41.8549	41.2585
12	-2644.43	9.21341	1.86e+15	40.8248	41.9167	41.2685

*indicates lag order selected by the respective criterion in their column
Source: SPSS Calculated values using secondary data

From the above VAR lag order selection criteria, it can be observed that out of five criteria two criteria suggest checking causality at lag order of 5.

Following table shows the result of Pairwise Granger Causality Tests at a lag length of 5.

Table 5.23.
Pairwise Granger Causality Tests at Lag length of 5

Null Hypothesis:	Obs	F-Statistic	Prob.
H0 5.2.14 FIIs_NET_EQ does not Granger Cause			
D(DIIs_SAL_EQ)	146	1.55772	0.1763
H0 5.2.15 D(DIIs_SAL_EQ) does not Granger Cause FIIs_NET_EQ		3.44888	0.0058

Source: SPSS calculated values from secondary data

From the above result of Granger Causality Tests, it can be said that there is a unidirectional relationship between FIIs net investment in the Indian equity market and DIIs sale in the Indian equity market. At a 95% level of confidence, it can be said that DIIs sale in the Indian equity market cause FIIs net investment in the Indian equity market. But FIIs net investmentdoes not cause DIIs sale in the Indian equity market.

Causality between Purchase of FIIs in Indian Equity Market(D(FIIs_Pur_Eq)) and Sale of DIIs in Indian Equity Market (D(DIIs_Sal_Eq))

The following table shows the statistics of VAR lag selection criteria to study the causality between Purchase of FIIs in Indian Equity Market (D(FIIs_Pur_Eq)) and Sale of DIIs in Indian Equity Market (D(DIIs_Sal_Eq)).

Table 5.24.
VAR Lag Order Selection Criteria

Lag	LgLk	SqLR	FPEr.	AIC	SIC	HQn
0	-2748.47	NA	5.91e+15	41.9919	42.0358	42.0097
1	-2717.08	61.3248	3.89e+15	41.5738	41.7055*	41.6273
2	-2707.56	18.3191	3.58e+15	41.4895	41.7090	41.5787*
3	-2706.55	1.91709	3.75e+15	41.5351	41.8424	41.6600
4	-2702.56	7.42921	3.75e+15	41.5353	41.9304	41.6958
5	-2695.05	13.7556*	3.55e+15*	41.4817*	41.9646	41.6779
6	-2694.50	0.99136	3.75e+15	41.5344	42.1050	41.7663
7	-2690.85	6.46531	3.77e+15	41.5397	42.1982	41.8073
8	-2690.66	0.33215	4.00e+15	41.5979	42.3441	41.9011
9	-2689.62	1.77163	4.19e+15	41.6431	42.4772	41.9820
10	-2686.76	4.81785	4.27e+15	41.6604	42.5822	42.0350
11	-2682.47	7.06701	4.26e+15	41.6560	42.6657	42.0663
12	-2681.20	2.05661	4.45e+15	41.6977	42.7951	42.1436

* indicates lag order selected by the respective criterion in their column
Source: SPSS Calculated values using secondary data

From the above VAR lag order selection criteria, it can be observed that out of five criteria three criteria suggest checking causality at lag order of 5. Following table shows the result of Pairwise Granger Causality Tests at a lag length of 5.

Table 5.25. Pairwise Granger Causality Tests at Lag length of 5

Null Hypothesis:	Obs	F-Statistic	Prob.
H0 5.2.16 D(FIIs_PUR_EQ) does not Granger Cause D(DIIs_SAL_EQ)	145	1.98181	0.0853
H0 5.2.17 D(DIIs_SAL_EQ) does not Granger Cause D(FIIs_PUR_EQ)		0.38491	0.8585

Source: SPSS calculated values from secondary data

From the above result of Granger Causality Tests, it can be said that there is no causality between FIIs purchase in the Indian equity market and DIIs sale in the Indian equity market.

Causality between Sale of FIIs in Indian Equity Market (D(FIIs_Sal_Eq)) and Sale of DIIs in Indian Equity Market (D(DIIs_Sal_Eq))

The following table shows the statistics of VAR lag selection criteria to study the causality between Sale of FIIs in Indian Equity Market (D(FIIs_Sal_Eq)) and Sale of DIIs in Indian Equity Market (D(DIIs_Sal_Eq)).

Table 5.26
VAR Lag Order Selection Criteria

Lag	LgLk	SqLR	FPEr.	AIC	SIC	HQn
0	-2754.85	NA	6.52e+15	42.0893	42.1332	42.1071
1	-2722.50	63.2074	4.23e+15	41.6566	41.7883	41.7101
2	-2706.94	29.9450	3.55e+15*	41.4800*	41.6995*	41.5692*
3	-2703.27	6.95129	3.56e+15	41.4850	41.7923	41.6098
4	-2700.74	4.70212	3.65e+15	41.5075	41.9026	41.6680
5	-2695.01	10.4948*	3.55e+15	41.4811	41.9640	41.6773
6	-2693.27	3.13317	3.68e+15	41.5156	42.0863	41.7475
7	-2690.66	4.62443	3.76e+15	41.5368	42.1953	41.8044
8	-2688.58	3.61686	3.88e+15	41.5662	42.3124	41.8694
9	-2688.02	0.96689	4.09e+15	41.6186	42.4526	41.9575
10	-2685.29	4.58373	4.17e+15	41.6380	42.5598	42.0126
11	-2684.97	0.53262	4.42e+15	41.6942	42.7038	42.1044
12	-2681.13	6.21106	4.44e+15	41.6966	42.7940	42.1426

*indicates lag order selected by the respective criterion in their column
Source: SPSS Calculated values using secondary data

From the above VAR lag order selection criteria, it can be observed that out of five criteria four criteria suggest checking causality at lag order of 2. Following table shows the result ofPairwise Granger Causality Tests at a lag length of 2.

Table 5.27
Pairwise Granger Causality Tests at Lag length of 2

Null Hypothesis:	Obs	F-Statistic	Prob.
H0 5.2.18 D(FIIs_SAL_EQ) does not Granger Cause D(DIIs_SAL_EQ)	151	3.24638	0.0417
H0 5.2.19 D(DIIs_SAL_EQ) does not Granger Cause D(FIIs_SAL_EQ)		1.14697	0.3204

Source: SPSS Calculated values using secondary data

From the above result of Granger Causality Tests, it can be said that there is a unidirectional relationship between FIIs sell in the Indian equity market and DIIs Sale in the Indian equity market. At a 95% level of confidence, it can be said that FIIs sell in the Indian equity market cause DIIs sale in the Indian equity market. But DIIs sale does not cause FIIs sell in the Indian equity market.

From the above discussion, it is summarized that DIIs investment of DIIs is one of the significant factor affecting FII investment. In the next section, other factors are studied for their causality with FII investment in the Indian equity market.

Causality between FIIs and Gross Domestic Product of India (GDP)

Gross Domestic Product (GDP) shows the development of the economy. GDP data are available with two variants i.e. at current price and at a constant price. GDP at a constant price are more reliable as they are adjusted with inflation. As GDP data are made available quarterly in the study FIIs data were also converted on quarterly. To calculate quarterly data FIIs purchase, FIIs sell and FIIs net investment in the Indian equity market are summed for each quarter to study their causality with GDP.

In the case of GDP data, they are having different bases as government changes its base from time to time. Currently, the base year for GDP calculation is 2011-12, before that base year was the year 2004-05. As GDP data before a year, March 2012 is having the base year of 2004-05, so earlier data is required to be adjusted considering a new base year 2011-12, to have a common base year. Hence the earlier data i.e. from January 2006 to March 2013 (the base year 2004-05) are extrapolated considering new base year 2011-12.

Once the GDP data extrapolated taking a new base year to check the causality between FII investment in the Indian equity market and GDP of the Indian economy, stationarity is required to be checked of both of the time-series data. For FIIs stationarity is already checked earlier, following test shows the results of the unit root test of GDP data.

Unit Root Test:

To check the stationarity of the time-series data, the Augmented Dickey-Fuller test is applied. To check the stationarity of GDP time-series, the following is the null hypothesis.

H0 5.3.1 : GDP has a unit root

Table 5.28.
Test statistic of Augmented Dickey-Fuller (ADF)

Variable	**Exogenous**	**t-statistics**	**Prob.**
GDP	None	4.241222	1.0000
	Constant	3.081526	1.0000
	Constant, Linear Trend	-0.911768	0.9462
D(GDP_BASE201112)	None	0.324150	0.7750
	Constant	-2.600122	0.1000***
	Constant, Linear Trend	-4.433912	0.0048*
D(GDP_BASE201112,2)	None	-6.933422	0.0000*
	Constant	-6.957851	0.0000*
	Constant, Linear Trend	-6.892620	0.0000*

* Significant at 1%, ** Significant at 5%, *** Significant at 10% level of Significance

Source: SPSS calculated values from secondary data

From the above table, it can be said that GDP time series data are stationary at their second difference. Now the causality is required be checked between GDP data and FIIs purchase, FIIs sell and FIIs net investment in the Indian equity market.

Causality between Net Investment of FIIs in the Indian equity market(FIIs_Net_Eq) and GDP (D(GDP_BASE201112,2))

The following table shows the statistics of VAR lag selection criteria to study the causality between Net Investment of FIIs in the Indian equity market (FIIs_Net_Eq) and GDP (D(GDP_BASE201112,2)).

Table 5.29
VAR Lag Order Selection Criteria

Lag	LgLk	SqLR	FPEr.	AIC	SIC	HQn
0	-965.309	NA	1.20e+19	49.6056	49.6909	49.6362
1	-957.196	14.9775	9.71e+18	49.3946	49.6506	49.4865
2	-952.782	7.69566	9.53e+18	49.3734	49.8000	49.5265
3	-909.445	71.1173*	1.27e+18	47.3561	47.9533*	47.5704*
4	-904.720	7.26921	1.24e+18*	47.3190	48.0868	47.5944
5	-900.536	6.00876	1.24e+18	47.3095*	48.2479	47.6462
6	-899.559	1.30262	1.48e+18	47.4645	48.5736	47.8624
7	-896.780	3.41945	1.63e+18	47.5272	48.8068	47.9863
8	-893.120	4.12980	1.73e+18	47.5446	48.9949	48.0649
9	-888.340	4.90268	1.76e+18	47.5046	49.1255	48.0861
10	-884.630	3.42403	1.92e+18	47.5195	49.3110	48.1623
11	-880.833	3.11556	2.13e+18	47.5299	49.4920	48.2339
12	-878.519	1.66169	2.64e+18	47.6163	49.7491	48.3815

*indicates lag order selected by the respective criterion in their column
Source: SPSS Calculated values using secondary data

From the above VAR lag order selection criteria, it can be observed that out of five criteria three criteria suggest checking causality at lag order of 3. But GDP data is quarterly data and one of the criteria also suggests a lag length of 4 and one criteria suggests 5. Following table shows the result of Pairwise Granger Causality Tests at a lag length of 5, 4 and 3 respectively.

Table 5.30

Pairwise Granger Causality Tests at Lag length of 5, 4 & 3

Lags 5				
Null Hypothesis:		Obs	F-Statistic	Prob.
H0 5.3.2	D(GDP_BASE201112,2) does not Granger Cause FIIs_NET_EQ	46	2.83333	0.0299
H0 5.3.3	FIIs_NET_EQ does not Granger Cause D(GDP_BASE201112,2)		1.42393	0.2399
Lags: 4				
Null Hypothesis:		Obs	F-Statistic	Prob.
H0 5.3.4	D(GDP_BASE201112,2) does not Granger Cause FIIs_NET_EQ	47	3.43715	0.0171
H0 5.3.5	FIIs_NET_EQ does not Granger Cause D(GDP_BASE201112,2)		1.19702	0.3279
Lags: 3				
Null Hypothesis:		Obs	F-Statistic	Prob.
H0 5.3.6	D(GDP_BASE201112,2) does not Granger Cause FIIs_NET_EQ	48	2.14510	0.1093
H0 5.3.7	FIIs_NET_EQ does not Granger Cause D(GDP_BASE201112,2)		1.74570	0.1727

From the above result of Granger Causality Tests, it can be said that there is a unidirectional relationship between GDP and FIIs net investment in the Indian equity market. At a 95% level of confidence, it can be said that GDP cause FIIs net investment in the Indian equity market. But FIIs net investment does not cause GDP.

Causality between Purchase of FIIs in the Indian equity market(D(FIIs_Pur_Eq)) and GDP (D(GDP_BASE201112,2))

The following table shows the statistics of VAR lag selection criteria to study the causality between Purchase of FIIs in the Indian equity market (D(FIIs_Pur_Eq)) and GDP (D(GDP_BASE201112,2)).

Table 5.31
VAR Lag Order Selection Criteria

Lag	LgLk	SqLR	FPEr.	AIC	SIC	HQn
0	-990.091	NA	4.27e+19	50.8765	50.9618	50.9071
1	-982.901	13.2737	3.63e+19	50.7129	50.9688	50.8047
2	-976.336	11.4467	3.19e+19	50.5813	51.0079	50.7344
3	-931.204	74.0630*	3.89e+18*	48.4720	49.0692*	48.6862*
4	-927.771	5.28240	4.04e+18	48.5010	49.2688	48.7765
5	-923.360	6.33338	4.01e+18	48.4800	49.4184	48.8167
6	-923.351	0.01175	5.03e+18	48.6846	49.7937	49.0826
7	-917.947	6.65072	4.83e+18	48.6127	49.8923	49.0718
8	-915.716	2.51697	5.51e+18	48.7034	50.1537	49.2237
9	-909.768	6.10092	5.27e+18	48.6035	50.2244	49.1850
10	-903.866	5.44761	5.14e+18	48.5059	50.2975	49.1487
11	-900.749	2.55761	5.92e+18	48.5512	50.5134	49.2552
12	-893.351	5.31185	5.64e+18	48.3769*	50.5097	49.1421

*indicates lag order selected by the respective criterion in their column
Source: SPSS calculated values from secondary data

From the above VAR lag order selection criteria, it can be observed that out of five criteria four criteria suggest checking causality at lag order of 3. Following table shows the result of Pairwise Granger Causality Tests at a lag length of 3.

Table 5.32.
Pairwise Granger Causality Tests at Lag length of 3

Null Hypothesis:		Obs	F-Statistic	Prob.
H0 5.3.8	D(FIIs_PUR_EQ) does not Granger Cause D(GDP_BASE201112,2)	48	0.6661	0.5777
H0 5.3.9	D(GDP_BASE201112,2) does not Granger Cause D(FIIs_PUR_EQ)		0.37428	0.7720

Source: SPSS calculated values from secondary data

From the above result of Granger Causality Tests, it can be said that there is no causality between GDP and FIIs purchase in the Indian equity market.

Causality between Sale of FIIs in the Indian equity market(D(FIIs_Sal_Eq)) and GDP (D(GDP_BASE201112,2))

The following table shows the statistics of VAR lag selection criteria to study the causality between Sale of FIIs in the Indian equity market (D(FIIs_Sal_Eq)) and GDP (D(GDP_BASE201112,2)).

Table 5.33
VAR Lag Order Selection Criteria

Lag	LgLk	SqLR	FPEr.	AIC	SIC	HQn
0	-976.963	NA	2.18e+19	50.2032	50.2885	50.2338
1	-972.195	8.803517	2.10e+19	50.1638	50.4197	50.2556
2	-965.569	11.55312	1.84e+19	50.0291	50.4557	50.1822
3	-922.356	70.91364*	2.47e+18*	48.0182	48.6154*	48.2325*
4	-919.419	4.518077	2.63e+18	48.0727	48.84058	48.3482
5	-915.389	5.786333	2.67e+18	48.0712	49.0096	48.4079
6	-915.136	0.337312	3.30e+18	48.2634	49.3724	48.6613
7	-908.852	7.733933	3.03e+18	48.1462	49.4259	48.6054
8	-902.234	7.467045	2.76e+18	48.0120	49.4623	48.5323
9	-898.245	4.090725	2.92e+18	48.0126	49.6335	48.5941
10	-893.407	4.466496	3.01e+18	47.9695*	49.7611	48.6123
11	-891.877	1.255151	3.76e+18	48.0962	50.0584	48.8002
12	-886.849	3.609964	4.04e+18	48.0435	50.1763	48.8087

* indicates lag order selected by the respective criterion in their column
Source: SPSS calculated values from secondary data

From the above VAR lag order selection criteria, it can be observed that out of five criteria four criteria suggest checking causality at lag order of 3. Following table shows the result of Pairwise Granger Causality Tests at a lag length of 3.

Table 5.34.

Pairwise Granger Causality Tests at Lag length of 3

Null Hypothesis:		Obs	F-Statistic	Prob.
H0 5.3.10	D(FIIs_SAL_EQ) does not Granger Cause D(GDP_BASE201112,2)	48	0.05916	0.9809
H0 5.3.11	D(GDP_BASE201112,2) does not Granger Cause D(FIIs_SAL_EQ)		0.54813	0.6522

Source: SPSS calculated values from secondary data

From the above result of Granger Causality Tests, it can be said that there is no causality between FIIs sell in the Indian equity market and GDP.

Causality between FIIs and Index of Industrial Production (IIP)

Like GDP data, IIP data are also having different bases for their calculation from time to time. The government changes the base year for the calculation of IIP from time to time. Currently, the base year for IIP calculation is 2011-12, before that base year was the year 2004-05. IIP data before year March 2012 are calculated considering the base year of 2004- 05, so earlier data is required to be adjusted considering the new base of 2011-12 to have a common base year. Hence earlier data i.e. from January 2006 to March 2013 (the base year2004-05) are extrapolated considering new base year 2011-12.

Once IIP data are extrapolated with new base year to check the causality between FIIs and IIP data it requires to check the stationarity of data. For FIIs the unit root test is already conducted for IIP following test shows the results of the unit root test.

Unit Root Test:

To check the stationarity of the time-series data, the Augmented Dickey-Fuller test is applied. To check the stationarity of IIP time-series, the following is the null hypothesis.

H0 7.4.1 : IIP_Base201112 has a unit root

Table 5.35
Test statistic of ADF

Variable	Exogenous	t-statistics	Prob.
IIP_Base201112	None	2.245594	0.9942
	Constant	-1.100805	0.7147
	Constant, Linear Trend	-2.785773	0.2050
D(IIP_Base201112)	None	-2.930770	0.0036**
	Constant	-3.862188	0.0030*
	Constant, Linear Trend	-3.871689	0.0156**

* Significant at 1% and ** Significant at 5% level of Significance
Source: SPSS calculated values from secondary data

From the above table, it can be said that all IIP time series data are also stationary at their first difference. Now the causality is required be checked between IIP data and FIIs purchase, FIIs sell and FIIs net investment in the Indian equity market.

Causality between Net Investment of FIIs in the Indian equity market (FIIs_Net_Eq) and IIP (D(IIP_BASE201112))

The following table shows the statistics of VAR lag selection criteria to study the causality between Net Investment of FIIs in the Indian equity market (FIIs_Net_Eq) and IIP (D(IIP_BASE201112)).

Table 5.36.
VAR Lag Order Selection Criteria

Lag	LgLk	SqLR	FPEr.	AIC	SIC	HQn
0	-1847.05	NA	5.04e+09	28.0159	28.0596	28.0337
1	-1805.93	80.3615	2.87e+09	27.4536	27.5846	27.5068
2	-1794.54	21.9258	2.57e+09	27.3415	27.5599*	27.4303
3	-1792.09	4.63087	2.63e+09	27.3651	27.6708	27.4893
4	-1788.87	6.00085	2.66e+09	27.3769	27.7700	27.5366
5	-1783.09	10.6040	2.59e+09	27.3499	27.8303	27.5451
6	-1772.03	19.9469	2.33e+09	27.2429	27.8107	27.4736
7	-1770.34	2.99608	2.41e+09	27.2779	27.9330	27.5441
8	-1758.60	20.4477	2.15e+09	27.1607	27.9032	27.4624
9	-1747.23	19.4637	1.92e+09	27.0490	27.8789	27.3862
10	-1743.25	6.69418	1.93e+09	27.0493	27.9666	27.4220
11	-1724.77	30.5206	1.55e+09	26.8299	27.8345	27.2381
12	-1704.44	32.9573*	1.21e+09*	26.5825*	27.6745	27.0262*

* indicates lag order selected by the respectivecriterion in their column

Source: SPSS calculated values from secondary data

From the above VAR lag order selection criteria, it is observed that out of five criteria four criteria suggest checking causality at lag order of 12. Following table shows the results of Pairwise Granger Causality Tests at a lag length of 12.

Table 5.37.
Pairwise Granger Causality Tests at Lag length of 12

Null Hypothesis:	Obs	F-Statistic	Prob.
H0 7.4.2 D(IIP_BASE201112) does not Granger Cause FIIs_NET_EQ	132	2.50103	0.0062
H0 7.4.3 FIIs_NET_EQ does not Granger Cause D(IIP_BASE201112)		0.94570	0.5050

Source: SPSS calculated values from secondary data

From the above result of Granger Causality Tests, it can be said that there is a unidirectional relationship between IIP and FIIs net investment in the Indian equity market. At a 95% level of confidence, it can be said that IIP cause FIIs net investment in the Indian equity market. But FIIs net investment does not cause FIIs sell in the Indian equity market.

Causality between Purchase of FIIs in the Indian equity market (FIIs_Pur_Eq) and IIP (D(IIP_BASE201112))

The following table shows the statistics of VAR lag selection criteria to study the causality between Purchase of FIIs in the Indian equity market (FIIs_Pur_Eq) and IIP (D(IIP_BASE201112)).

Table 5.38
VAR Lag Order Selection Criteria

Lag	LgLk	SqLR	FPEr.	AIC	SIC	HQn
0	-1913.25	NA	1.71e+10	29.2404	29.2843	29.2583
1	-1865.31	93.6693	8.76e+09	28.5697	28.7014	28.6232
2	-1847.47	34.3316	7.10e+09	28.3583	28.5778*	28.4475
3	-1841.00	12.2416	6.83e+09	28.3207	28.6279	28.4455
4	-1840.20	1.48607	7.18e+09	28.3695	28.7646	28.5301
5	-1832.98	13.2362	6.84e+09	28.3203	28.8032	28.5165
6	-1821.77	20.1953	6.13e+09	28.2102	28.7809	28.4421
7	-1817.87	6.90762	6.14e+09	28.2118	28.8702	28.4793
8	-1807.92	17.31834	5.61e+09	28.1209	28.8671	28.4241
9	-1797.60	17.6507	5.10e+09	28.0244	28.8584	28.3633
10	-1792.52	8.52259	5.03e+09	28.0080	28.9298	28.3825
11	-1781.17	18.7112	4.50e+09	27.8958	28.9054	28.3060
12	-1762.07	30.9138*	3.58e+09*	27.6652*	28.7626	28.1111*

*indicates lag order selected by the respective criterion in their column
Source: SPSS calculated values from secondary data

From the above VAR lag order selection criteria, it can be observed that out of five criteria four criteria suggest checking causality at lag order of 12. Following table shows the result of Pairwise Granger Causality Tests at a lag length of 12.

Table 5.39. Pairwise Granger Causality Tests at Lag length of 12

Null Hypothesis:	Obs	F-Statistic	Prob.
H0 7.4.4 D(FIIs_PUR_EQ) does not Granger Cause D(IIP_BASE201112)	131	1.13952	0.3368
H0 7.4.5 D(IIP_BASE201112) does not Granger Cause D(FIIs_PUR_EQ)		0.93085	0.5194

From the above result of Granger Causality Tests, it can be said that there is no causality between FIIs purchase in the Indian equity market and IIP.

Causality between Sale of FIIs in the Indian equity market (FIIs_Sal_Eq)and IIP (D(IIP_BASE201112))

The following table shows the statistics of VAR lag selection criteria to study the causality between Sale of FIIs in the Indian equity market (FIIs_Sal_Eq) and IIP(D(IIP_BASE201112)).

Table 5.40
VAR Lag Order Selection Criteria

Lag	LgLk	SqLR	FPEr.	AIC	SIC	HQn
0	-1901.70	NA	1.44e+10	29.0642	29.10809	29.0820
1	-1855.29	90.6914	7.52e+09	28.4167	28.54843	28.4702
2	-1829.52	49.5843	5.39e+09	28.0842	28.30376*	28.1734
3	-1823.30	11.7648	5.22e+09	28.0504	28.35774	28.1753
4	-1821.48	3.39361	5.39e+09	28.0837	28.4787	28.2442
5	-1816.27	9.54703	5.30e+09	28.0652	28.5480	28.2614
6	-1806.70	17.2452	4.87e+09	27.9801	28.5508	28.2120
7	-1801.36	9.44199	4.77e+09	27.9598	28.6182	28.2273
8	-1795.44	10.3155	4.64e+09	27.9304	28.6766	28.2336
9	-1781.04	24.6177	3.96e+09	27.7716	28.6057	28.1105
10	-1773.10	13.3357	3.74e+09	27.7115	28.6333	28.0860
11	-1760.35	21.0295	3.27e+09	27.5778	28.5874	27.9881
12	-1741.82	29.9822*	2.63e+09*	27.3560*	28.4534	27.8020*

* indicates lag order selected by the respective criterion in their column
Source: SPSS calculated values from secondary data

From the above VAR lag order selection criteria, it can be observed that out of five criteria four criteria suggest checking causality at lag order of 12. Following table shows the result of Pairwise Granger Causality Tests at a lag length of 12.

Table 5.41
Pairwise Granger Causality Tests at Lag length of 12

Null Hypothesis:	Obs	F-Statistic	Prob.
H0 7.4.6 D(FIIs_SAL_EQ) does not Granger Cause D(IIP_BASE201112)	131	1.41546	0.1702

H0 7.4.7	D(IIP_BASE201112) does not Granger Cause D(FIIs_SAL_EQ)	1.09914	0.3686

Source: SPSS calculated values from secondary data

From the above result of Granger Causality Tests, it can be said that there is no causality between FIIs sell in the Indian equity market and IIP.

Causality between FIIs and Inflation (WPI)

Inflation can be measured using the Wholesale Price Index (WPI) as well as the Consumer Price Index (CPI). WPI is better to consider inflation level at industry and its calculation is stable compared to CPI. CPI more focuses on inflation at the end consumer. Thus for investment and financial markets, WPI is appropriate indicators of inflation than CPI.

Like GDP and IIP, WPI data are also calculated using different bases. The government changes it's the base year for the calculation of WPI from time to time. Currently, the base year for WPI calculation is 2011-12, earlier it was the year 2004-05. WPI data before the year March 2012 are calculated considering the base year 2004-05, so earlier data is required to be adjusted considering the new base of 2011-12 to have a common base year. Hence the earlier data i.e. from January 2006 to March 2013 (the base year 2004-05) are extra poled considering the new base year 2011-12.

To check the causality between FIIs and WIP data it requires to check the stationarity of data. Following test shows the results of the unit root test.

Unit Root Test:

To check the stationarity of the time-series data, the Augmented Dickey-Fuller test is applied. To check the stationarity of WPI time-series, the following is the null hypothesis.

H0 5.5.1 Null Hypothesis: WPI_Base201112 has a unit root

Table 5.42
Test statistic of ADF

Variable	Exogenous	t-statistics	Prob.
WPI_Base201112	None	3.025564	0.9994
	Constant	-1.193670	0.6766
	Constant, Linear Trend	-1.557428	0.8052
D(WPI_Base201112)	None	-8.940203	0.000*
	Constant	-9.755804	0.000*
	Constant, Linear Trend	-9.774569	0.0000*

* Significant at 1% level of Significance
Source: SPSS calculated values from secondary data

From the above table, it can be said that all FIIs and WPI time series data are stationary at their first difference. Now the causality is required be checked between WPI data and FIIs purchase, FIIs sell and FIIs net investment in the Indian equity market.

Causality between Net Investment of FIIs in the Indian equity market (FIIs_Net_Eq) and WPI (D(WPI_BASE201112))

The following table shows the statistics of VAR lag selection criteria to study the causality between Net Investment of FIIs in the Indian equity market (FIIs_Net_Eq) and WPI (D(WPI_BASE201112)).

Table 5.43
VAR Lag Order Selection Criteria

Lag	LgLk	SqLR	FPEr.	AIC	SIC	HQn
0	-1573.407	NA	79721843	23.86981	23.91349*	23.88756
1	-1565.729	15.00795	75401268*	23.81407*	23.94511	23.86732*
2	-1563.999	3.327825	78044851	23.84848	24.06687	23.93722
3	-1563.748	0.476344	82616187	23.90527	24.21102	24.02951
4	-1561.718	3.783764	85138045	23.93511	24.32822	24.09486
5	-1561.522	0.358475	90221567	23.99276	24.47323	24.18800
6	-1560.146	2.481656	93927817	24.03251	24.60033	24.26325
7	-1559.676	0.831944	99157823	24.08601	24.74119	24.35224
8	-1553.172	11.33367*	95551960	24.04806	24.79060	24.34979
9	-1547.952	8.936507	93910456	24.02958	24.85948	24.36681
10	-1545.089	4.815335	95678321	24.04680	24.96406	24.41954
11	-1541.420	6.060406	96325272	24.05181	25.05642	24.46004
12	-1538.927	4.041133	98755055	24.07465	25.16662	24.51838

* indicates lag order selected by the respective criterion in their column
Source: SPSS calculated values from secondary data

From the above VAR lag order selection criteria, it can be observed that out of five criteria three criteria suggest checking causality at lag order of 1. Following table shows the result of Pairwise Granger Causality Tests at a lag length of 1.

Table 5.44
Pairwise Granger Causality Tests at Lag length of 1

Null Hypothesis:	Obs	F-Statistic	Prob.
H0 5.5.2 FIIs_NET_EQ does not Granger Cause 0.8575D(WPI_BASE201112)	154	0.03235	
H0 5.5.3 D(WPI_BASE201112) does not Granger Cause FIIs_NET_EQ 0.6250		0.23992	

Source: SPSS calculated values from secondary data

From the above result of Granger Causality Tests, it can be said that there is no causality between FIIs net investment in the Indian equity market and WPI.

Causality between Purchase of FIIs in the Indian equity market (D(FIIs_Pur_Eq)) and WPI (D(WPI_BASE201112))

The following table shows the statistics of VAR lag selection criteria to study the causality between Purchase of FIIs in the Indian equity market (D(FIIs_Pur_Eq)) and WPI (D(WPI_BASE201112)).

Table 5.45
VAR Lag Order Selection Criteria

Lag	LgLk	SqLR	FPEr.	AIC	SIC	HQn
0	-1644.78	NA	2.84e+08	25.14180	25.1857	25.1596
1	-1625.15	38.3661	2.24e+08	24.90313	25.0348*	24.9566*
2	-1619.10	11.6429	2.17e+08*	24.87180*	25.09128	24.9609
3	-1617.21	3.57135	2.24e+08	24.90407	25.21134	25.0289
4	-1616.05	2.17217	2.34e+08	24.94733	25.34240	25.1078
5	-1610.13	10.8360	2.28e+08	24.91810	25.40096	25.1143
6	-1609.24	1.60402	2.39e+08	24.96557	25.53622	25.1974
7	-1605.81	6.07817	2.41e+08	24.97424	25.63269	25.2418
8	-1604.39	2.47665	2.51e+08	25.01359	25.75982	25.3168
9	-1597.99	10.9327*	2.42e+08	24.97704	25.81107	25.3159
10	-1596.31	2.81764	2.51e+08	25.01250	25.93432	25.3870
11	-1594.72	2.62598	2.61e+08	25.04925	26.05886	25.4595
12	-1591.56	5.12286	2.65e+08	25.06199	26.15939	25.5079

* indicates lag order selected by the respective criterion in their column
Source: SPSS calculated values from secondary data

From the above VAR lag order selection criteria, it can be observed that out of five criteria two criteria suggest checking causality at lag order of 2. Following table shows the result of Pairwise Granger Causality Tests at a lag length of 2.

Table 5.46.

Pairwise Granger Causality Tests at Lag length of 2

	Null Hypothesis:	Obs	F-Statistic	Prob.
H0 5.5.4	D(FIIs_PUR_EQ) does not Granger Cause D(WPI_BASE201112)	151	1.65216	0.1952
H0 5.5.5	D(WPI_BASE201112) does not Granger Cause D(FIIs_PUR_EQ)		1.02142	0.3626

Source: SPSS calculated values from secondary data

From the above result of Granger Causality Tests, it can be said that there is no causality between FIIs purchase in the Indian equity market and WPI.

Causality between Sale of FIIs in the Indian equity market (D(FIIs_Sal_Eq)) and WPI (D(WPI_BASE201112))

The following table shows the statistics of VAR lag selection criteria to study the causality between Sale of FIIs in the Indian equity market (D(FIIs_Sal_Eq)) and WPI (D(WPI_BASE201112)).

Table 5.47
VAR Lag Order Selection Criteria

Lag	LgLk	SqLR	FPEr.	AIC	SIC	HQn
0	-1628.26	NA	2.21e+08	24.8895	24.9334	24.9074
1	-1613.04	29.7508	1.86e+08	24.7182	24.8499	24.7717
2	-1597.07	30.7176*	1.55e+08*	24.5355*	24.7549*	24.6247*
3	-1594.73	4.43292	1.59e+08	24.5608	24.8681	24.6856
4	-1593.80	1.730479	1.67e+08	24.6077	25.0027	24.7682
5	-1591.24	4.69278	1.71e+08	24.6296	25.1125	24.8258
6	-1589.14	3.78920	1.76e+08	24.6586	25.2292	24.8905
7	-1585.53	6.38103	1.77e+08	24.6646	25.3231	24.9322
8	-1584.29	2.16454	1.85e+08	24.7067	25.4530	25.0100
9	-1580.28	6.84901	1.85e+08	24.7066	25.5407	25.0455
10	-1578.13	3.62113	1.90e+08	24.7348	25.6566	25.1094
11	-1575.98	3.54490	1.96e+08	24.7630	25.7727	25.1733
12	-1573.13	4.61549	2.00e+08	24.7806	25.8780	25.2265

* indicates lag order selected by the respective criterion in their column
Source: SPSS calculated values from secondary data

From the above VAR lag order selection criteria, it can be observed that out of five criteria suggest checking causality at lag order of 2. Following table shows the result of Pairwise Granger Causality Tests at a lag length of 2.

Table 5.48.
Pairwise Granger Causality Tests at Lag length of 2

	Null Hypothesis:	Obs	F-Statistic	Prob.
H0 5.5.6	D(FIIs_SAL_EQ) does not Granger Cause D(WPI_BASE201112)	151	2.28481	0.1054
H0 5.5.7	D(WPI_BASE201112) does not Granger Cause D(FIIs_SAL_EQ)		0.92224	0.3999

Source : SPSS Values calculated from secondary data

From the above result of Granger Causality Tests, it can be said that there is no causality between FIIs sell in the Indian equity market and WPI.

Causality between FIIs and Dollar of the United State of America (USD)

The USD is dominated currency all over the world in foreign trade and the investment of FPI/FIIs also comes in the form of forex is USD. In addition to this, FII investment in the Indian equity market is also dominated by US investors. As per an earlier discussion, on May 2019 in investment done by FPI/FIIs in equity and in total, 35.73% and 33.06% asset under custody (AUD) is invested by the United State of America respectively. Thus, the exchange rate of Indian rupee (INR) to USD is significant to FIIs Investment in India.

To check the causality between FII investment in the Indian equity market and USD exchange rate data, it requires to check the stationarity of the data. For FIIs unit root test is done, for USD following test shows the results of the unit root test.

5.3.4.3. Unit Root Test:

To check the stationarity of the time-series data, the Augmented Dickey-Fuller test is applied. To check the stationarity of USD time-series, the following is the null hypothesis.

H0 5.6.1 Null Hypothesis: USD has a unit root

Table 5.49

Test statistic of ADF

Variable	Exogenous	t-statistics	Prob.
USD	None	1.204631	0.9413
	Constant	-0.680407	0.8474
	Constant, Linear Trend	-2.888040	0.1693
D(USD)	None	-8.910218	0.0000*
	Constant	-9.034050	0.0000*
	Constant, Linear Trend	-9.007773	0.0000*

* Significant at 1% level of Significance

Source: SPSS Values calculated from secondary source data.

From the above table, it can be said that USD time series data are also stationary at their first difference. Now the causality is required be checked between USD data and FIIs purchase, FIIs sell and FIIs net investment in the Indian equity market.

Causality between Net Investment of FIIs in the Indian equity market (FIIs_Net_Eq) and USD (D(USD))

The following table shows the statistics of VAR lag selection criteria to study the causality between Net Investment of FIIs in the Indian equity market (FIIs_Net_Eq) and USD (D(USD)).

Table 5.50
VAR Lag Order Selection Criteria

Lag	LgLk	SqLR	FPEr.	AIC	SIC	HQn
0	-1583.872	NA	93418797	24.02836	24.07204*	24.04611
1	-1574.945	17.44702	86701009	23.95371	24.08475	24.00696
2	-1567.725	13.89285	82577391*	23.90493*	24.12332	23.99367*
3	-1567.211	0.973897	87066958	23.95774	24.26349	24.08199
4	-1564.957	4.199888	89421639	23.98420	24.37731	24.14395
5	-1560.906	7.428150	89382966	23.98342	24.46389	24.17866
6	-1555.455	9.827398*	87484294	23.96144	24.52927	24.19218
7	-1554.234	2.164888	91309311	24.00355	24.65873	24.26978
8	-1551.256	5.189012	92818129	24.01903	24.76157	24.32076
9	-1549.378	3.214860	95961548	24.05119	24.88108	24.38842
10	-1546.424	4.968285	97633400	24.06703	24.98429	24.43976
11	-1544.941	2.448861	1.02e+08	24.10517	25.10978	24.51340
12	-1543.107	2.974301	1.05e+08	24.13798	25.22995	24.58171

* indicates lag order selected by the respectivecriterion in their column

Source: SPSS Values calculated for Secondary Source Data.

From the above VAR lag order selection criteria, it can be observed that out of five criteria three criteria suggest checking causality at lag order of 2. Following table shows the result of Pairwise Granger Causality Tests at a lag length of 2.

Table 5.51.
Pairwise Granger Causality Tests at Lag length of 2

Null Hypothesis:	Obs	F-Statistic	Prob.
H0 5.6.2 D(USD) does not Granger Cause FIIs_NET-EQ	152	0.51937	0.5960
H0 5.6.3 FIIs NET EQ does not Granger Cause D(USD)		2.92770	0.0566

Source: SPSS Values calculated for Secondary Source Data.

From the above result of Granger Causality Tests, it can be said that there is no causality between FIIs net investment in the Indian equity market and USD exchange rate.

Causality between Purchase of FIIs in the Indian equity market(D(FIIs_Pur_Eq)) and USD (D(USD))

The following table shows the statistics of VAR lag selection criteria to study the causality between Purchase of FIIs in the Indian equity market (D(FIIs_Pur_Eq)) and USD (D(USD)).

Table 5.52.
VAR Lag Order Selection Criteria

Lag	LgLk	SqLR	FPEr.	AIC	SIC	HQn
0	-1675.681	NA	4.56e+08	25.61345	25.65735	25.63129
1	-1652.504	45.29274	3.40e+08	25.32067	25.45236*	25.37418
2	-1645.065	14.30918	3.23e+08	25.26817	25.48765	25.35736*
3	-1641.502	6.745107	3.25e+08	25.27485	25.58212	25.39970
4	-1639.306	4.090051	3.34e+08	25.30239	25.69745	25.46292
5	-1629.795	17.42546*	3.07e+08*	25.21825*	25.70110	25.41445
6	-1628.622	2.112661	3.21e+08	25.26141	25.83206	25.49329
7	-1623.938	8.295859	3.18e+08	25.25096	25.90940	25.51852
8	-1623.619	0.556154	3.37e+08	25.30715	26.05339	25.61038
9	-1618.148	9.353919	3.29e+08	25.28470	26.11873	25.62361
10	-1616.621	2.564609	3.43e+08	25.32246	26.24428	25.69703
11	-1616.460	0.266224	3.64e+08	25.38106	26.39067	25.79131
12	-1614.548	3.093159	3.77e+08	25.41295	26.51035	25.85887

* indicates lag order selected by the respective criterion in their column
Source: SPSS Values calculated for Secondary Source Data.

From the above VAR lag order selection criteria, it can be observed that out of five criteria three criteria suggest checking causality at lag order of 5. Following table shows the result of Pairwise Granger Causality Tests at a lag length of 5.

Table 5.53. Pairwise Granger Causality Tests at Lag length of 5

Null Hypothesis:	Obs	F-Statistic	Prob.
H0 5.6.2 D(FIIs_PUR_EQ) does not Granger Cause D(USD)	151	2.28481	0.1054
H0 5.6.3 D(USD) does not Granger Cause (FIIs NET EQ)		0.92224	0.3999

From the above result of Granger Causality Tests, it can be said that there is no causality between FIIs purchase in the Indian equity market and USD exchange rate.

Causality between Sale of FIIs in the Indian equity market (D(FIIs_Sal_Eq)) and USD (D(USD))

The following table shows the statistics of VAR lag selection criteria to study the causality between Sale of FIIs in the Indian equity market (D(FIIs_Sal_Eq)) and USD (D(USD)).

Table 5.54.
VAR Lag Order Selection Criteria

Lag	LgLk	SqLR	FPEr.	AIC	SIC	HQn
0	-1660.122	NA	3.59e+08	25.37591	25.41980	25.39374
1	-1638.223	42.79563	2.74e+08	25.10263	25.23432	25.15615
2	-1624.595	26.21455	2.36e+08*	24.95565*	25.17513*	25.04484*
3	-1621.933	5.040035	2.41e+08	24.97607	25.28335	25.10093
4	-1620.431	2.797590	2.50e+08	25.01421	25.40928	25.17474
5	-1614.84	10.2277*	2.45e+08	24.9900	25.4729	25.1862
6	-1613.48	2.45486	2.55e+08	25.0303	25.6009	25.2621
7	-1610.09	6.00579	2.57e+08	25.0396	25.6980	25.3071
8	-1607.87	3.86703	2.65e+08	25.0667	25.8129	25.3699
9	-1606.09	3.03892	2.74e+08	25.1006	25.9347	25.4395
10	-1604.35	2.92107	2.84e+08	25.1352	26.0570	25.5097
11	-1603.90	0.74584	3.01e+08	25.1893	26.1989	25.5996
12	-1601.53	3.82776	3.09e+08	25.2143	26.3117	25.6602

* indicates lag order selected by the respective criterion in their column

Source: SPSS Values calculated for Secondary Source Data.

From the above VAR lag order selection criteria, it can be observed that out of five criteria four criteria suggest checking causality at lag order of 2. Following table shows the result of Pairwise Granger Causality Tests at a lag length of 2.

Table 5.55
Pairwise Granger Causality Tests at Lag length of 2

Null Hypothesis:	Obs	F-Statistic	Prob.
H0 5.6.6 D(FIIs_SAL_EQ) does not Granger Cause D(USD)	151	2.16836	0.1180
H0 5.6.7 D(USD) does not Granger Cause D(FIIs_SAL_EQ)		5.09654	0.0073

Source: SPSS Values calculated from secondary data

From the above result of Granger Causality Tests, it can be said that there is a unidirectional relationship between FIIs sell in the Indian equity market and USD exchange rate. At a 95% level of confidence, it can be said that the USD exchange rate cause FIIs sell in the Indian equity market. But FIIs sell does not cause USD exchange.

Causality between FIIs and Call Money Rate (CR)

Call Money Rate (CR) is an indicator of borrowing the cost of money in the money market. It provides information about the cost of short-term capital, i.e. opportunity cost. Call Money Rate data are available on a daily basis. For the analysis purpose, monthly average data is calculated and studied their causality with FIIs.

To check the causality between FII investment in the Indian equity market and Call Money Rate in the Indian economy, it requires to check the stationarity of the data. For FIIs unit test is done, the following test shows the results of the unit root test of Average Call Money Rate(CR) data.

Unit Root Test:

To check the stationarity of CR time-series, the following is the null hypothesis.

H0 5.7.1 Null Hypothesis: CR has a unit root

Table 5.56
Test statistic of ADF

Variable	Exogenous	t-statistics	Prob.
CR	None	-9.00056	0.3249
	Constant	-3.614104	0.0065*
	Constant, Linear Trend	-3.617023	0.0315**
D(CR)	None	-8.930805	0.0000*
	Constant	-8.900952	0.0000*
	Constant, Linear Trend	-8.874607	0.0000*

* Significant at 1%, ** Significant at 5% level of Significance
Source: SPSS Values calculated from secondary data.

From the above table, it can be said that CR time series data are stationary at their first difference. Now the causality is required be checked between CR data and FIIs purchase, FIIs sell and FIIs net investment in the Indian equity market.

Causality between Net Investment of FIIs in the Indian equity market (FIIs_Net_Eq) and Call Money Rate (D(CR))

The following table shows the statistics of VAR lag selection criteria to study the causality between Net Investment of FIIs in the Indian equity market (FIIs_Net_Eq) and Call MoneyRate (D(CR)).

Table 5.57
VAR Lag Order Selection Criteria

Lag	LgLk	SqLR	FPEr.	AIC	SIC	HQn
0	-1590.17	NA	1.03e+08	24.1238	24.1675*	24.1415*
1	-1584.97	10.1539	1.01e+08*	24.1057*	24.2367	24.1589
2	-1582.40	4.95661	1.03e+08	24.1273	24.3456	24.2160
3	-1581.04	2.57594	1.07e+08	24.1673	24.4730	24.2915
4	-1573.469	14.1132*	1.02e+08	24.1131	24.5062	24.2729
5	-1569.007	8.17923	1.01e+08	24.1061	24.5866	24.3014
6	-1565.756	5.86177	1.02e+08	24.1175	24.6853	24.3482
7	-1563.643	3.74577	1.05e+08	24.1461	24.8012	24.4123
8	-1560.477	5.51636	1.07e+08	24.1587	24.9012	24.4604
9	-1556.147	7.41415	1.06e+08	24.1537	24.9836	24.4909
10	-1550.544	9.42255	1.04e+08	24.1294	25.0467	24.5021
11	-1548.542	3.30617	1.07e+08	24.1597	25.1643	24.5679
12	-1545.821	4.41200	1.10e+08	24.1791	25.2710	24.6228

* indicates lag order selected by the respectivecriterion in their column
Source: SPSS Values calculated from secondary data

From the above VAR lag order selection criteria, it can be observed that out of five criteria two criteria suggest checking causality at lag order of 1. Following table shows the result of Pairwise Granger Causality Tests at a lag length of 1.

Table 5.58.
Pairwise Granger Causality Tests at Lag length of 1

Null Hypothesis:	Obs	F-Statistic	Prob.
H0 5.7.2 FIIs_NET_EQ does not Granger Cause D(CR)	154	0.33699	0.5624
H0 5.7.3 D(CR) does not Granger Cause FIIs_NET_EQ		0.82786	0.3643

From the above result of Granger Causality Tests, it can be said that there is no causality between FIIs net investment in the Indian equity market and Call money rate.

Causality between Purchase of FIIs in the Indian equity market (D(FIIs_Pur_Eq)) and Call Money Rate (D(CR))

The following table shows the statistics of VAR lag selection criteria Purchase of FIIs in the Indian equity market (D(FIIs_Pur_Eq)) and Call Money Rate (D(CR)).

Table 5.59
VAR Lag Order Selection Criteria

Lag	LgLk	SqLR	FPEr.	AIC	SIC	HQn
0	-1661.531	NA	3.67e+08	25.39743	25.44132	25.41526
1	-1644.99	32.3125	3.03e+08	25.2060	25.3377*	25.2595
2	-1637.93	13.5930	2.89e+08	25.1592	25.3787	25.2484
3	-1634.48	6.51636	2.92e+08	25.1677	25.4750	25.2926
4	-1626.89	14.1423	2.76e+08	25.1129	25.5079	25.2734
5	-1617.50	17.1986	2.55e+08*	25.0306*	25.5135	25.2268*
6	-1613.59	7.04564	2.55e+08	25.0320	25.6026	25.2638
7	-1610.15	6.09159	2.58e+08	25.0405	25.6990	25.3081
8	-1609.50	1.13337	2.71e+08	25.0916	25.8379	25.3949
9	-1605.76	6.40175	2.73e+08	25.0956	25.9296	25.4345
10	-1598.79	11.7072*	2.61e+08	25.0502	25.9720	25.4248
11	-1597.28	2.48082	2.72e+08	25.0883	26.0979	25.4985
12	-1595.58	2.75601	2.82e+08	25.1234	26.2208	25.5693

* indicates lag order selected by the respectivecriterion in their column

Source: SPSS Values calculated from secondary data.

From the above VAR lag order selection criteria, it can be observed that out of five criteria three criteria suggest checking causality at lag order of 5. Following table shows the result of Pairwise Granger Causality Tests at a lag length of 5.

Table 5.60.
Pairwise Granger Causality Tests at Lag length of 5

Null Hypothesis:	Obs	F-Statistic	Prob.
H0 5.7.4 D(FIIs_PUR_EQ) does not Granger Cause D(CR)	145	0.89939	0.4836
H0 5.7.5 D(CR) does not Granger Cause D(FIIs_PUR_EQ)		2.05547	0.0749

Source: SPSS Values calculated from secondary data

From the above result of Granger Causality Tests, it can be said that there is no causality between FIIs purchase in the Indian equity market and Call money rate.

Causality between Sale of FIIs in the Indian equity market (D(FIIs_Sal_Eq)) and Call Money Rate (D(CR))

The following table shows the statistics of VAR lag selection criteria to study the causality between Sale of FIIs in the Indian equity market (D(FIIs_Sal_Eq)) and Call Money Rate (D(CR)).

Table 5.61
VAR Lag Order Selection Criteria

Lag	LgLk	SqLR	FPEr.	AIC	SIC	HQn
0	-1645.528	NA	2.88e+08	25.15310	25.19700	25.17094
1	-1631.390	27.62951	2.46e+08	24.99832	25.13000	25.05183
2	-1616.182	29.25429	2.08e+08	24.82721	25.04669*	24.91639
3	-1613.131	5.775696	2.11e+08	24.84170	25.14897	24.96656
4	-1605.107	14.94651	1.98e+08	24.78025	25.17532	24.94079
5	-1601.804	6.051472	2.00e+08	24.79089	25.27375	24.98710
6	-1589.123	22.84420	1.76e+08	24.65837	25.22902	24.89025*
7	-1586.304	4.992336	1.79e+08	24.67640	25.33484	24.94395
8	-1585.092	2.109937	1.87e+08	24.71896	25.46519	25.02219
9	-1582.709	4.074575	1.92e+08	24.74365	25.57767	25.08255
10	-1569.480	22.21678*	1.67e+08*	24.60275*	25.52456	24.97732
11	-1568.804	1.113879	1.76e+08	24.65350	25.66311	25.06375
12	-1564.629	6.756936	1.76e+08	24.65082	25.74823	25.09675

*indicates lag order selected by the respectivecriterion in their column
Source: SPSS Values calculated from secondary data

From the above VAR lag order selection criteria, it can be observed that out of five criteria three criteria suggest checking causality at lag order of 10. Following table shows the result of Pairwise Granger Causality Tests at a lag length of 10.

Table 5.62Pairwise Granger Causality Tests at Lag length of 10

Null Hypothesis:	Obs	F-Statistic	Prob.
H0 5.7.6 D(FIIs_SAL_EQ) does not Granger Cause D(CR)	135	0.58104	0.8266
H0 5.7.7 D(CR) does not Granger Cause D(FIIs_SAL_EQ)		3.46863	0.0005

Source: SPSS Values calculated from secondary data

From the above result of Granger Causality Tests, it can be said that there is no causality between FIIs net investment in the Indian equity market and Call money rate.

Causality between FIIs and Foreign Exchange Reserve (Avg_FR_USD)

Foreign Exchange Reserve (FR) is essential for various economic activities. It helps in stabilizing payment to foreign investors at the time of their exit. FR also helps in stabilizing the value of INR at the international market. Hence FR is a crucial factor for FPI/FIIs before investing in any country.

To check the causality between FII investment in the Indian equity market and Foreign Exchange Reserve (Avg_FR_USD) in India, it requires to check the stationarity of the data. Following test shows the results of the unit root test of Avg_FR_USD.

Unit Root Test:

To check the stationarity of the time-series data, the Augmented Dickey-Fuller test is applied. To check the stationarity of Avg_FR_USD time-series, the following is the null hypothesis.

H0 7.8.1 Null Hypothesis: Avg_FR_USD has a unit root

Table 5.63. Test statistic of ADF

Variable	Exogenous	t-statistics	Prob.
Avg_FR_USD	None	1.351566	0.9554
	Constant	-1.876613	0.3426
	Constant, Linear Trend	-2.881948	0.1713
D(Avg_FR_USD)	None	-5.878325	0.0000*
	Constant	-6.185556	0.0000*
	Constant, Linear Trend	-6.202389	0.0000*

* Significant at 1%,
** Significant at 5% level of Significance
Source: SPSS Values calculated from secondary data

From the above table, it can be said that Avg_FR_USD time series data are stationary at their first difference. Now the causality is required be checked between Avg_FR_USD and FIIs purchase, FIIs sell and FIIs net investment in the Indian equity market.

Causality between Net Investment of FIIs in the Indian equity market (FIIs_Net_Eq) and Foreign Exchange Reserve (D(Avg_FR_USD)))

The following table shows the statistics of VAR lag selection criteria to study the causality between Net Investment of FIIs in the Indian equity market (FIIs_Net_Eq) and Foreign Exchange Reserve (D(Avg_FR_USD))).

Table 5.64
VAR Lag Order Selection Criteria

Lag	LgLk	SqLR	FPEr.	AIC	SIC	HQn
0	-2711.985	NA	2.48e+15	41.12099	41.16466	41.13873
1	-2680.299	61.93178	1.63e+15	40.70150	40.83254*	40.75475
2	-2672.371	15.25492	1.53e+15*	40.64199*	40.86038	40.73073*
3	-2670.007	4.477564	1.57e+15	40.66677	40.97253	40.79102
4	-2669.183	1.535131	1.65e+15	40.71490	41.10801	40.87464
5	-2665.074	7.533063	1.65e+15	40.71325	41.19372	40.90849
6	-2662.318	4.970604	1.68e+15	40.73208	41.29991	40.96282
7	-2661.610	1.254171	1.77e+15	40.78197	41.43715	41.04821
8	-2655.235	11.10793	1.71e+15	40.74599	41.48853	41.04772
9	-2653.535	2.910150	1.77e+15	40.78084	41.61074	41.11807
10	-2648.968	7.681231	1.76e+15	40.77225	41.68950	41.14498
11	-2647.481	2.456262	1.83e+15	40.81032	41.81493	41.21855
12	-2640.820	10.79944*	1.76e+15	40.76999	41.86196	41.21372

* indicates lag order selected by the respectivecriterion in their column

Source: SPSS Values calculated from secondary data

From the above VAR lag order selection criteria, it can be observed that out of five criteria three criteria suggest checking causality at lag order of 2. Following table shows the result of Pairwise Granger Causality Tests at a lag length of 2.

Table 5.65. Pairwise Granger Causality Tests at Lag length of 2

Null Hypothesis:	Obs	F-Statistic	Prob.
FIIs_NET_EQ does not Granger Cause D(AVG_FR_USD)	152	7.63304	0.0007
D(AVG_FR_USD) does not Granger Cause FIIs_NET_EQ		0.21274	0.8086

Source: SPSS Values calculated from secondary data

From the above result of Granger Causality Tests, it can be said that there is a unidirectional relationship between FIIs net investment in the Indian equity market and Foreign Exchange Reserve. At a 95% level of confidence, it can be said that FIIs net investment in the Indian equity market cause Foreign Exchange Reserve. But Foreign Exchange Reserve do not causeFIIs net investment in the Indian equity market.

Causality between Purchase of FIIs in the Indian equity market (D(FIIs_Pur_Eq)) and Foreign Exchange Reserve (D(Avg_FR_USD))

The following table shows the statistics of VAR lag selection criteria to study the causality between Purchase of FIIs in the Indian equity market (D(FIIs_Pur_Eq)) and Foreign Exchange Reserve (D(Avg_FR_USD)).

Table 5.66
VAR Lag Order Selection Criteria

Lag	LgLk	SqLR	FPEr.	AIC	SIC	HQn
0	-2778.137	NA	9.30e+15	42.44484	42.48873	42.46268
1	-2734.811	84.66794	5.10e+15	41.84444	41.97613*	41.89795*
2	-2729.432	10.34645	5.00e+15	41.82339	42.04287	41.91258
3	-2723.662	10.92333	4.86e+15	41.79637	42.10364	41.92123
4	-2720.705	5.508958	4.94e+15	41.81228	42.20735	41.97282
5	-2711.981	15.98213	4.60e+15*	41.74017*	42.22303	41.93637
6	-2710.335	2.965282	4.77e+15	41.77611	42.34676	42.00799
7	-2706.610	6.597002	4.80e+15	41.78030	42.43875	42.04786
8	-2703.710	5.047356	4.88e+15	41.79710	42.54333	42.10033
9	-2702.005	2.915734	5.06e+15	41.83213	42.66616	42.17104
10	-2700.466	2.584664	5.26e+15	41.86971	42.79152	42.24428
11	-2694.327	10.12159*	5.10e+15	41.83706	42.84667	42.24731
12	-2690.956	5.455805	5.16e+15	41.84665	42.94406	42.29258

* indicates lag order selected by the respective criterion in their column
Source: SPSS Values calculated from secondary data

From the above VAR lag order selection criteria, it can be observed that out of five criteria two criteria suggest checking causality at lag order of 5. Following table shows the result of Pairwise Granger Causality Tests at a lag length of 5.

Table 5.67

Pairwise Granger Causality Tests at Lag length of 5

Null Hypothesis:	Obs	F-Statistic	Prob.
D(FIIs_PUR_EQ) does not Granger Cause D(AVG_FR_USD)	145	1.59117	0.1668
D(AVG_FR_USD) does not Granger Cause D(FIIs_PUR_EQ)		1.60834	0.1620

Source: SPSS Values calculated from secondary data

From the above result of Granger Causality Tests, it can be said that there is no causality between Foreign Exchange Reserve and FIIs net investment in the Indian equity market.

Causality between Sale of FIIs in the Indian equity market (D(FIIs_Sal_Eq)) and Foreign Exchange Reserve (D(Avg_FR_USD))

The following table shows the statistics of VAR lag selection criteria to study the causality between Sale of FIIs in the Indian equity market (D(FIIs_Sal_Eq)) and Foreign Exchange Reserve (D(Avg_FR_USD)).

Table 5.68
VAR Lag Order Selection Criteria

Lag	LgLk	SqLR	FPEr.	AIC	SIC	HQn
0	-2761.028	NA	7.16e+15	42.18363	42.22753	42.20147
1	-2722.682	74.93675	4.24e+15	41.65926	41.79095	41.71277
2	-2708.315	27.63670	3.62e+15	41.50099	41.72047*	41.59017*
3	-2703.676	8.781959	3.59e+15	41.49124	41.79851	41.61609
4	-2700.727	5.492052	3.64e+15	41.50729	41.90235	41.66782
5	-2694.446	11.50808*	3.52e+15*	41.47246*	41.95531	41.66866
6	-2691.906	4.575517	3.60e+15	41.49475	42.06540	41.72663
7	-2688.153	6.647237	3.62e+15	41.49851	42.15696	41.76607
8	-2686.075	3.616051	3.73e+15	41.52786	42.27410	41.83109
9	-2684.831	2.127418	3.89e+15	41.56994	42.40396	41.90884
10	-2681.376	5.802387	3.93e+15	41.57826	42.50008	41.95283
11	-2676.317	8.341943	3.88e+15	41.56209	42.57170	41.97234
12	-2672.541	6.110124	3.90e+15	41.56551	42.66291	42.01144

* indicates lag order selected by the respectivecriterion in their column
Source: SPSS Values calculated from secondary data

From the above VAR lag order selection criteria, it can be observed that out of five criteria three criteria suggest checking causality at lag order of 5. Following table shows the result of Pairwise Granger Causality Tests at a lag length of 5.

Table 5.69. Pairwise Granger Causality Tests at Lag length of 5

Null Hypothesis:	Obs	F-Statistic	Prob.
D(FIIs_SAL_EQ) does not Granger Cause D(AVG_FR_USD)	145	1.27724	0.2774
D(AVG_FR_USD) does not Granger Cause D(FIIs_SAL_EQ)		5.27911	0.0002

Source: SPSS Values calculated from secondary data

From the above result of Granger Causality Tests, it can be said that there is a unidirectional relationship between FIIs sell in the Indian equity market and Foreign Exchange Reserve. At a 95% level of confidence, it can be said that the Foreign Exchange Reserve cause FIIs sell in the Indian equity market. But FIIs sell does not cause Foreign Exchange Reserve.

Summary: Factors Affecting the Investment Decisions of FIIs in India.

In this chapter, it is found that certain factors are significant to effect FII investment, but at the same time, it is also found that FII investment is affecting certain determinants in a significant manner. To identify determinant of FII investment in India, using causality study certain determinants were identified as follow.

1. DIIs purchase causes FIIs net investment
2. DIIs sale causes FIIs net investment
3. GDP causes FIIs net investment
4. IIP causes FIIs net investment
5. Exchange Rate of USD causes FIIs sell
6. Call Rate causes FIIs sell
7. Average foreign exchange reserve of USD causes FIIs sell

All of the above factors cause FIIs net investment and FIIs sell at the same time any of the specific factors were not observed which separately influences FIIs purchase. But it is observed through cause towards FIIs net investment. DIIs purchase (at lag 3) and DIIs sale (at lag 5), GDP (at lag 4 & 5) and IIP (at lag 12) cause FIIs net investment. At the same time, US dollar exchange rate (at lag 2), Call Rate (at lag 10) and average foreign exchange reserve of US dollar (at lag 5) cause the FIIs sell in the Indian equity market. As FIIs turnover is significant to the total turnover of the Indian equity market (discussed earlier), the sale of FIIs may also affect the performance of the Indian equity market. Hence the movement of FII investment in India, whether it is purchase or sale, is

crucial to understand and to forecast the performance of the Indian equity market. Indian government should also form economic policies in such a way that India can maintain its attractiveness for FII investment in the present global competitive financial market. As DIIs is also one of the determinants of FII investment, the government should also take care of DIIs and provide them with ease while they are investing and operating in the Indian equity market. Other various economic indicators viz. IIP, Call Rate, Foreign exchange reserve and GDP are also being vital for FII investment in India, government actions towards economic development can significantly affect FII investment in the Indian equity market.

Reserve of US dollar (at lag 5) cause the FIIs sell in the Indian equity market. As FIIs turnover is significant to the total turnover of the Indian equity market (discussed earlier), the sale of FIIs may also affect the performance of the Indian equity market. Hence the movement of FII investment in India, whether it is purchase or sale, is crucial to understand and to forecast the performance of the Indian equity market. Indian government should also form economic policies in such a way that India can maintain its attractiveness for FII investment in the present global competitive financial market. As DIIs is also one of the determinants of FII investment, the government should also take care of DIIs and provide them with ease while they are investing and operating in the Indian equity market. Other various economic indicators viz. IIP, Call Rate, Foreign exchange reserve and GDP are also being vital for FII investment in India, government actions towards economic development can significantly affect FII investment in the Indian equity market.

During the study of the determinant of FII investment, it is also observed that FII investment in the Indian equity market also causes certain factors. Such determinants affected by FII investment listed below.

FIIs net investment cause DIIs net investment at lag 3

FIIs purchases cause DIIs net investment at lag 9

FIIs sell cause DIIs net investment at lag 9

FIIs net investment cause DIIs purchase at lag 3

FIIs sell cause DIIs sale at lag 2

FIIs net investment cause Average Foreign Exchange of USD at lag 2

From above list it can be observed that FIIs net investment (at lag 3), FIIs purchase (at lag 9) and FIIs sales (at lag 9) cause the DIIs net investment in equity market and the same time FIIs net investment (at lag 3) and FIIs sell (at lag 2) cause DIIs purchase and DIIs sale respectively. It implies that DIIs investment caused by FII investment in the Indian equity market. It means if there is a heavy inflow or outflow of FIIs Investment, it also influences the DIIs flow of investment. In such case FII investment can affect the Indian equity market significantly not only in terms of the value of major indices of the Indian equity market (Sensex and Nifty 50) but also overall market capitalisation as well as even the turnover of the Indian equity market can be affected by the FII investment. The proportion of FIIs turnover to the total turnover of the Indian equity market discussed earlier also justifies it. Further detailed analysis of the effect of FII investment in the Indian equity market is discussed in the next chapter, where the causality between investment and the Indian equity market as well as the effect of FII investment in the Indian equity market will be discussed. It is also observed that FIIs net investment also cause Average Foreign Exchange of USD (at lag 2). As foreign exchange reserve is the vital part of the strength of the economy and it can be observed that it is affected by FII investment, the government should take into consideration FII investment while framing economic policy.

CHAPTER VI

FINDINGS & CONCLUSIONS

The year 1991 marked the beginning of a new era for the Indian economy in general and Indian Financial system in particular. The Government of India thought it is much required need to allow the flow of foreign capital and also to allow the private sector participation in the businesses which were under the control of the Government till that time. Subsequently the rules and regulations for FIIs which were alos allowed to participate in the economy were framed and brought into practice from 15.10.1993. SEBI was given more powers and is recognized as a special statutory body and was also given the status of the regulatory body for capital markets in India.

In order to participate and invest in Indian capital markets it was mandated that the desiring FIIs shall get registered as per the Act with both the capital market regulator SEBI and the money market regulator RBI. In the initial days of the permission granted to FIIs to invest in India limits were set starting from 5% that can be invested in a single company. However, later the limits were raised as per the need of the day. As a result of this India has witnessed huge amount of FII inflows and outflows which has changed the working of the Indian stock market beyond imaginations. The total number of FIIs including their sub accounts that are registered with SEBI till the end of 2017-18 are 9,136. In the year 2014 SEBI has made a change by combining all the sub accounts such as FPIs, DDPs QFIs into one entity and called it as FII.

It was observed from the analysis made on the trends and patterns of FIIs investment for the period of the present study that FII preferred the companies which operated in financial services. As they felt that providing basic financial services to the huge population of this vast country will be rewarding. After banking and financial services they preferred the IT and ITeS as it was considered to the booming sector for last few decades. The next preference of the FIIs was into oil and gas sector, automobiles and pharma sector and majority of their investment was concentrated in these five sectors and they had exposure to other sectors too.

The investment pattern of FIIs is studied from the date of the availability of structured and systematic data from 1997 till the end of the financial year 2019 and found that FIIs invested in Indian Equity, Debt and overall capital markets of India.

As this chapter is the concluding chapter of the study, all the findings of the study are tried to put together in the form of the summary & conclusions. In order to have better understanding of the entire study the conclusions are attempted to be put as per the objectives that are set for the present study.

Objective 2: To understand the investment pattern of FIIs in the Indian Equity Market

To study the pattern of the investment of FIIs in the Indian equity market, it is found that FII investment trend is continuously increasing at 26.05% of CAGR. But at the same time it is found that slop of FII investment trend various from time to time. Thus, structural breaks and major events causing structural breaks are also studied. A time-series model for determining the forecasting model is used. In this estimation of the model, it is found that first difference of the log transformation of FII investment in the Indian equity market time-series is the most appropriate transformation for the forecasting and determining the trend of FII investment in the Indian equity market. it is found that ARIMA (1,1,1) model provides the best forecasting results. The following equation of ARIMA (1,1,1) model is found.

D_LN_FIIs_EQ = 0.019 + 0.726(AR(1)) - 0.479(MA (1))

But when the expert-modeller in SPSS software is applied, it is found that the existence of seasonality in the model and provided following optimum SARIMA model that is ARIMA (1,1,0) (1,0,1) for the time-series data of FII investment in the Indian equity market without any transformation. SARIMA model is as follow.

FIIs_Cum_Eq = 3.404 + 0.385(AR1) + 0.956 (SA1) + 0.925 (SMA1)

As the time series forecasting model of FII investment is determined, it is observed that fluctuations in the investment make the series unstable. Certain events were recognised which cause structural breaks in the time-series data of FII investment in India. Hence structural breaks are studied in FII investment in the Indian equity market. To study structural breaks in FII investment two approaches were used. In the first approach, the break dates are found through multiple structural break test. In this approach, it is found that mainly April 2009 and May 2015 were the major break dates, which were significantly affected the trend of FII investment in the Indian equity market. The break time of April 2009 was the time period of the end of the subprime crisis in the US and in Europe bailout program were taken place. In break time of May 2015 India's taxmen imposed MAT on FPI. Considering these two major structural breaks, following time-series model for the first difference of investment in the Indian equity market is established.

D_FIIs_EQ = 1421.246 + 6816.735(SB_2009M04) - 6975.938(SB_2015M05)

Above equation with the positive coefficient for the structural break in April 2009 explains the positive impact of the end of Subprime prices in US and bailout program in Europe; whereas the negative coefficient of a structural break in May 2015 explains the negative impact of imposing of MAT by Indian government on FII investment in the Indian equity market.

In the second approach, it is found that few events are significant in affecting FII investment in the Indian equity market. Out of the observed events, the following events were found significant for FII investment.

1. 13th, 14th, and 15th Lok Sabha election during October 1999, May 2004 and April-May 2009 respectively;
2. The boom in IT and Telecom companies in the US in December 1999;
3. Announcement of GAAR in March 2012;
4. QFI allowed investing in Indian mutual fund and Indian equity shares in June 2012;
5. Declaration of MAT in May 2005;
6. Greece crisis in August 2015;
7. Tax revision in GST rates in December 2018; and

8. In February 2019 airstrike of Indian Air Force against Pulwama attack andannouncement of interim budget 2019-20.

Though many of these national and international events are affecting FIIs investment, continuous growth and upward trend are found in FIIs investment in the Indian equity market.

As FIIs are the dominant player in the Indian equity market, the trend of their investment is important to study. To understand the trend of FII investment in the Indian equity market various events affecting the trend are important to study. Thus, for a better understanding of the trend and the pattern of FIIs investments, various factors affecting the FII investment in the Indian equity market have been studied. The further study contributed towards the second objective of the study.

Objective 3: To understand the various factors that have an impact on the FIIs Investment decision in Indian Equity Markets

In order to study the determinants of FII investment in the Indian equity market, first of all, it is explored through the literature review; then primary data have been collected from the experts using the structured questionnaire. In the analysis of primary data, it is found that there is a positive relationship between the performance of the Indian equity market (Sensex and Nifty as Proxy) and FII investment decision in India. When FIIs take investment decision to choose companies in Indian stock market, they prefer sectors like Financial Service, Oil and Gas, IT and Banking as most favourable sectors, in terms of capitalisation FIIs more prefer large-cap stocks and in terms of the factors related to the performance of the company's EPS and DPS are the most important factors considered by FIIs.

In the primary survey other factors are also studied, which can be broadly classified into two categories 1) Economic factors and 2) International or global level factors. it is found that FIIs considers economic factors like purchasing power parity, GDP growth rate, inflation indexes, fiscal deficit, interest rate in domestic country, problem in domestic country of FIIs, growth opportunity in domestic country of FIIs, growth rate of the host countries, growth as well

challenges in developing countries and initiatives and challenges of new government of India toward economic performance (after 2014). Further analysis of primary data is done through the factor analysis. The factor analysis is used to reduce all the factors identified through exploratory study and literature review and grouped them into fewer factors. Through the factor analysis, major six factors were found influencing FII investment in India. Such factors are as listed below.

1. failure of government in the implementation of economic policy
2. challenges posed by the international environment
3. purchasing power of Indian rupee
4. opportunities and challenges in the domestic country of FIIs
5. attractiveness of economic policy of the host country
6. initiatives of new government

After identifying these factors, to confirm their influence on FII investment in the Indian equity market, the secondary data were collected from various reliable sources viz. websites of RBI, CDSL, NSDL, BSE and NSE, as a proxy of earlier factors studied. These secondary data werer analysed through the study of causality between these factors (DII investment, GDP, IIP, WPI, Call Rate, Exchange Rate, Average USD reserve) and purchase, sales and net investment of FIIs in India. In this causality study, it is found that DIIs purchase, DIIs sale and change in IIP cause FIIs net investment in the Indian equity market. Whereas change in the exchange rate of the US dollar, call rate and Indian USD foreign exchange reserve cause FIIs sell in the Indian equity market. None of the factor found causing FIIs purchase in the Indian equity market. In addition to this, the bidirectional causality is also found between DIIs purchase in the Indian equity market and FIIs net investment in the Indian equity market. In the study of causality, it is found that FIIs purchase in the Indian equity market clauses DIIs net investment, FIIs sell in the Indian equity market cause DIIs net investment and DIIs sale in the Indian equity market and FIIs net investment in the Indian equity market cause DIIs net investment, DIIs purchase and USD foreign exchange reservein India.

Once the causality between various factors and FII investment in the Indian equity market is studied, towards the achievement of the last objective of study the relationship between FII investment in the Indian equity market and the performance of the Indian equity market, the causality between FII investment in the Indian equity market and the performance various indices of the Indian equity market as proxy of the Indian equity market is done. In this causality, it is found that there is bidirectional causality between sectoral indices like Auto, Bankex and Healthcare and FII investment in the Indian equity market. Thus, it is found that not only the FII investment affects the Indian sectoral indices but also the performance of these indices affect the FII investment in the Indian equity market.

Objective 4: To study the effect of FII investment in the Indian Equity Market

To serve towards this objective of the study a causal study is done between FII investment and Nifty 50 as a proxy of the Indian equity market. Here the unidirectional causality is found between FII investment in the Indian equity market and Nifty 50. It implies that FII investment affects the performance of Nifty 50 and not a vice versa. This unidirectional causality leads me to establish the relationship between FII investment in the Indian equity market and the performance of the Indian equity market (Nifty 50). Finally, it is found that the performance of Nifty 50 is influenced by FII investment in the Indian equity market in a significant manner. This relationship have been shown through the model established, which can be represented in terms of the mean model showing the regression model with the support of variance model explaining Threshold Autoregressive conditional Heteroskedasticity (TARCH) as follow.

D(NIFTY) = 2.519 +0.0179(D(CUM_FIIs_EQ)) - 97.361(SB_2009M07)+ 21.355(SB_2014M03) - 0.047 (AR(2)) + 0.164(MA(1))

GARCH = 305.289 + 0.116*RESID(-1)^2 - 0.033*RESID(-1)^2*(RESID(-1)<0) +0.539*RESID(-2)^2 - 0.618*RESID(-2)^2*(RESID(-2)<0) + 0.071*GARCH(-1) + 0.699*GARCH(-2)

From both of the models, it can be concluded that the performance of the Indian equity market is affected by the FII investment, various structural breaks in FIIs investments and also by its past performance. At the same time, it is also found that volatility in the performance of the Indian equity is also affected by previous time period volatility.

The above conclusion implies that the role of FII investment in the Indian equity market is significant and it affects the performance of the Indian equity market as well its volatility. Thus, all types of the investors who are interested in dealing in the Indian equity market must take into account the movement of FII investment in the Indian equity market for the rational investment decision in the equity market. At the same time to protect the interest of investors in the Indian equity market, the government should always look forward towards the policy which not only maintains the interest of existing FII investment but also attracts new FII investment through forming such policies.

With the opening of the gates to the foreign and private players by the Government of Indian in the year 1991 and allowing them to participate in the Indian economy from the year 1992 the country's economy has witnessed a paradigm shift and lot of structural changes took place in all the sectors of the economy in general and in the financial services sector in particular.

However , in order to cater to the rising needs of millions of people of this vast country in general and the aspiring youth in particular the government has to take many steps in the direction of creation of job opportunities, providing world class infrastructure, health facilities, social security measures, quality and market oriented education and so on. For catering all such needs the participation of FIIs and domestic private players is the need of the hour. The government regulation and the capital and technological participation of the FIIs and private players shall be like a hand in the glove for achieving the bigger dreams of Indian economy to be self reliant and reaching the top position in terms of the economy and GDP in the world. Undoudetly a lot is done, however a lot is yet to be done.

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