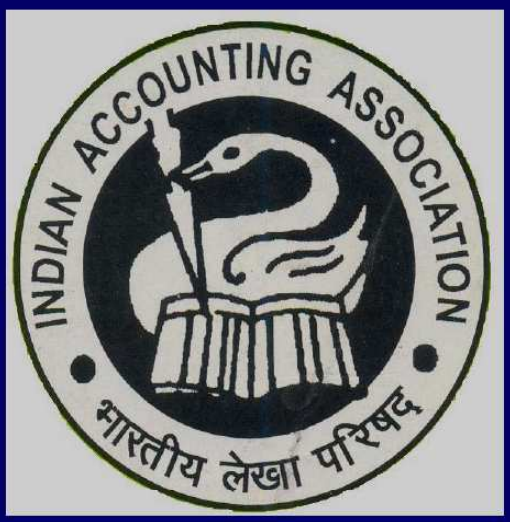
ISSN: 2249-4804

Business Spectrum

*** Volume – II No. 2 July – December, 2012 ***



The Bi-annual Journal of

Indian Accounting Association

Midnapore Branch, West Bengal

Editorial Board

Prof. Jaydeb Sarkhel
University of Burdwan
jaydebsarkhel@gmail.com
Editor in Chief

Dr. Samir Ghosh
Vidyasagar University
samirghosh_commerce@rediffmail.com
Executive Editor

Dr. Anupam Parua
K. D. College of Commerce & General Studies, Midnapore
anupam_parua@rediffmail.com
Desk Editor

Members

Prof. Nageshwar Rao
Vikram University
drnageshwarrao@yahoo.com

Prof. Arindam Gupta
Vidyasagar University
arindam_finance@rediffmail.com

Prof. Sudipti Banerjea
University of Calcutta
sudiptiban@rediffmail.com

Dr. Prithul Chakraborty
Presidency University
prithul_cb@yahoo.co.in

Prof. S. Gurusamy
University of Madras
professorsg@yahoo.com

Dr. Debdas Rakshit
University of Burdwan
debdas_rakshit@yahoo.co.in

Prof. S. N. Dhar
North Bengal University
dharsnd@gmail.com

Prof. D. Obul Reddy
Formerly, Osmania University
profobulreddy@yahoo.co.in

Prof. Pralay Kr. Haldar
Tripura University
pkhaldar@rediffmail.com

Prof. D. R. Dandapat
University of Calcutta
dhrubacal@yahoo.co.in

Prof. Ashok Banerjee
I.I.M., Calcutta
ashok@iimcal.ac.in

Prof. Sunil Kr. Gandhi
University of Kalyani
sunilgandhi_ku@rediffmail.com

Prof. G. Soral
M. L. Sukhadia University
drgsoral@gmail.com

Dr. Pulak Mishra
I.I.T. Kharagpur
pmishra@hss.iitkgp.ernet.in

Table of Contents

Page No.	Topic	Author(s)
01 – 19	**1. Effective Public – Private Partnership for Infrastructure Development: An Indian Experience**	**Dr. Ananda. S.** *Assistant Professor* *Department of International Business Administration* *College of Applied Science, Ministry of Higher Education* *P.O Box 23, Postal Code 215, Salalah, Sultanate of Oman* *Email: anands66@gmail.com*
20 – 33	**2. Public – Private Partnership and Development: An Overview**	**Anirban Sarkar** *Assistant Professor* *Dept. of Commerce & Management* *West Bengal State University, Barasat; Berunanpukuria, P.O. Malikapur* *Kolkata – 700 126 ; West Bengal, India* *Email: anirban_sarkar77@yahoo.co.in*
34 – 43	**3. Investigating Impact of FDI on GDP Growth rates of India and some ASEAN countries**	**Prof. Sangita Dutta Gupta** *Assistant Professor* *Globsyn Business School* *XI-11&12, Block-EP, Sector - V* *Salt Lake Electronics complex,* *Kolkata-700091, West Bengal, India* *Email: sangitadgpt@gmail.com* **Dr. Vishal Talwar** *LSE Fellow* *Dept. of Management* *London School of Economics* *Houghton Street* *London WC2A 2AE* *Email: v.talwar@lse.ac.uk*
44 – 55	**4. Commercial Prospects of Floriculture: A Study on Purba Medinipur District**	**Dr. Sanjit Kumar Das** *Reader in Commerce* *Bhairab Ganguly College,* *Belghoria, Kolkata-700056* *West Bengal, India* *Email: sanjit_msdl@yahoo.com* *sanjitbgc@gmail.com*
56 – 76	**5. Impact of Post – Liberalization Profitability of Public Sector General Insurance Companies in India: A Study of Pre – liberal and Post – liberal Periods**	**Mr. Anirban Sarkar** *Research Scholar* *Dept. of Commerce with Farm Management* *Vidyasagar University* *Midnapore, West Bengal, India - 721102*

EDITORIAL

I am happy to announce the release of volume 2 no. 2 of *Business Spectrum*, the bi-annual journal of IAA, Midnapore Branch. This issue contains five articles written by scholars from within the country and abroad. Two articles are concerned with Public Private Partnership in India. One article is concerned with Foreign Direct Investment in India and one is concerned with liberalization of the insurance sector in India. All the four articles are of contemporary relevance to the Indian economy. Besides there is one article on Floriculture in East Midnapore district of West Bengal. This is a study on the local economy. Thus this issue considers national as well as local issues.

Dr. S. Anand in his article on PPP for infrastructure development provides a conceptual framework to sustainable PPP model adopted in India. He explains various models of PPP and also various options of PPP for infrastructure development in India. He also examines the relevance of PPP model for accelerated economic development in India.

Anirban Sarkar in his article entitled "Public-private partnership and development: an overview" also gives conceptual ideas of PPP, modes of PPP and strategies required for successful PPP in India. He analyses the Indian scenario in details.

The third article of Sangita Dattagupta and Dr. Vishal Talwar entitled, "Investigating Impact of FDI on GDP Growth Rates of India and some ASEAN countries" provides time series analysis of the flow of FDI in India and ASEAN countries. They have considered correlation between FDI and economic growth They argue that not only FDI promotes growth but also a growth oriented environment is conducive for attracting FDI inflows.

In his article, "Commercial Prospects of Floriculture: A Study on Purba Medinipur District", Sanjit kumar Das analyses the problems faced by the farmers in this district in the cultivation of flowers. He also makes a SWOT analysis in his study.

Anirban Sarkar in his article on the impact of liberalization on the profitability of public sector general insurance companies in India makes a study of two time periods 1993-94 to 1999-00 and 2000-01 to 2009-10. The first period is the pre-liberalisation period while the second period is the post-liberalization period. He has made a comparative analysis of profitability in these two periods.

On the whole the articles are informative and readable. I thank the paper writers. I also thank the referees of the papers, the members of the editorial board and the desk editor for their cooperation.

Effective Public – Private Partnership for Infrastructure Development: An Indian Experience

Dr. Ananda. S. ♦

Abstract

The shortage of infrastructure is proving to be a key binding constraint in sustaining and expanding economic growth. Infrastructure spending is the only way to bridge this gap to boost the economic growth. Traditionally, in India, infrastructure related services are mostly considered under government periphery. But, due to certain shortcomings this model has not come at par with the growing needs of the economy. Hence, the concept of Private Public Partnership (PPP) confirms the realization of the need for cooperation between the public and private sectors to ensure a sustainable economic development. PPPs aim is to combine the skills, expertise, and experience of both the public and private sectors to deliver higher standard of services to the nation. The PPP model in India has achieved an intermediary success in certain specific sectors like real estate, construction, roads etc. Infrastructure development is the key aspect for sustaining and expanding India's economic growth. In the light of the above background, this paper is to give a conceptual frame work to sustainable PPP model adopted in India and its application to infrastructure development. The paper also examines the relevance of PPP model for accelerated economic development in India.

Key words: *Economic growth, Infrastructure, Optimum Risk, PPP Model, Soft Fund, Special Purpose Vehicle.*

JEL Codes: *H400, L32, L980, O16, O18*

Introduction

PPPs have been around for a few centuries. During sixteenth and seventeenth century, in France roads and bridges were concessioned for tolls in return for maintaining the routes. Canals were built and water was collected and distributed under concessions. By the 1820, there were six private water companies operating in London. Such works included: riverbeds and canal construction, waste collection, public lighting, mail distribution, and even opera houses. At the beginning of the nineteenth century, nearly all of the waterworks in the USA were private.

♦ *Assistant Professor, Department of International Business Administration, College of Applied Science, Ministry of Higher Education, P.O Box 23, Postal Code 215, Salalah, Sultanate of Oman, Email: anands66@gmail.com*

Electricity utilities in the nineteenth century in Brazil, Chile, Costa Rica, and Mexico were private entities. In Argentina, Brazil, and Uruguay, private developers from Britain, France, and the United States built and operated many of the early railways in the nineteenth and twentieth centuries. PPP was pioneered in the United Kingdom and later on spread to other parts of the globe such as the Middle East, Australia, Canada and Europe. Singapore too has taken up the PPP model in recent years. This has given fresh hope to the idea that PPP can indeed be tapped to provide for meeting the ever increasing demand in Asia and elsewhere.

The model of PPP in sector of infrastructure was prevalent in India as early as the 19th century. The Great Indian Peninsular Railway Company operating between Bombay and Thana (1853), the Bombay Tramway Company running tramway services in Bombay (1874), and the power generation and distribution companies in Bombay and Calcutta in the early 20th century are some of the earliest examples of PPP in India.

In the past, the infrastructure sector has been the forte of the government and state agencies alone in India. However, today, it has emerged as an attractive sector for investment by the private players due to the higher returns it promises in spite of the long-term commitment required and the bureaucratic and political risks involved. This has led to the emergence of the popular model of PPP, in financing of infrastructure projects. PPP is a well thought theme and is in line with the global trend of liberalized economy. The theme further confirms the realization of the need for cooperation between the public and private sectors to ensure a sustainable economic development in the country. In the 1990s a specific form of privatization was developed to deal with limitations on public borrowing. This involved using a private company to borrow money, build a new hospital, school, road, etc and then operates it over many years, recouping the investment and profit from payments over the whole period of operation.

Purpose of the Study

The aim of this paper is to provide a conceptual background to PPP and its application to infrastructure development with special reference to India. Therefore, the objectives of this paper are to:

i. Explain the concept of PPP
ii. Understand various models of PPP
iii. Discuss various options of PPP for infrastructure development.
iv. Examine the relevance of PPP for accelerated economic development
v. Describe the Indian experience in PPP

Conceptual Framework

As per government of India's definition, "PPP means an arrangement between a government or statutory entity or government owned entity on one side and a private sector entity on the other, for the provision of public assets and/or related services for public benefit, through investments being made by and/or management undertaken by the private sector entity for a specified time period, where there is a substantial risk sharing with the private sector and the private sector receives performance linked payments that conform (or are benchmarked) to specified, pre-determined and measurable performance standards." 'Private Sector Company' means a company in which 51 percent or more of the subscribed and paid up equity is owned and controlled by a private entity. 'Public Services' are those services that the State is obligated to

provide to its citizens (towards meeting the socio-economic objectives) or where the State has traditionally provided the services to its citizens. For example, provision of security, law and order, electricity, water, etc. to the citizens.

In total, PPP is a long-term contractual partnership between the public and private sector agencies, specifically targeted towards financing, designing, implementing, and operating infrastructure facilities and services that were traditionally provided by the public sector. These collaborative ventures are built around the expertise and capacity of the project partners and are based on a contractual agreement, which ensures appropriate and mutually agreed allocation of resources, risks, and returns.

Need for Development of Infrastructure Services

India has been facing large gaps in the demand and supply of essential social and economic infrastructure and services. Rapidly growing economy, increased industrial activity, burgeoning population pressure, and all-round economic and social development have led to greater demand for better quality and coverage of water and sanitation services, sewerage and drainage systems, solid-waste management, roads and seaports, and power supply. Increased demand has put the existing infrastructure under tremendous pressure and far outstripped its supply.

The infrastructure shortages are proving to be the leading binding constraint in sustaining, deepening, and expanding economic growth and competitiveness of India. For example, the lack of good quality infrastructure is costing India around 2 per cent growth in GDP every year. Good quality infrastructure has been the main enabler of higher level of economic growth in developed as well as developing countries like USA, Russia, Malaysia, and China. The Expert Group on Commercialization of Infrastructure estimated the loss due to poor roads and congestion at around Rs 200 billion per annum. The Economic Survey of India, 2006-07, estimates that power shortages of 12 per cent at peak levels and 8 per cent at non peak levels are equivalent to around $3.4 billion of forgone generation capacity or an approximate GDP loss of around $68 billion. The annual cost of environmental degradation, on account of lack of sewerage and solid-waste management systems and surface water harvesting is 4.5 per cent of GDP. Water pollution accounts for 6 per cent of the economic cost of environmental degradation which undermines global competitiveness. Lack of infrastructure is preventing the sectoral, regional, and socioeconomic broadening of the economy. Poor infrastructure is also a major barrier to foreign direct investment. Greater investment in infrastructure is the answer to all these problems. In this backdrop, Government of India is committed to raising investment in infrastructure from its existing level of below 5 percent of GDP to almost 9 percent. This suggests that more than 450 billion US dollar will be required to fund infrastructural development in India over the next five years.

Traditional Model of Infrastructure Development

Infrastructure services traditionally have been the domain of government run institutions in India. Traditionally it has been pursued that infrastructure is only the government's concern and government is solely responsible for its development. The role of government is to provide necessary infrastructure services towards the growth and development of country. Hence, for a long time in emerging economies, the traditional government driven model existed. The government revenue in terms of direct & indirect taxes are major sources of funding apart from

government services and other governments department. Funds are allocated annually depending upon the requirement and they may not be related to income generated or revenue collected. The various government agencies & statutory bodies are deployed to various infrastructure ventures. In spite of strong government initiative, there are still certain shortcomings in Traditional Model as highlighted below:

- The government has limited funds available from their annual incomes plus there are restrictions on the levels of borrowing for public spending.
- Lack of specialized skills needed for technologically advanced activities.
- Increased government debt.
- Execution is timely delivery of project is a key challenge with inherent red-tapism in the system.
- Complex legal compliance & statutory issues result in unnecessary delay.
- The estimation and project management is poor due to lack of expertise.
- Tendency for under investment backed by political influence.
- Quality, efficiency & competitiveness are very low.

Public-private partnerships are an important part of the answer to such shortcomings.

Privatization and PPP

While PPPs may seem same as privatization but they are different from privatization. PPPs involve private management of public service through a long-term contract between an operator and a public authority whereas privatization involves outright sale of a public service or facility to the private sector. A typical PPP example would be a toll expressway project financed and constructed by a private developer. PPPs enable the delivery of infrastructure and ancillary services without privatization. PPPs differ from privatization in that:

- Public owned assets are not sold off to the private sector
- In many cases new assets which are initial funded by the private sector are eventually transferred to public ownership
- Core services continue to be provided by the public sector
- The Government, on behalf of the public, sets standards of ancillary service delivery
- Profit sharing arrangements are in place the community may have access to any wind falls which could be generated under PPPs.

The following are the few examples of Asian countries with the type of PPP used in the infrastructure sector.

- Development of road links on BOT and BOO basis (Bangladesh)
- Railway ticket booking systems (Bangladesh)
- Fiber optic systems operated by the Private sector (Bangladesh)
- Private sector development and investment in ports (India)
- Private airport development and operation (India)
- Optic fiber telecom distribution systems (India)
- Private sector lease/usage of rail wagons (India)
- Ropeway systems (Nepal)
- Private sector operation of Inland container depots (Nepal)
- Transport and tourism investment and operation by the private sector in (Bhutan)

Roles and Responsibilities

PPPs do not mean reduced responsibility and accountability of the government. They still remain public infrastructure projects committed to meeting the critical service needs of citizens.

- The government remains accountable for service quality, price certainty, and cost-effectiveness of the partnership.
- Government remains actively involved throughout the project's life cycle.
- The government's role gets redefined as one of facilitator and enabler.
- The private partner plays the role of financier, builder, and operator of the service or facility.

Forms of PPP

There are two main forms of PPPs. Firstly, concession contracts, where the company gets paid by user charges – for example in water services, or toll roads. Secondly, contracts typical of the private finance initiative (PFI) in the UK, where the company gets payments from a public authority. There is also a third meaning of PPP, which the European Commission has called an 'institutional PPP'. This is a joint venture company, providing a public service, which is partly owned by a public authority and partly owned by a private company or private investors. There are various models of PPP. The first includes those that are applicable to new projects, while the other includes options applicable to existing non-performing or moribund projects. The types of public private partnership models with varying degrees of private participation are as follows:

Applicable to New Projects

The following options can be used to initiate new desirable projects to kick start the economy in the absence of sufficient financial, technical and managerial resources to the government. Among popular options in this category are described below.

- **Design-Build (DB)**
  Under this model, the government contracts with a private partner to design and build a facility in accordance with the requirements set by the government. After completing the facility, the government assumes responsibility for operating and maintaining the facility. This method of procurement is also referred to as Build-Transfer (BT).
- **Design-Build-Maintain (DBM)**
  This model is similar to Design-Build except that the private sector also maintains the facility. The public sector retains responsibility for operations.
- **Design-Build-Operate (DBO)**
  Under this model, the private sector designs and builds a facility. Once the facility is completed, the title for the new facility is transferred to the public sector, while the private sector operates the facility for a specified period. This procurement model is also referred to as Build-Transfer- Operate (BTO).
- **Design-Build-Operate-Maintain (DBOM)**
  This model combines the responsibilities of design-build procurements with the operations and maintenance of a facility for a specified period by a private sector partner. At the end of that period, the operation of the facility is transferred back to the public sector. This method of procurement is also referred to as Build-Operate-Transfer (BOT).

- **Build-Own-Operate-Transfer (BOOT)**
  The government grants a franchise to a private partner to finance, design, build and operate a facility for a specific period of time. Ownership of the facility is transferred back to the public sector at the end of that period.
- **Build-Own-Operate (BOO)**
  The government grants the right to finance, design, build, operate and maintain a project to a private entity, which retains ownership of the project. The private entity is not required to transfer the facility back to the government.
- **Design-Build-Finance-Operate/Maintain (DBFO, DBFM or DBFO/M)**
  Under this model, the private sector designs, builds, finances, operates and/or maintains a new facility under a long-term lease. At the end of the lease term, the facility is transferred to the public sector. In some countries, DBFO/M covers both BOO and BOOT.

Applicable to Existing Projects/Facilities

PPP can also be employed in the resuscitating and rehabilitation of an existing project or facility that is not performing optimally. The available variants include the following:

- **Service Contract**
  In this option, the public sector retains control over its services and facilities while the private sectors participate through a service contract. In service contract or "contracting out" the government contracts with private sector to supply functional responsibilities that government previously performed. The introduction of private sector operator will lead to competition, reduction in service delivery cost, improved quality of service and improved morale of public employees and managers.
- **Management contract /lease management contract**
  This entails the introduction of private sector operator to a publicly owned facility under contract with the sponsoring government. The private operator is responsible for all aspects of operation and maintenance. This can lead to improved service and efficiency in service delivery. This can be used to enhance performance of public sector owned hotels, water supply system, etc.
- **Concession**
  Concession entails that government grants to a private firm or consortium the exclusive rights to operate, maintain and manage the entire project facility for an extended period. The basic system is still owned by the public, but the private concessionaire owns all improvements and extensions. The concessionaire/ inject capital as part of the concession agreement to revitalize the facility. The details of the operating requirement and the responsibility of owner government are usually spelt out in the concession agreement. Usually the concessionaire sets the rates for the services, but usually within the regulatory requirements of the government. Also, the concessionaire is often required to pay an initial and or annual concession fee to the government, and to commit to certain level of investment over the course of the concession period. This is applicable to hotels, water system, medical facilities, roads, airport facilities, etc.
- **Divestiture**
  The government transfers an asset, either in part or in full, to the private sector. Generally the government will include certain conditions with the sale of the asset to ensure that improvements are made and citizens continue to be served.

The choice of an option in a given situation depends upon various factors such as: the degree of control desired by the Government; ability of the Government and private sector to provide the desired service at specified and acceptable level of quality; legal framework for private investment; regulatory mechanism; and potential of attracting financial resources from both the public and private sectors.

Business Models of PPP

The above mentioned models of PPPs may be operational in any one of the following forms:

a. **Joint ventures**
   The private and public sectors set up a jointly owned company to complete a project which brings benefits to both parties.
b. **Franchises**
   The private sector is permitted to provide and charge the public for services which would normally be provided by the state, in return for a fee.
c. **Privately financed investment projects**
   A private company obtains the funds to design, construct / refurbish and operate/maintain a public asset such as a hospital. Once the asset is operating a regular fee is paid by the public sector for a set period (usually 20-35 years). At the end of this period, the asset reverts to public ownership.
d. **Retaining minority shares in privatized companies**
   The state retains an agreed percentage of the shares, in order to keep some control over the provision of services to the public.
e. **Market Testing**
   Private companies are invited to tender for a contract to provide public services, in competition with the existing public sector provider.

Stakeholders Concerns in PPPs

It is clear that developing an infrastructure project in general through Private Sector Participation is an involved and complex exercise as it calls for meeting the objectives of all the stakeholders of the project. The various concerns of the key stakeholders in a typical project are as follows:

i. **Government**
   - Ensuring that the project comes up in time
   - Ensuring that the resources provided by it are suitably leveraged
   - Ensuring that the service delivered is of a high quality.
   - Ensuring that the consumers obtain the value for money and the prices assure the equity investor a decent return on his investment.

ii. **Consumer**
   - Continued delivery of the service
   - High Quality service
   - Availability of service at reasonable price

iii. **Equity providers/Shareholders**
   - Steady use by the consumers of the service facility
   - Earning a reasonable rate of return on their investments
   - Earning the upsides from the success of the project (High Risk- High Return)
   -

iv. Lenders

- Completion of the project within the specified time period and within the estimated costs.
- Revenues and expenses in line with the estimates
- Reduction of downsides of the project.

Structure of PPP

There are three key questions need to be answered in structuring PPP are:

- how do we fund such a large requirement of financial resources?
- how do we ensure that these resources translate into infrastructure assets in an efficient manner?
- how do we ensure that, once created, these infrastructure assets translate into high quality services that benefit the economy, communities and ordinary citizens in an inclusive and transparent manner?

Typically, a PPP project involves a public sector agency and a private sector consortium which comprises contractors, maintenance companies, private investors, and consulting firms. Under the PPP format, the government role gets redefined as one of facilitator and enabler, while the private partner plays the role of financier, builder, and operator of the service or facility. PPPs aim is to combine the skills, expertise, and experience of both the public and private sectors to deliver higher standard of services to customers or citizens. The public sector contributes assurance in terms of stable governance, citizens' support, financing and also assumes social, environmental, and political risks. The private sector brings along operational efficiencies, innovative technologies and managerial effectiveness, access to additional finances, and construction and commercial risk sharing. The consortium often forms a special company or a 'special purpose vehicle' (SPV). The SPV signs a contract with the government and with the subcontractors to build the facility and then maintain it. To enable the flow of private funds and resources into public infrastructure and services, the PPP is operationalized through a contractual relationship between a public body and a private company. This partnership could take many contractual forms, which progressively vary with increasing risk, responsibility, and financing for the private sector. However, the most common partnership options are (i) Service Contract; (ii) Management Contract/Lease; (iii) Build Operate Transfer (BOT); (iv) Concession; (v) Joint Venture; and (vi) Community-based Provision. Most contracts take the form of Concession and Design, Build, Finance, and Operate contracts, to cover the finance, design, management, and maintenance obligations. These contracts are usually financed by user fees or tariffs or by government subsidies. The public sponsor of the PPP decides the degree of private participation required for the particular project. This decision is usually based on the government's objectives of undertaking the project, the degree of control it desires, and the ability of the PPP consortium to deliver the required service. It is also influenced by the provisions of the existing legal and regulatory framework, the structuring of the project to attract private resources, and the potential to generate future cash flows.

Financing Structure

PPP projects are often undertaken to supplement conventional procurement practices by taking additional revenue sources and mixing a variety of funding sources, thereby reducing demands on constrained public budgets. Some of the revenue sources used to support PPPs includes:

- Shareholder equity
- Grant anticipation bonds
- General obligation bonds
- State infrastructure bank loans
- Direct user charges (tolls and transit fares) leveraged to obtain bonds;
- Other public agency dedicated revenue streams made available to a private franchisee or concessionaire:
    - Leases
    - Direct user charges from other tolled facilities
    - Shadow tolls

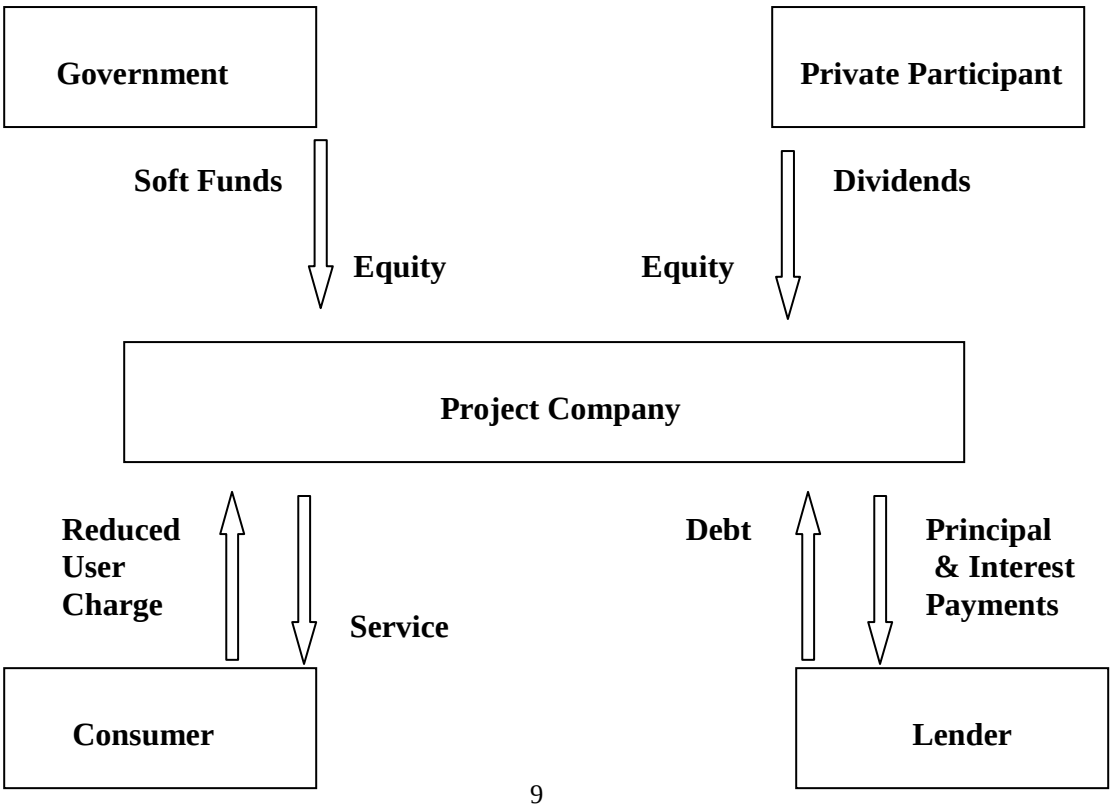
PPP financings often involve the co-mingling of different federally-sponsored tools and private commercial debt.

In developing infrastructure projects traditionally government funds have been used to provide equity, quasi-equity and debt. This in general has not reduced the price of the service offered to the end consumer. There are two innovative models for better utilization of government funds. The objective of this model is to maximize service to the consumer at an affordable price with minimum use of government funds.

Structure I: Soft Funds Model

This model would be particularly useful in the context of micro and medium sector projects. The Government invests soft funds in the project which are not required to be serviced, hence bringing the price by the user down.

Figure 1: Soft Funds Model



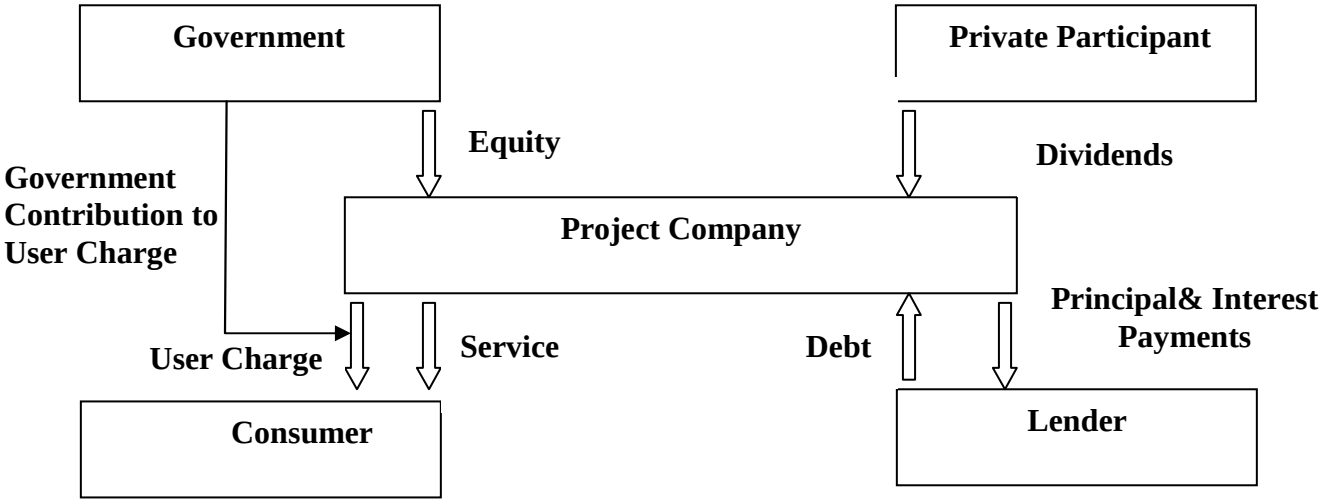
Remarks:

- Government provides Soft Funds to the project.
- Attracts top class Private Sector Participants and Private Sector Efficiencies.
- User charge reduced as government funds do not need to be serviced
- Control Mechanisms in place.
- Assign / Takeover in cases of deficiency in service

Structure 2: User Price Rationalization Model

This model would be particularly useful in the context of medium and larger scale projects this model can be used. Government does not invest, Private Participants invests, user pays for service but government rationalizes the price of the service.

Figure 2: User Charge Rationalization Model



Remarks:

- Typically Build Own Operate (BOO) Model
- No upfront investment
- Attracts top class Private Sector Participants and Private Sector Efficiencies
- Government able to use long term planning and resource allocation
- Control mechanisms in place
- Assign/ Takeover in cases of deficiency in services

Risk Sharing Approach

The key to the PPP process is the sharing of risks between the parties. Effective PPP models involve sensible division of roles and fair sharing of responsibilities, costs, and risks between the public and private sectors. Optimal, not maximum, assignment of risk is the principle that needs to be adopted. This starts with the identification and valuation of risks, which then need to be suitably allocated between the public and private sectors if a project is to be successfully structured. To maintain value for money risks should be allocated to the parties best able to manage them. In

allocating risk, it is a general principle that risk should be carried by the party which is best able to control, manage, or mitigate that risk. Certain risks are transferred to the private sector such as design risk, construction risk and operational risk, incidental to running any business. Risk transfer is supposed to outweigh the increased cost of borrowing by the private sector that will have to obtain the finance from an investment bank at a more expensive rate than the government.

Some of the generic risks involved in a typical project are listed below:

- Project Cost and Completion Risks
- Demand Forecasting Risks
- Revenue Risks (Tariff & revenue leakage)
- Technology Risks
- Performance Risks
- Environmental & Social Risks
- Political Risks
- Legal & Regulatory Risks
- Labour Risks
- Foreign Exchange Risks

The high degrees of economic externality of public infrastructure, and the commercial and socioeconomic risks involved in developing and operating them, have made it difficult to appropriate returns from infrastructure investments.

Benefits of PPPs

This partnership model is set to be beneficial for the government, the private sector and the society. The following are the main benefits of PPP:

- **The Privatized Strength**

The emergence of PPPs is seen as a sustainable financing and institutional mechanism. PPP projects lead to faster implementation and reduced lifecycle costs. Private management also increases accountability and adds incentive to performance and maintenance of higher service standards.

- **Optimal Risk Allocation**

The long gestation period of infrastructure projects require sustainable financial and operational capacity. Therefore, there is increasing reluctance in both sectors to absorb all the costs and the risk of building and operating these assets alone. Since the private sector assumes the risk of nonperformance of assets and realizes its return if the assets do perform, the PPP process involves a thorough and full-scale risk appraisal. This results in better cost estimation and more rational investment decisions.

Implication for Public – Private Partnerships

Some of the key factors that need to be in place to encourage effective public-private partnerships are as follows:

- The key factor for the successful PPPs lies in the ability of local participants to induce and sustain a collaborative process involving a wide variety of organizations, groups and individuals in pursuit of a common goal. Abilities, in this sense, are both harnessed and developed in a virtuous cycle of personal and organizational development.

- Effective PPPs must balance the need to produce both public value and private gain if they are to be sustainable. They must serve a learning function which allows participants and stakeholders to build the collaborative and technical skills which the wider community needs.
- Critical success factor for effective PPPs is improved government accountability and performance. Governments such as municipal councils must be able to understand costs and performance standards. They must
    - Be able to structure performance contracts
    - Have an effective monitoring capacity.
    - Show sufficient stability and consistency to engender a sense of trust in outside groups with whom they have co-producer relationships.
    - Operate with more accountability and transparency.
- Private firms have a new role in demand-making for policy change in addition to carrying out operational tasks. They frequently must form alliances and networks with other private sector organizations.

India's Experience

There is a large gap between the demand and supply of essential social and economic infrastructure and services in India. Since the opening of the Indian economy in 1991 there have been several cautious attempts at PPP. However, most PPPs have been restricted to the roads sector. The Government of India is committed to raising the investment in infrastructure from its existing level of 4.7 percent to around 8 percent of gross GDP. Infrastructure shortages are key binding constraint in sustaining and expanding India's economic growth and making it more inclusive for the poor. The government is actively promoting PPPs in the key infrastructure sectors of transport (roads/highways), ports (air, sea, container), telecommunication, water supply, waste management, tourism, power, industrial infrastructure, urban infrastructure township development, leisure, and health.

Over the past decade a large number of projects have been successfully implemented through the PPP format. Table 1 below provides details of the total investment in projects by type and primary sector that have been implemented under a PPP framework by the end of year 2011:

Table 1: Total Investment in Projects by Type and Primary Sector

(US $ Million)

Sector	Concession	Divestiture	Greenfield project	Management and lease contract	Total
Energy	22	8,943	108,311	144	117,420
Telecom	0	3,236	77,959	0	81,196
Transport	35,035	0	21,163	0	56,198
Water and sewerage	108	0	245	2	355
Total	35,165	12,179	207,678	146	255,169

Source: Private Participation in Infrastructure database, World Bank

Most infrastructure projects with private participation fit in one of the four categories indicated in the table. But the boundaries between these categories are not always clear, and some projects have features of more than one category. In these cases projects have been classified in the category that better reflects the risk borne by the private sector

Table 2 below provides details of the number of projects that have been implemented across sectors up to the year 2011.

Table 2: Total Projects by Primary Sector and Subsector

(US $ Million)

Sector	Sub-Sector	Number of Projects	Total Investment
Energy	Electricity	215	116,589
	Natural Gas	5	831
	Total Energy	220	117,420
Telecom	Telecom	37	81,196
	Total Telecom	37	81,196
Transport	Airports	7	4,527
	Railroads	8	7,246
	Roads	238	37,309
	Seaports	34	7,116
	Total Transport	287	56,198
Water and sewerage	Treatment plant	4	195
	Utility	8	160
	Total Water and sewerage	12	355
Total		**556**	**255,169**

Source: Private Participation in Infrastructure database, World Bank

India has developed a large number of projects through these arrangements as mentioned in Table 2. There is a clear demonstration in evidence that the private sector is a willing participant in PPP arrangements in the country and that there is a substantial level of capacity to undertake projects if offered.

Table 3 below provides details of number of projects that have been implemented and their respective investment in primary sector between year 1990 and 2011.

Table 3 : Number of Project & Investment by Primary Sector

Year	Energy		Telecom		Transport		Water and sewage		Total	
	No.	Amount	No,	Amount	No.	Amount	No.	Amount	No.	Amount
1990	0	0	0	0	1	2	0	0	1	2
1991	1	614	0	0	0	0	0	0	1	614
1992	2	13	0	0	0	0	0	0	2	13
1993	3	1,051	0	0	0	0	0	0	3	1,051
1994	1	311	4	97	1	125	0	0	6	533
1995	6	1,008	10	683	0	0	0	0	16	1,691

1996	6	1,553	6	1,229	4	182	0	0	16	2,964
1997	2	970	4	3,827	6	405	0	0	12	5,202
1998	7	1,066	2	673	10	302	0	0	19	2,041
1999	8	2,500	0	1,045	13	467	0	0	21	4,012
2000	8	1,954	0	682	2	96	1	0	11	2,732
2001	3	240	7	3,415	5	351	1	2	16	4,008
2002	6	390	0	5,008	9	719	0	0	15	6,118
2003	8	913	0	2,080	19	579	0	0	27	3,572
2004	12	4,256	0	3,701	7	1,141	1	111	20	9,210
2005	7	910	0	5,666	14	1,527	1	0	22	8,102
2006	18	5,501	0	6,823	54	10,028	0	0	72	22,352
2007	17	10,236	0	8,168	34	3,925	5	142	56	22,472
2008	21	12,889	0	9,934	16	5,424	2	76	39	28,323
2009	27	24,504	2	7,830	13	4,872	1	24	43	37,229
2010	36	37,670	2	20,335	57	14,221	0	0	95	72,226
2011	21	8,870	0	0	22	11,833	0	0	43	20,703
Total	220	117,420	37	81,196	287	56,198	12	355	556	255,169

The track record of a large number of PPP projects in India establish that the quantum of investments required in the infrastructure sector could be mobilized to meet demand. The largest number of PPP projects are in the roads and bridges sector, followed by ports, particularly Greenfield ports. According to a Morgan Stanley report, more than Rs 1000 billion worth of PPP projects are under development in India. The PPPs are seen as an important tool for producing sustainable infrastructure investments, and catching up with the infrastructure deficit in the country.

Infrastructure projects implemented on a PPP basis provide an innovative framework to secure specific desired results. For instance, the private sector assumes the responsibility, obligation and risks of constructing, operating and maintaining the asset at a specified level of service for a period of up to 30 years. The projects are typically domiciled in SPV which is typically a legal entity incorporated under the Indian Companies Act, 1956. Each SPV develops the on-the-ground capabilities to discharge its responsibilities. Under a PPP framework a minimum level of service is guaranteed over an extended period of time. At the end of the period, the asset is handed over to Government free of cost.

The government has established the Viability Gap Funding scheme as a special facility to support the financial viability of those infrastructure projects which are economically justifiable but not viable commercially in the immediate future. It involves upfront grant assistance of up to 20 percent of the project cost for state or central PPP projects that are implemented by a private sector developer. Government of India has established India Infrastructure Finance Company Limited (IIFCL) in January 2006 as a wholly government-owned company to provide long-term finance to infrastructure projects, either directly or through refinance. The IIFCL caters for the burgeoning financing gap in long-term financing of infrastructure projects in the public, private, or PPP sector. Any government project awarded to a private sector company for development, financing, and construction through PPP will have overriding priority under the scheme.

It is also well recognized that an essential aspects for the successful growth of the infrastructure sector in PPP terms is good governance. Over the past fifteen years significant progress has been evidenced in this regard. The PPP approach, however, provides a framework for higher quality of services, resulting in higher recoveries, which in turn, enables greater ability to invest and improve the quality of services overtime. The PPP framework provides a sustainable and proven method for government to accelerate the provision of infrastructure services in our country, to global standards, keeping in mind, the principles of transparency, accountability, equity and inclusiveness.

The following are some notable examples of successful infrastructure PPP projects implemented in India in recent years:

- Water supply projects in cities such as Vishakhapatnam, Ahmedabad, Ludhiana, and Nagpur
- West Bengal has recorded significant success in housing and health sectors.
- Andra Pradesh, Punjab, Gujarat, Karnataka, Kerala, Madhya Pradesh, Tamil Nadu and Maharashtra have had success especially in ports, roads, airport, power and urban infrastructure.
    - Bangalore-MysoreInfrastructure Corridor
    - Hyderabad International Airport at Shamshabad
    - Surendranagar Mahuva Gauge Conversion (Gujarat)
    - Pipavav Port
    - Development of Integrated Waste Processing and Engineered Sanitary Landfills in Bangalore
    - Cochin International Airport
    - Indore-Sanawad- Burhanpur-Edlabaad Road
    - Mumbai – Pune Expressway
    - Up-gradation, operation and maintenance of Amritsar bus terminal
    - Karur Toll Bridge
    - Tirupur water and sewerage project in Tamil Nadu is a promising example for privately financed BOOT project in India, executed through an SPV.
    - Delhi-NOIDA toll Bridge Project, implemented on a BOOT framework on the basis of a 30-year concession

Possible Improvements

Despite of proven track record of the success of PPP in India, more attention need to be given for further improvement in the operational mechanism of this sector:

- **Need to publicize the size of business opportunity for PPP in Private Sector**
  The World Bank estimates that total investments of $425 billion are needed in infrastructure until 2010-11 and that there is a financing gap of $123 billion. This is the size of the business opportunity in PPPs in India over the next 5 years. The government needs to publicize this effectively to the private sector in India and abroad to tap the potential of private participation to meet its needs.
- **Improvement in regulatory and policy environments**
  The weakness in the enabling environment for PPP may prove to be a constraint. The private sector participation in infrastructure requires a well designed framework of policies in which investors have the assurance that standards of services will be

maintained and concessions will be transparently awarded. The government needs to be attuned to the international best practices for development of policies and frameworks that facilitate PPPs.

- **Prequalification, bidding and procurement procedures need standardization**
  Given the variations in the formats, bidding procedures and overall execution of the PPPs among the various states in India, there is a need for standardized prequalification and bidding procedures and guidelines for ensuring efficiency and ease of approval process.
- **Maintaining Transparency**
  The Government has to move towards competitive bidding and maintenance of transparency in the award of infrastructure projects.
- **Improving the credibility of structure of projects**
  Many government projects have suffered from time and cost overruns, quality issues, irregular cash flows from budgets and shortage of competent people. If the project is appraised and structured in a credible manner, the financial structuring part becomes much easier. This can only be achieved through rigorous project development and comprehensive risk and return analysis by the government.
- **Address risk and return perception of foreign investors**
  The foreign investors are still wary because of small project size, discomfort with existing legal and regulatory frameworks, currency risks and market risks. For project-specific considerations, foreign investors look out for unmet demand, revenue potential, demonstrated project viability, and political commitment to the project. Hence, the government needs to consider the kind of environment that could be attractive to foreign investors.
- **Provide adequate protection for lenders**
  PPP projects often raise debt funding on the basis of a limited-recourse project finance where lenders rely merely on project assets and cash flows and do not have recourse to the project sponsors. Therefore, PPP design and documentation should provide adequate protection to debt service against noncommercial risks related to regulatory changes, contract termination, etc.
- **Proactive public communication and stakeholder management**
  Many PPPs have failed owing to strong opposition from civil society, local media, and other stakeholders. PPPs have also been confused with privatization. Lack of public support have increased project costs, delayed project completion, and ultimately jeopardized the sustainability of public services. It is important for the project sponsors to disseminate information among the various stakeholder groups about the virtues of partnership options and convince them about the benefits that would accrue to them. Feedback and consultations with tariff-paying citizens, labor unions, relevant government agencies, private investors, civil society organizations, and media will ensure support, client focus, and improved overall coordination of the project.

Conclusion

Infrastructure development is essential for India to sustaining economic growth and improving competitive position in today's global markets. The preceding evidence shows that well-designed private participation schemes can produce real improvements in the quality and quantity of infrastructure services, as well as major benefits for the efficiency of provision. PPP becomes important for the primary reason that the government does not have unlimited capital

for investing into building infrastructure facilities, providing for public health and safety needs and ensuring a sustainable economic growth.

The emergence of PPPs is seen as a sustainable financing and institutional mechanism. India is increasingly adopting PPPs as an alternative to the traditional in-house provision/procurement of public services. PPP projects lead to faster implementation and reduced lifecycle costs. Private management also increases accountability and adds incentive to performance and maintenance of higher service standards. Government can reduce the costs and risks borne by taxpayers; the private sector can generate business opportunities; and the public can receive better or more accessible services.

The quality of regulation will be important in determining the extent to which pressures for efficiency are introduced. Although regulation may be difficult in India with limited capacities, it should be remembered that the regulatory function like setting prices and quality standards, and monitoring and enforcing compliance with these exists whether companies are in public or private hands. Experience has shown us that fundamental conflicts of interest mean that governments generally do a poor job of combining regulation with ownership of service provision. Therefore, there should be more effective regulation when provision is from the private sector. The success of PPP projects requires a single objective of better services for the public at a reasonable cost. This is achievable through realistic and reasonable risk transfer while addressing the public concerns. In this pursuit, easy availability of long-term private capital is an essential requirement.

References

Andrea Renda and Lorna Schrefler., 2006. *Public – Private Partnerships: Models and Trends in the European Union*. European Parliament Committee. [online] Available at: <http//:www.europarl.europa.eu> [Accessed 10 September 2010]

Asian Development Bank Workshop Report, 2006. *Facilitating Public Private Partnership for Accelerated Infrastructure Development in India*. [online] Available at: <http//:www.adb.org/documents/reports/consultant/.../39659-ind-tacr.pdf> [Accessed 14 September 2009]

Asian Development Bank, 2006. *Facilitating Public Private Partnership for Accelerated Infrastructure Development in India.* Workshop Report. [online] Available at: <http://www.adb.org/documents/reports/consultant/39659-ind/39659-ind-tacr.pdf> [Accessed 6 February 2012]

Campbell Thomson and Judith Goodwin., 2005. *Evaluation of PPP projects financed by the European Investment Bank.* [online] Available at: <http://www.eib.org/publications/eval/> [Accessed 15 September 2010]

CISCO., 2004. Value of Public-Private Partnerships in Protecting Critical Infrastructures.A Draft Report on Infrastructure David Hall, 2008. *Public-Private Partnerships (PPPs) Summary paper. A report commissioned by the European Federation of Public Service Unions (EPSU), London.* [online] Available at: <http//:www.epsu.org> [Accessed 11 September 2010]

Harris Stephen, 2005. *Public Private Partnerships: Delivering Better InfrastructureServices.* Working Paper on Sustainable Development Department. Inter-American Development Bank Washington, D.C.

IL&FS, India. *De-Mystifying Public-Private Partnerships: A Possible Framework to Accelerate India's Infrastructure Development* [online] Available at: <http://www.ilfsindia.com/downloads/bus_concept/demystifying_ppp.pdf>[Accessed 6 February 2012]

J.P. Gupta and A.K. Sravat., 1998. Development and project financing of private power projects in developing countries: a case study of India. *International Journal of Project Management,* 16(2), pp. 99-105.

JNNURM, India. *Encouraging Public Private Partnership Optional Reforms Under JNNURM.*[online] Available at: <https://docs.google.com/viewer .... [Accessed 6 February 2012]

KPMG and CII. Inida, 2006. A report on Public Private Participation in Indian Infrastructure Poised for Growth (2006). [online] Available at: <http://www.ibef.org/download/India_Infrastructure.pdf> [Accessed 10 September 2010]

Kumar, Dr. Sasi, Prasad, and C. Jayasankar., 2004. Public - private partnerships in urban infrastructure. *Kerala Calling.* [online] Available at: <http//:www.kerala.gov.in/keralacallfeb04/p36-37.pdf> [Accessed 15 September 15 2010

Lakshmanan, 2006. *Public-Private Partnership in Indian Infrastructure Development: Issues and Options.* [online] Available at: <http://www.rbi.org.in/scripts/BS_VIEWContent.aspx?ID=1912> [Accessed 6 February 2012]

Mohan Kumaraswamy and David Morris., 2002. BOT in Asian Megaprojects. *Journal of Construction Engineering and Management,* 128(2), pp.93-102.

Olawore A., 2004. Public-Private-Partnership for Infrastructure Development. 34th Annual conference of Nigerian Institution of Estate surveyors and Valuers. Abuja, Nigeria 30 March – 04 April.

Omoujine, E.O., 1997. Creating Infrastructure for unsustainable Economic Growth in Nigeria. *The Estate Surveyor and Valuer Journal,* 23 (4), pp.78-94.

Partnership British Columbia., 2003. *An Introduction to Public Private Partnerships.* [online] Available at: < http//: www.partnershipsbc.ca> [Accessed 15 September 2010]

Peter Morgan., 2009. Capacity Development and Public Private Partnerships. [online] Available at: < http//: www.gdrc.org> [Accessed 17 September 2010]

Peter Scharle., 2004. PPP as a Social Game. *Journal of Innovation,* 15(3), pp.83-98.

Sri Krishna Kumar, 2010. *Public Private Partnership in India.* JurisOnline.in [online] Available at: <http://jurisonline.in/2010/11/public-private-partnership-in-india/> [Accessed 6 February 2012]

Standard & Poor, New York, 2005. *Infrastructure & Public Finance Rating, Public Private Partnerships, Global Credit Survey*. [online] Available at: <www2.standardandpoors.com/spf/pdf/.../PPP_Credit_Survey_2005.pdf>[Accessed 20 August 2010]

World Bank, 2005. *India: Addressing Supply-Side Constraints to Infrastructure Financing*. South Asia Region, Finance and Private Sector Development Unit, World Bank, Washington, D.C.

World Bank, 2005. *India: Building Capacities for Public-Private Partnership*. South Asia Region, Energy and Infrastructure Unit and Finance and Private Sector Development Unit, World Bank, Washington, D.C.

Public – Private Partnership and Development: An Overview

Anirban Sarkar[♦]

Abstract

A Public-Private Partnership (PPP) is a long term contractual agreement between a government agency and a private partner for the delivery of goods or services. PPP is a mutually beneficial relationship between the public and private sectors which is an effective way to bridge gaps between demand and resources, quality and accessibility and risk and benefit. PPP can take various forms and include both collaborative (non-legal binding) or contractual (legally binding) agreements. A successful partnership between the public and private sectors depend on all those people who are involved with the project. PPP is now accepted as an effective and novel instrument for stimulating economic growth all over the world, especially in mixed economies. In an emerging economy like India the importance of PPP model has gained greater momentum for increasing and sustaining the current pace of socio-economic development. From the 1990s the Government of India (GOI) is also encouraging PPP based projects as a modern mechanism for faster economic growth, especially in key infrastructure sectors like power, transport and communications. In this backdrop, the paper examines the conceptual ideas of PPP, explains the modes of PPP and strategies required for successful public-private partnership in India, sketches the Indian scenario of PPP in general and concludes with observations and suggestions.

Key Words: Public-Private Partnership (PPP), Economic Growth, Emerging Economy, Socio-economic Development, Infrastructure Sectors

Introduction

Public-private partnership (PPP) is a funding model for a public infrastructure project such as a new telecommunications system, airport, or power plant. The public partner is represented by the government at a local, state and/or national level. The private partner can be a privately-owned business, public corporation or consortium of businesses with a specific area of expertise. PPP is a broad term that can be applied to anything from a simple, short term management contract (with or without investment requirements) to a long-term contract that includes funding, planning, building, operation, maintenance and divestiture. PPP arrangements are useful for large projects that require highly-skilled workers and a significant cash outlay to get started. They are also useful in countries that require the state to legally own any infrastructure that serves the public.

♦ Assistant Professor, Dept. of Commerce & Management, West Bengal State University, Barasat, Kolkata – 700 126, West Bengal, India, E-mail: anirban_sarkar77@yahoo.co.in

A Public-Private Partnership is a long-term contractual agreement between a government agency and a private partner for the delivery of goods or services. As partners, each party shares in the potential risks and rewards inherent in the delivery of goods or services, including financial risks and responsibilities, and quality assurances for the taxpayer. Public-Private Partnerships are not privatizations because the government entity involved in the agreement retains control and ownership of the project.

The Canadian Council for Public-Private Partnerships defines a public-private partnership as "a cooperative venture between the public and private sectors, built on the expertise of each partner, that best meets clearly defined public needs through the appropriate allocation of resources, risks and rewards."

Governments benefit from public-private partnerships (PPP) by gaining access to corporate expertise and experience in management, strategic planning, innovative problem solving, labour market expertise, skill development, efficient delivery of goods and services, product development and logistical support.

Public-private partnerships can take various forms and include both collaborative (non-legal binding) or contractual (legally binding) agreements.

Contractual Partnerships: The Traditional View

Depending on the type of contract, the following levels of contractual partnerships exist:

- Time & Materials (T&M): Under this type of contractual partnership, the public sector customer has the most control during the term of the relationship. There are no performance-based measured outcomes; thus, performance thresholds have not been identified, and there are no reporting mechanisms for performance.
- Firm Fixed Price (FFP): Under this type of contractual partnership, the public sector customer has less control and must define the deliverable for the contractor. Outcomes are identified as 'deliverables', and typically not in the form of metrics- nor are they measured during the course of the contract. There is a desired "to-be" state in mind, but uncertainty regarding "how" to reach those outcomes is assumed by the private sector supplier.
- Performance Based: This type of contractual partnership is actually a marriage of T&M and FFP with joint solution design meetings and mutually agreed upon service level agreements (SLAs). Performance thresholds and reporting mechanisms are jointly established between public sector customer and private sector supplier, there are stated objectives and outcomes by the public sector, and performance is measured on a predetermined and consistent basis.
- Shared-in-services Savings: Under this type of contractual partnership, the public sector customer has relinquished control to the private sector supplier and the private sector supplier assumes most or all of the risk in this contractual scenario. This arrangement is usually referred to as an A-76 in the federal government- a total outsourcing arrangement. The private sector supplier has the most control and the public sector customer should justify this arrangement by knowing their total cost of ownership of doing this business before outsourcing.

Collaborative Partnerships

Collaborative partnerships are non-legal working relationships that often occur between the public and private sectors to meet a common objective or goal. Primarily goodwill gestures,

collaborative partnerships are often used to provide knowledge exchange or collective leverage resources for a specified goal.

It is not uncommon for technology firms and state IT organizations to collaborate to explore new technology that mutually benefits both parties. For example, organizations often establish an advisory board, stakeholder group or governance body which includes private sector representatives. These groups may be formed to assist with strategic planning, to provide on-going expertise and guidance, or to target specific issues or projects. These bodies may be standing committees or they may be task forces, convened for short term, tactical purposes. No matter what the title or structure of these entities, they create an environment to foster collaboration and partnerships. These collaborative efforts provide an open forum for both public and private entities to exchange ideas and promote the interest of the technology community and government to provide better services and meet new citizen demands.

A collaborative partnership like the CLC can be used to respond to infrequent emergency situations or calamities that impact government and their ability to deliver services. In 2005, a significant number of private sector technology companies responded to requests from government leaders to provide assistance to the recovery operations, in response to Hurricanes Katrina and Rita. These firms were not bound by contractual obligations to offer assistance; rather they recognized a critical situation and the overarching public need. The result was effectively working together towards a common goal. Much can be learned through these intense and immediate circumstances if we take the time to reflect.

Objective & Methodology

A Public-Private Partnership (PPP) is a long term contractual agreement between a government agency and a private partner for the delivery of goods or services.PPP is a mutually beneficial relationship between the public and private sectors, which are an effective way to bridge gaps between demand and resources, quality and accessibility, and risk and benefit.PPP can take various forms and include both collaborative (non-legal binding) or contractual (legally binding) agreements. A successful partnership between the public and private sectors depend on all those people who are involved with the project. PPP is now accepted as an effective and novel instrument for stimulating economic growth all over the world, especially in mixed economies. In an emerging economy like India the importance of PPP model has gained greater momentum for increasing and sustaining the current pace of socio-economic development. From the 1990s the Government of India (GOI) is also encouraging PPP based projects as a modern mechanism for faster economic growth, especially in key infrastructure sectors like power, transport and communications. In this backdrop, the paper examines the conceptual ideas of PPP, explains the modes of PPP and strategies required for successful public-private partnership in India, sketches the Indian scenario of PPP in general and West Bengal in particular and concludes with observations and suggestions. The present study is exploratory in nature to provide a clear guidance for empirical research. It is also descriptive where the focus is on fact-finding investigation with adequate interpretation. For this purpose secondary data were collected. The secondary data were collected through newspapers, magazines, books, journals, conference proceedings, Government reports and websites.

Public-Private Partnership (PPP)-A Conceptual Framework

PPP projects are based on long-term contracts and may involve delegation of governmental authority such as for toll collection, besides enabling private control over monopolistic services. The structuring of PPP contracts requires due diligence of a high order because of

the complex nature of the partnerships and the need to protect the interests of the users as well as the exchequer. Inadequacies in the contracts/ concessions can severely compromise the public exchequer and user interests besides leading to rent seeking and exposing PPP projects to public criticism. Badly structured contracts and inadequate regulation can often lead to windfall gains and rent seeking by the private investors. It is, therefore, important to ensure that PPP projects are carefully structured for safeguarding user and government interests with a view to ensuring efficient services at competitive costs.

PPP model describes a government service or private business venture which is funded and operated through a partnership of government and one or more private sector companies. These schemes are some-times referred to as PPP or 3Ps. It involves a contract between a public sector authority and a private party, in which the private party provides a public service or project and assumes substantial financial, technical and operational risk in the project. In some types of PPP projects, the cost of using the service is borne exclusively by the users of the service, and not by the taxpayer. In other types (notably the private finance initiative), capital investment is made by the private sector on the strength of a contract with the government to provide agreed services, and the cost of providing the service is borne wholly-or in part-by the government.

Government may promote in many more ways. It may place any of its assets or facilities under private management for public goods and services. In projects that are aimed at creating public goods-as in the infrastructure sector-the government may provide a capital subsidy in the form of a one-time grant, so as to make in more attractive to the private investors. In some other cases, the government may support the project by providing revenue subsidies, including tax breaks or by providing guaranteed annual revenues for a fixed period.

Types of PPP Models

There are various types of PPPs, established for different reasons, across a wide range of market segments, reflecting the different needs of governments for infrastructure services. Although the types vary, two broad categories of PPPs can be identified: the institutionalized kind that refers to all forms of joint ventures between public and private stakeholders; and contractual PPPs.

Concession Model

Concessions, which have the longest history of public-private financing, are most associated with PPPs. By bringing private sector management, private funding and private sector know-how into the public sector, concessions have become the most established form of this kind of financing. They are contractual arrangements whereby a facility is given by the public to the private sector, which then operates the PPP for a certain period of time. Oftentimes, this also means building and designing the facility as well. The normal terminology for these contracts describes more or less the functions they cover. Contracts that concern the largest number of functions are 'Concession' and 'Design, Build, Finance and Operate' contracts, since they cover all the above mentioned elements: namely finance, design, construction, management and maintenance. They are often financed by user fees (e.g. for drinking water, gas and electricity, public transport etc. but not for 'social PPPs' e.g. health, prisons, courts, education, and urban roads, as well as defence).

Public Finance Initiative (PFI) Model

Another model is based on the UK Private Finance Initiative (PFI) which was developed in the UK in 1992. This has now been adopted by parts of Canada, France, the Netherlands,

Portugal, Ireland, Norway, Finland, Australia, Japan, Malaysia, the United States and Singapore (amongst others) as part of a wider reform programme for the delivery of public services. In contrast to the concession model, financing schemes are structured differently. Under PFI schemes, privately financed contracts for public facilities and public works cover the same elements but, in general, are paid, for practical reasons, by a public authority and not by private users. For example, public lighting, hospitals, schools etc. come under such scheme.

There are a range of PPP models that allocate responsibilities and risks between the public and private partners in different ways.
The following terms are commonly used to describe typical partnership agreements:

Buy-Build-Operate (BBO): Transfer of a public asset to a private or quasi-public entity usually under contract that the assets are to be upgraded and operated for a specified period of time. Public control is exercised through the contract at the time of transfer.

Build-Own-Operate (BOO): The private sector finances, builds, owns and operates a facility or service in perpetuity. The public constraints are stated in the original agreement and through ongoing regulatory authority.

Build-Own-Operate-Transfer (BOOT): A private entity receives a franchise to finance, design, build and operate a facility (and to charge user fees) for a specified period, after which ownership is transferred back to the public sector.

Build-Operate-Transfer (BOT): The private sector designs, finances and constructs a new facility under a long-term Concession contract, and operates the facility during the term of the Concession after which ownership is transferred back to the public sector if not already transferred upon completion of the facility. In fact, such a form covers BOOT and BLOT with the sole difference being the ownership of the facility.

Build-Lease-Operate-Transfer (BLOT): A private entity receives a franchise to finance, design, build and operate a leased facility (and to charge user fees) for the lease period, against payment of a rent.

Design-Build-Finance-Operate (DBFO): The private sector designs, finances and constructs a new facility under a long-term lease, and operates the facility during the term of the lease. The private partner transfers the new facility to the public sector at the end of the lease term.

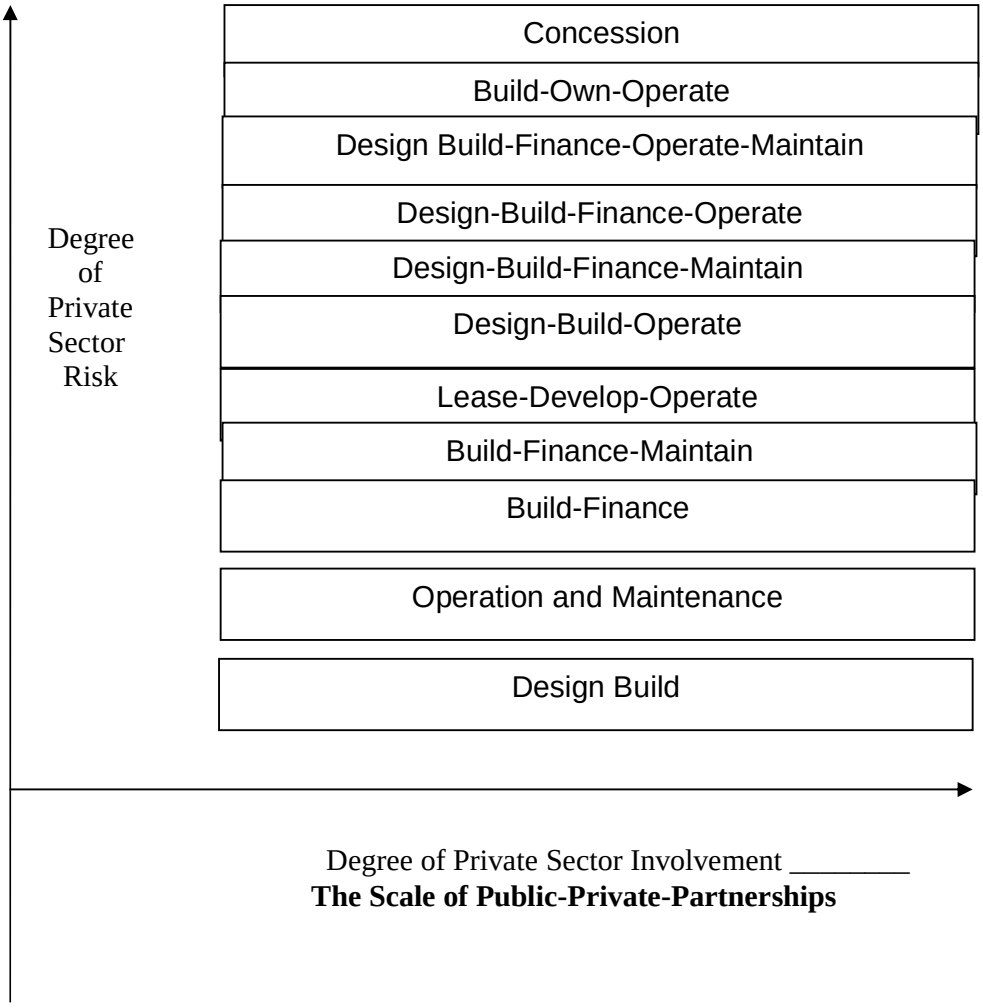
Finance Only: A private entity, usually a financial services company, funds a project directly or uses various mechanisms such as a long-term lease or bond issue.

Operation & Maintenance Contract (O & M): A private operator, under contract, operates a publicly owned asset for a specified term. Ownership of the asset remains with the public entity. (Many do not consider O & Ms to be within the spectrum of PPPs and consider such contracts as service contracts.)

Design-Build (DB): The private sector designs and builds infrastructure to meet public sector performance specifications, often for a fixed price, turnkey basis, so the risk of cost overruns

is transferred to the private sector. (Many do not consider DBs to be within the spectrum of PPPs and consider such contracts as public works contracts).

Operation License: A private operator receives a license or rights to operate a public service, usually for a specified term. This is often used in IT projects.



The Scale of Public-Private-Partnerships

Building Blocks for a Successful Partnership

A successful partnership between the public and private sectors depends on all of the people involved with the project. Problematic public-private partnerships usually result from non-technical challenges that arise in the working relationship. Lack of executive and project leadership, insuperable communication issues, or deficiencies in planning and defined processes can create barriers to collaboration. Unfortunately, the technology often is the "scapegoat' within an unsuccessful partnership. Similarly, if nothing appears broken from a technology perspective, and the operation is apparently running smoothly, the working relationship may be deemed successful when-in truth-the partnership lacks key building blocks for success.

Outlined below are some of the building blocks for a successful partnership:

- **An Assurance from Executive Leadership:** A successful partnership can result only if there is assurance from "the top" of both the government and private sector organization to work together. The most senior public officials must be willing to be actively involved in supporting the concept of public and private partnerships, and take a hostile leadership role in the development of each given collaborative venture. A well-informed political leader can play a critical role in minimizing misperceptions about the value to the public of an effectively developed partnership.
- **A statutory groundwork for Partnering:** Equally important, there should be a statutory foundation for the implementation of public and private partnerships within the state organization. Too often, state laws may limit or lack clarity regarding the formation and management of public and private sector partnerships. Without this clarity, leaders often view these collaborative partnerships as risky ventures and cannot take advantage of innovative and creative solutions. A number of states have established effective statutory frameworks to foster collaborative work with the private sector.
- **Direct Public Sector Participation:** Once a partnership has been established, the public sector must remain actively involved in the project or program at all levels. On-going supervision of the performance of the partnership is important in assuring its success. This monitoring should be done on a daily, weekly, monthly, or quarterly basis for different aspects of each partnership (the frequency is often defined in the business plan and/or contract) from an outcome basis.
- **A carefully developed plan:** You must know what you expect of the partnership beforehand. A carefully developed plan (often done with the assistance of an outside expert in this field) will substantially increase the probability of success of the partnership. This plan most often will take the form of an extensive, detailed contract, clearly describing the responsibilities of both the public and private partners. In addition to addressing areas of respective responsibilities, a good plan or contract will include a clearly defined method of dispute resolution (because not all contingencies can be foreseen).
- **Efficient Communication with Stakeholders:** More people will be affected by a partnership than just the public officials and the private sector partner. Affected employees, the portions of the public receiving the service, the press, public labour unions and relevant interest groups will all have opinions and, frequently, significant misconceptions about a partnership and its value to all the public. It is important to communicate openly and candidly with these stakeholders to minimize potential resistance to establishing a partnership.

  Both parties need to develop an effective communication plan. The communication management process provides a structured approach to creating and delivering effective information, defining audiences and delivery vehicles. The process helps ensure accurate and consistent messages are conveyed, by appropriate senders, to necessary audiences, through appropriate channels and vehicles at the right time. Successful implementation will positively affect the work environment and relationships with sponsoring organizations, employees and other stakeholders.

  In order to be successful, a communication strategy relies on the following critical success factors:

  * Timely sharing of information
  * Accurate and consistent messages conveyed to key audiences

* Realistic messages from trusted sources that set realistic expectations.

It is critically important that the project develop, organize and prioritize its formal messages and informal communication with a rifle-not a shotgun-approach! This means aligning messages and sharpening them for specific audiences.

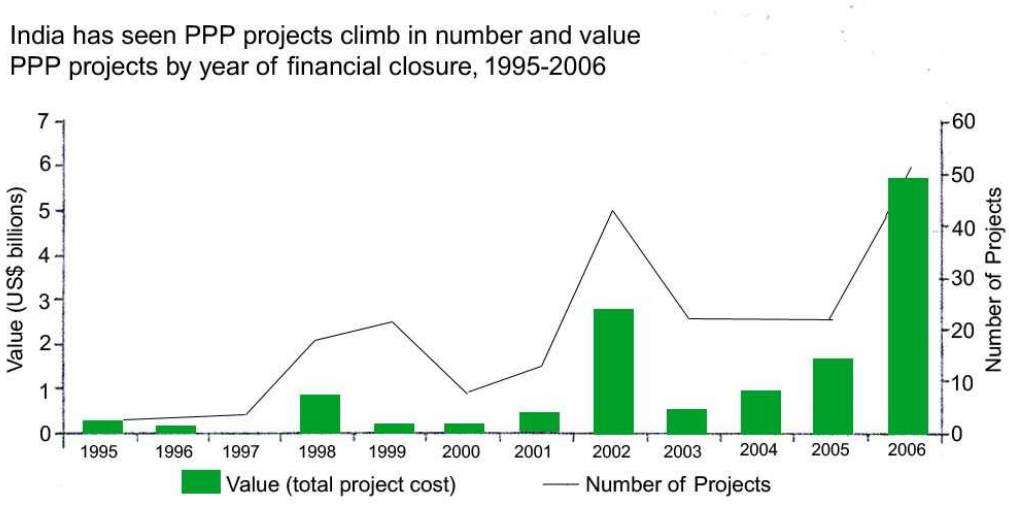
- **The Right Opportunity:** Only a select number of government business problems are ripe for a true partnership. These should have the right characteristics-uncertainty, high complexity, challenging problems, etc. When forming a public-private partnership, it is critically important that both parties set and manage reasonable expectations, especially the state government sector.

- **The Right Partner:** The 'lowest bid' is not always the best choice for selecting a partner. The "best value" in a partner is critical in a long-term relationship. A candidate's experience in the specific area of partnership being considered is an important factor in identifying the right partner.

PPP in India

In recent years, there has been a rapid change in India's program of infrastructure. Its PPP program has grown rapidly in the past six to seven years. In 2002-2006 more than 150 PPP deals closed, compared with 66 in the previous seven years (Fig. 1). This growth was mainly in the transport and urban infrastructure sectors, with road projects accounting for a large share of the increase, particularly in the number of projects.

Figure: 1



Source : PricewaterhouseCoopers 2007

According to the Planning Commission, an approximation of 8% of the Gross Domestic Product (GDP) needs to be invested. This would help in acquiring a prospective economy as stated in the 11th Five Year Plan. So, Fund Investment of over US $494 billion has been conceived of according to the 11th Five Year Plan effective from 2007 to 2012. Hence, the need to implement PPPs in India can be summarized as under:

- It would help to utilize the potential of the private sector in terms of their efficiencies, flexibility and innovativeness in order to provide better

infrastructure and services at an optional cost and for better Value for Money (VFM) to the users.

- It can bring in position a transparent, consistent, efficient administrative mechanism, so that the stakeholders can get a level playing field.
- It will also help to get assistance in project development through funding from Government of India for essential infrastructure projects.
- It will also help to make assessment of the Value for Money (VFM) especially for major projects with exception for projects in backward areas or projects with social requirements, which at the first view may not be financially viable on PPP.
- It will help to provide Viability Gap Funding (VGF) where the essential projects are intrinsically unviable.

The investment sectors under consideration are inclusive of communications, electric power, water transport, road, rail, air, water supply as well as irrigation which amount to about Rs. 20, 27,169 crores according to 2006-2007 prices. In order to meet such demands various PPPs have been promoted for implementation of infrastructure projects with private participation in India. With the broadest and most sustained efforts for attracting investment, India has attracted more investment commitments to infrastructure projects with private participation in 2006 than any other developing country, which can be exclusively attributed to the success of its reforms in transport and telecommunications.

In this regard the contribution of PPP in different sectors of India can be summarized as under:

(i) PPP in Telecommunication

India has seen a fast and steady growth in the spread and reach of telecommunication in India in the past few years, especially in the year 2007-2008. According to the reports, the targeted growth of 250 million for the year 2007 was already achieved in the month of October 2007. The year recorded the total number of 156.55 millions of telephone connection. Telecom market has grown at about 25 percent p.a. over the last 5 years. Wireless segment base grew at 8 percent p.a. and fixed line at about 10 percent p.a.

(ii) PPP in Transport

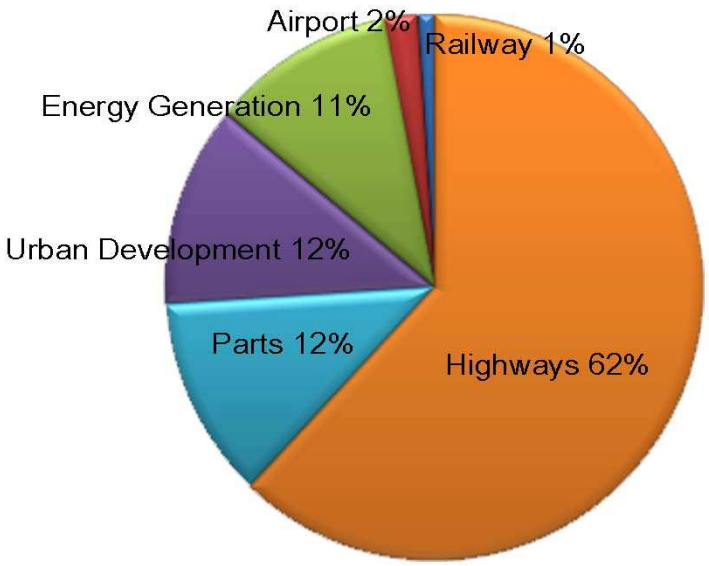
Transport has also become an important sector, attracting 18 percent of investment commitments in 2001-2006 and 34 percent in 2006. The main driver has been India's growing program of Public-private partnerships in transport, which reached financial closure on more than 40 projects in 2006 alone. A large share of the transport projects in India have been public-private partnerships including the expansion of the National Highway System. Activity has also been on the rise outside of roads. Indian Railways has already incorporated this practice by letting out some part of their work to private contractors. The Jawaharlal Nehru National Urban Renewal Mission (JNNURM) was also an initiative to this context. As a result of the surge in 2006, investment commitments to transport projects in India were roughly equal to those in telecommunications.

(iii) PPP in Energy

As on 21st November 2008, 280 projects had been sanctioned to be completed via the PPP route, out of which only 32 projects were in the energy sector. The pie chart below shows the percentage of various sectors in the PPP pie.

PPP percentages in various sectors on comparison of the various sectors according to the cost-outlay of the projects, the energy sector accounts for only $ 3.56 billion, which is just over 13% of the total planned outlay for PPP projects. This is mainly due to large investments required in the development of highways and ports. So, PPP in the energy sector in India is in a nascent stage of development, but the number of such projects is obviously growing.

Figure – 2



Source: Website article, IIM Indore, 2010

(iv) PPP in Education

The Government of many developed countries has found a range of different ways to leverage the capacity and expertise of the private sector to provide education. It may be in the form of providing for certain provisions or it may also be in the form of financing.

Figure – 3

Financing and provision of services in public- private partnerships

		Provision	
		Private	Public
Finance	Private	• Private schools • Home schooling • Tutoring	• User fees • Student loans
		• Vouchers • Contract schools • Charter schools • Contracting out	• Public schools • Public universities

Source: Adapted from World Bank , 2006

As published in The Hindu, in the field of education, PPP has been proposed as an important strategy in the 11th Five Year Plan. Among many things, the 11th Plan has proposed the

setting up of 6,000 new model schools in secondary education, affiliated to the CBSE. Of these, 2,500 are to be under the PPP model. The intention is to set up these schools in the backward regions and remote areas where equality education is inaccessible.

It can be well judged from the above discussion that the contribution or involvement of PPP in different sectors of India has been varied.

Growth of PPP in India

Development and use of PPPs for delivering infrastructure services has now at least 11 years of precedence in India, with the majority of projects coming in line in the last 5 years. Policies in favour of attracting private participation as well as innovation with different structures have met with varying degree of success. Some sectors like telecommunications, power, ports and roads have done very good progress compared to limited success in other sectors.

Some states have undertaken far more PPPs than others, and a much heavier use of PPPs in some sectors than others. As far as current status of projects in place, as per PPP database of GOI, there have been at least 450 PPP projects in our main sectors of focus where a contract has been awarded and projects are underway in the sense that they are either operational, have reached construction stage, or at least construction implementation is imminent. The total project cost is estimated to be about Rs2, 24,175.8crore (sector-wise investment details in Table 1&2 in Annexure 1).

The road projects account for 60% of the total number of projects and 45% by total value because of the small average size of projects. Ports-though account for 10% of the total number of projects-have a larger average size of project and contribute 30% in terms of total value. The potential use of PPPs in e-governance and health and education sectors remains largely untapped across India as a whole, though off late there have been some activities shaping in these sectors.

Across states and central agencies, the leading users of PPPs by number of projects have been Karnataka, Andhra Pradesh, and Rajasthan, with 95, 63 and 49 awarded projects, respectively, and the National Highways Authority of India (NHAI), with about 77 projects.
In terms of main types of PPP contracts, almost all contracts have been of the BOT/BOOT type (either toll or annuity payment models) or close variants.

In terms of approach to provider selection, almost all the projects in the sample were competitively bid (either national or international competitive bidding) with the negotiated ones (through MOUs) primarily coming from the railway PPP projects, which is understandable given the lack of clear policy framework and standard contract still date.
In terms of contract award method the International Competitive Bidding yielded 39% of total investment in India followed by Domestic Competitive Bidding with 33%, the detailed method of bidding is mentioned in Table-3 in Annexure-1.

Concluding Observations

The Central Government and some states have sufficiently progressed in developing infrastructure needed for broad and robust PPP programmes, some states have developed policies and approached some sectors only and some other states are yet to seriously commence the PPP mode. As a result, there exists considerable diversity among different states-both in the strength of policy and legal frameworks.

Some State Governments are still at an early stage in the development of their PPP mode. It is important to note that the right frameworks and capacities are to be improved in these states and agencies where PPP programmes are going to be pursued.

Policies for attracting private participation and innovation with different structures have met with varying degree of success. Some sectors like roads, ports, energy, airports and urban infrastructure have done very good progress but other sectors' success is very limited.

For solving the countless socio-economic problems of the country, PPP efforts has been playing valuable role. Most countries of the world have accepted it as a quick road to economic success. Even the communist countries like China and Vietnam are increasingly depending on the PPP model for solving their economic problems. India, though late in realizing the potential of PPP projects, is fast catching up with the rapidly going countries by utilizing the devices of PPP model in various sectors, especially in infrastructure. In this context considerable public opinion-from the government as well as the civil society-is needed to make PPP projects a great success in India. It would be ideal for the Government to facilitate similar strategies for many projects in the PPP model and find the way. The media has an important role to play in popularizing the PPP model as a modern vehicle for rapid economic growth. However, the policies and programs relating to the PPP based projects need to be carefully monitored and supervised by the government in order to protect the larger interest of the people and the country. The success of PPP projects only affirms its potential to address the country's infrastructure deficit, but challenges remain, because the financing, marketing, operations and maintenance hold the key to 'public-private tie-ups' success in India. For instance, lack of a reasonable land acquisition policy and absence of independent regulators for enforcing contracts and to settle disputes.

References :

- The Economic Times, 30th December, 2010 and 31st December, 2010.
- Gol "Report of the Committee on Infrastructure Financing, Department of Economic Affairs", Ministry of Finance, government of India, New Delhi, (2007).
- THE HINDU-Business Lines, 24th December, 2010 and 14th January, 2011.
- Lall, Rajiv and Anupam Rastogi "The Political Economy of Infrastructure Development in Post-independence India", IDFC Occasional Paper series 2007/1, Infrastructure Development Finance Company, Mumbai (2007).
- The Management Accountant, March, 2011.
- "Raising Resources for Railway Projects", Economic and Political Weekly, 12-18 June, Mumbai (2004).
- Rastogi, Anupam "The Infrastructure Sector in India, 2005, in 3i Network, India Infrastructure Report 2006: Urban Infrastructure", Oxford Univeristy Press, New Delhi (2006).
- Report of Planning Commission, Government of India, New Delhi, September 2010.
- http:// www.infrastructure.gov.in
- http:// www.pppindiadatabase.com

ANNEXURE

Table – 1: State wise figures of PPP Projects in India						
States	**Total Number of Project based on value of contracts**					
	Total Number of Projects	**Based on 100 crore**	**Between 100 to 250 crore**	**Between 251 to 500 crore**	**More than 500 crore**	**Value of contracts**
Andhra Pradesh	63	1062.93	1554.27	3188.53	33473.7	39279.43
Bihar	02	4.00	0.00	418.04	0.00	422.04
Chandigarh	14	15.00	0.00	0.00	0.00	15.00
Chhattisgarh	04	70.00	304.00	464.00	0.00	838.00
Delhi	09	95.00	0.00	408.20	10374.00	10877.20
Goa	02	30.00	220.00	0.00	0.00	250.00
Gujarat	27	130.06	277.22	3360.90	14943.71	18711.89
Haryana	02	0.00	0.00	756.00	0.00	756.00
Jharkhand	06	131.00	550.00	0.00	0.00	681.00
Karnataka	95	980.39	1692.55	12203.31	24615.60	39491.85
Kerala	11	114.00	112.00	615.50	11131.00	11972.50
Madhya Pradesh	37	1027.32	1117.28	2694.95	2949.00	7788.55
Orissa	16	235.10	0.00	500.00	6888.34	7623.44
Pudducherry	02	0.00	0.00	419.00	1867.00	2286.00
Punjab	19	537.26	434.72	572.00	0.00	1543.98
Rajasthan	49	523.92	783.79	833.00	3112.70	5253.41
Sikkim	24	175.59	558.00	2669.00	13708.00	17110.59
Tamil Nadu	30	143.31	555.60	6412.87	5340.00	12451.78
Uttar Pradesh	05	0.00	0.00	1458.57	649.21	2107.78
West Bengal	05	0.00	200.00	1214.40	641.00	2055.40
Inter State	13	160.45	195.00	2294.67	5984.00	8634.12
Total	**450**	**5638.83**	**9299.93**	**41582.78**	**167739.21**	**224175.8**

Source: http://www.pppindiadatabase.com

Table 2: Sector-wise figures of PPP Projects in India						
Sector	**Total Number of Projects**	**Based on 100 crore**	**Between 100 to 250 crore**	**Between 251 to 500 crore**	**More than 500 crore**	**Value of contracts**
Airports	05	0.00	0.00	303.00	18808.00	19111.00
Education	01	93.32	0.00	0.00	0.00	93.32
Energy	24	175.59	558.00	2669.00	13708.00	17110.59
Railways	04	0.00	102.22	905.00	594.34	1601.56
Roads	271	3162.50	55256.49	32861.87	60453.92	102004.70
Tourism	29	742.56	674.52	0.00	1050.00	2467.08
Urban Development	73	1283.86	1468.52	2403.91	10132.00	15288.47
Total	**450**	**5638.83**	**9299.93**	**41582.78**	**167739.21**	**224175.8**

Source: http://www.pppindiadatabase.com

Table 3: Showing sector-wise and contract-wise method of PPP project in India					
Sector	**Total Number of Projects based on Contract Award Method**				
	Total Number of Projects	**Domestic Competitive Bidding**	**International Competitive Bidding**	**Negotiated MOU**	**Value of Contracts (Rs. Crore)**
Airports	05	0.00	1888.08.00	0.00	19111.00
Education	01	93.32	0.00	0.00	93.32
Energy	24	100.00	0.00	16014.59	17110.59
Ports	43	4816.00	24037.00	34519.95	66498.95
Railways	04	696.56	0.00	905.00	1601.56
Roads	271	1367.76	34161.90	1259.20	102004.78
Tourism	29	1367.76	982.32	0.00	2467.08
Urban Development	73	4645.83	9758.91	15.00	15288.47
Total	**450**	**74583.67**	**87748.13**	**52785.84**	**224175.8**

Source: http://www.pppindiadatabase.com

Investigating Impact of FDI on GDP Growth rates of India and some ASEAN countries

Sangita Dutta Gupta[1]
Dr. Vishal Talwar[2]

Abstract

Foreign Direct Investment (FDI) has been highlighted as important for the economic development of a country. It brings in much needed capital, technical know-how, and global production networks as well as best practices within the organizational, managerial and marketing domains. FDI thus facilitates the process of economic growth and development for host countries. Some of the largest beneficiaries of inward FDI have been India, China and some of the other ASEAN countries and it is not surprising that there is a growing body of economic research that is focused on understanding the correlation between FDI and economic growth within this region. Theoretical and empirical literatures have identified several channels through which foreign direct investment (FDI) influences economic growth. In this research, we examine the causality between growth and FDI for India and 5 ASEAN countries. Conducting time-series examinations using Augmented Dickey Fuller unit root tests, co-integration tests and the Granger causality tests, we find causality results that have implications on our current understanding of the impact of FDI on growth and vice-versa. Thus, it adds to the growing body of knowledge that is trying to understand economic development in two very prominent growth oriented regions in Asia. Our research also suggests that policy guidelines which emphasise the importance of FDI for growth should be revisited to further focus on the role of growth as an important determinant of FDI. An important learning is the importance of creating a growth oriented environment conducive for attracting FDI inflows. This could revolve around quality of human capital, infrastructure, institutions and governance, tax systems etc. that enhance willingness and confidence amongst the investor community to identify further opportunities in the host countries.

Key words: Foreign Direct Investment, GDP, Causality, India, ASEAN

Introduction

The last 30 years have witnessed a dramatic change in the global economic environment.

[1] Assistant Professor, Globsyn Business School, Kolkata – 700091, West Bengal, India, E-mail: sangitadgpt@gmail.com
[2] LES Fellow, Dept. of Management, London School of Economics, London, UK

Seen with a great deal of skepticism until the 1970s, inward FDI has been embraced with alacrity especially after the abolition of global capital controls. This has led to an increased openness to inward foreign direct investment attributable to a considerable positive change in investment regimes in many parts of the world (Oxelheim and Ghauri, 2008). Even though a focus on inward FDI is not without its costs (for e.g. the opportunity cost in terms of the value foregone by using the money on incentives rather than on direct measures to improve productivity, efficiency and knowledge creation as highlighted by Oxelheim and Ghauri (2008), most researchers seem to agree that the benefits of inward FDI far exceeds its costs (McDermott, 1989; Bajpai and Sachs, 2000).

The impact of FDI on economic growth can be considered as important irrespective of the economic growth models considered. This particular phenomenon has been researched extensively and in the last two decades, both the theoretical and empirical literature has identified several channels through which FDI influences economic growth (Vadlamannati and Tamazian 2009). According to Vadlamannati and Tamazian (2009), in the short run, FDI provides new capital which allows additional investment in both human and physical capital. According to them, this can be very beneficial for developing countries that face severe liquidity constraints. From a long term perspective, the impact of FDI on developing economies is much higher and goes beyond liquidity constraints, like investments in new or existing production plants, generating employment opportunities and resulting in transfer of hard and soft technologies to the recipient country (Vadlamannati and Tamazian 2009).

Rationale & Context of Study

FDI"s correlation with economic growth in host countries has been a topic of considerable research in the last few years (Zhao and Du, 2007). Researchers such as Bende-Nabende and Ford (1998) and Gupta (1983) have claimed a positive relationship between FDI and growth whereas others (for e.g. Alam, 2000) have remained skeptical about this relationship. For some researchers, output growth is considered to be very important for FDI inflows to a host country and this is called 'Market Size Hypothesis' or the 'Growth driven FDI Hypothesis' (Caves 1996; Zhang 2001). On the other hand, others have found bi-directional causality (Shan 2002; Chakraborty and Basu 2002), i.e. FDI and economic growth have a reinforcing causal relationship (Gunaydin and Tatoglu 2005). Thus, such studies reveal that the causal relationship between FDI and economic growth can be circular. Growth can have an impact on the inflow of foreign capital and FDI on the other hand can have an impact on growth. However, Shan (2002) is of the view that even though there may be a two-way causality between FDI and growth, the impact of growth on FDI is more intensive than that of FDI on output growth.

Being an engine for global economic growth for the last 20 odd years, it is but natural that China has been used as a research context for many of the studies investigating the relationship between FDI and growth. China has been steadily increasing its share of inward FDI not only within the manufacturing domain but also within the knowledge intensive production domain (Oxelheim and Ghauri, 2008). According to a report (UNCTAD, 2005), the most popular prospective R&D location for firms is China (61.8%) followed by the United States (41.2%) and India (29.4%). With the opening up of their economy in the late

1970s, China has always formulated and implemented policies favorable to FDI. In 2006, FDI to China was US $ 72.71 billion, increasing to US $ 83.52 billion in 2007 and then to US $ 108.312 billion in 2008. However, in 2009, it fell down to US $ 90.03 billion. Thus, it is logical that a number of FDI related studies would be focused on the Chinese economic miracle.

The Indian economy opened up around 13 years later (in 1991) and has attracted its fair share of FDI onto its shores. Even though FDI inflow into India was a paltry US $ 1.6 Billion in 2000, it had increased to a respectable US $ 41.554 billion by 2008.

However, over the last two decades, another dominant region within the Asian context has been shaping the global landscape, this is the ASEAN countries (Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Mynamar, Philippines, Singapore, Thailand, and Vietnam). Even though FDI inflows to these ASEAN countries have fluctuated tremendously (on account of the Asian financial crisis in 1997-1998, the economic slowdown in US and Europe, and the recession in Japan in 2001); however, the FDI inflow trend for ASEAN has been on the upward trajectory for the last several years (Pradhan 2010). Other researchers such as Yew et al. (2010) believe that except for Singapore, the other 4 big ASEAN countries have reached saturation levels as far as FDI growth is concerned, however, this argument is not yet substantiated.

With a major focus of FDI related studies on China, there is less of an emphasis on the ASEAN countries and this is where this study contributes from an overall context perspective, i.e. it looks at 5 ASEAN countries (Malaysia, Singapore, Indonesia, Thailand, and Philippines) as well as India to investigate the causality between FDI and growth. Most studies have not tested the direction of causality between FDI and economic growth or have implicitly assumed a one-way causality of FDI to economic growth (Zhao and Du 2007).

This assumption has been questioned by Kholdy (1995) whereas Zhao and Du (2007) are of the view that neglect of either of the causal relations can lead to biased and inefficient estimations. The purpose of this study is to contribute to this academic debate around causality by examining the relationship between FDI and growth within the context of India and 5 ASEAN countries. ASEAN countries have been able to attract a large amount of FDI over last 20 years. Of the five countries considered here, Singapore has been able to attract maximum amount of FDI over the years.

The FDI inflow has gone up from 1236 million USD in 1980 to 38638 million USD in 2010.Thailand also recorded good FDI inflow .It increased from 189 million USD in 1980 to 5813 million USD in 2010.For Philippines the FDI inflow dipped in 2003-2004 but picked up from 2005 onwards and has reached 1713 million USD in 2010. In case of Malaysia, the FDI inflow has increased from 934 million USD in 1980 to 9103 million USD in 2010. Although the FDI dipped between 1984-1988 and also during late 90s. In case of Indonesia, it has gone up from 180 million USD in 1980 to 13304 million USD in 2010.

Table: 1 – Net FDI inflow to Five ASEAN Countries (in million USD)

Year ► Country ▼	**1980**	**1981**	**1982**	**1983**	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**
MALAYSIA	934	1265	1397	1261	797	695	489	423	719	1668	2611
INDONESIA	180	133	225	292	222	308	258	385	576	682	1092
PHILLIPINNES	114	243	193	247	137	105	157	415	999	568	550
SINGAPORE	1236	1660	1602	1134	1302	1047	1710	2836	3655	2887	5575
THAILAND	189	289	188	356	412	160	262	354	1106	1837	2575
	1991	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**
MALAYSIA	4043	5138	5741	4581	5815	7297	6323	2714	3895	3788	554
INDONESIA	1482	1799	2003	2191	4419	6245	4729	-207	-1838	-4495	-2926
PHILLIPINNES	556	776	1238	1591	1459	1520	1249	1752	1247	2240	195
SINGAPORE	4887	2204	4686	8550	11535	9682	13753	7314	16578	16484	15087
THAILAND	2049	2151	1807	1369	2070	2338	3882	7492	6091	3410	5073
	2002	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**		
MALAYSIA	3203	2473	4624	4065	6060	8595	7172	1430	9103		
INDONESIA	233	-507	1896	8336	4914	6928	9318	4877	13304		
PHILLIPINNES	1542	491	688	1854	2921	2916	1544	1963	1713		
SINGAPORE	6402	11941	21026	15460	29348	37033	8588	15279	38638		
THAILAND	3355	5222	5859	8067	9517	11355	8448	4976	5813		

Source: UNCTAD HANDBOOK OF STATISTICS 2010

Methodology

To find out the causal relationship between FDI and Economic growth in India and China for the period 1980-2008, Johansen's Cointegration and Granger Causality tests are employed (Srinivasan, 2010). However, it is important that the stationarity of each individual time

series data is verified as there is always a possibility of the time series data being non-stationary exhibiting deterministic or stochastic trends. Even if the series is non-stationary, cointegration approach can be applied but all the variables will have to be integrated of same order in that case.

The non-stationary data is made stationary by differencing. The number of differencing gives the order of the order of the integration. The Augmented Dickey Fuller test is applied to find out the stationarity and the order of each series.

Johansen's Cointegration test is applied to determine the long term relationship if the selected series is integrated of same order. We will apply the Granger causality if they are not cointegrated. One variable GDP is said to Granger cause another variable, FDI, if we are able to explain GDP with the help of lagged values of FDI. If the lagged values of GDP can explain FDI, then FDI is said to granger cause GDP. The performance of the standard Granger causality is tested by estimating the following equations

$$\Delta \ln FDI_t = a_1 + \sum_{k-1}^{n} \alpha_{1i} \Delta \ln FDI_{t-k} + \sum_{k-1}^{n} \beta_{2i} \Delta \ln GDP_{t-k} + u_{1t} \ldots\ldots (1)$$

$$\Delta \ln GDP_t = a_2 + \sum_{k-1}^{n} \beta_{1i} \Delta \ln GDP_{t-k} + \sum_{k-1}^{n} \alpha_{2i} \Delta \ln FDI_{t-k} + u_{2t} \ldots.. (2)$$

To find the causality we test the null hypothesis $H_0 : \beta_{2i} = \alpha_{2i} = 0$,Wald F-test is used and if both β_{2i} and α_{2i} are significant then there will be bidirectional causality between FDI and Growth. If β_{2i} is significant then GDP granger causes FDI and FDI granger causes GDP if α_{2i} is statistically significant (Srinivasan, 2010).
The data on GDP and FDI in US Million Dollar was taken from UNCTAD Handbook of Statistics'2010 and from World Bank report.

Empirical Results

Any time series analysis starts with the checking of unit root property of the data series as it is crucial for both cointegration and causality test.. As mentioned earlier the Standard Augmented Dickey Fuller is used to check the stationarity of the time series data on GDP and FDI

Table 1 shows the results of ADF for the GDP and FDI series for selected ASEAN countries. Table 1 shows that the null hypothesis of unit root for the selected variables such as FDI and GDP in case of Malaysia, Thailand and Philippines was not rejected at levels. It was rejected at first difference. Both the series for the above mentioned countries are found to be stationary and integrated at the order of one *I(1)* . For Indonesia and India, however, the null hypothesis of unit root was not rejected at the levels. It was not rejected for first difference also as shown in Table 2. When the series are differentiated twice, both the series are found to be stationary and integrated at the order of two *I*(2).In case of Singapore, the null hypothesis of unit root was rejected at levels with trend and intercept and both the series are found to be integrated of order zero *I(0).*

Result of ADF Unit Root Test

Table 1: Results of Augmented Dickey Fuller Test

Countries	Variable	ADF Test Statistics		
		Level		
		Intercept	With Trend & intercept	None
Malaysia	FDI	-2.29	-3.38	-0.268
	GDP	1.53	-0.777	3.194
Singapore	FDI	1.136	-5.990**	2.915
	GDP	-1.144	-7.224**	0.306
Indonesia	FDI	-0.922	-1.627	-0.345
	GDP	3.772	1.552	4.46
Thailand	FDI	-1.45	-4.36	-0.445
	GDP	1.441	-0.399	3.37
Philippines	FDI	-2.62	-4.166	-0.455
	GDP	3.12	0.487	4.63
India	FDI	3.97	2.95	4.39
	GDP	6.64	3.47	1.35

Table 2: Results of Augmented Dickey Fuller Test

Countries	Variable	ADF Test Statistics		
		1st Difference		
		Intercept	With Trend & intercept	None
Malaysia	FDI	-6.510**	-6.297**	-6.577**
	GDP	-5.35**	-6.177**	-4.145**
Indonesia	FDI	0.158	-0.106	0.416
	GDP	-2.727	-3.97	-2.118
Thailand	FDI	-4.187**	-6.450**	-4.79**
	GDP	-2.99**	-3.281**	-2.305**
Philippines	FDI	-8.04**	-7.89**	-8.11**
	GDP	-3.22**	-4.483**	-1.21
India	FDI	2.33	-2.48	2.73
	GDP	0.82	-0.50	1.52

Table 3: Results of Augmented Dickey Fuller Test

Countries	Variable	ADF Test Statistics		
		2nd Difference		
		Intercept	With Trend & intercept	None
INDONESIA	FDI	-4.22**	-4.58**	-4.161**
	GDP	-6.05**	-6.139**	-5.97**
INDIA	FDI	-4.07**	-4.57**	-3.90**
	GDP	-9.13**	-9.78**	-8.86**

** -Significant at 5% and 1% level

FDI and GDP for Singapore is integrated of same order *I(0)*. FDI and GDP for Thailand, Philippines and Malaysia are integrated of order 1 that is *I(1)*.The order for Indonesia is *I(2)*. So the Johansen"s Cointegration test is performed to find out the long term relationship between FDI and GDP for all five countries. The results for the test are given in Table 4. As seen from the table below, the Johansen"s trace statistics for Thailand and India fail to reject the null hypothesis of no cointegrating vector ($r = 0$), implying that FDI and GDP are not cointegrated. But for Malaysia and Singapore at least one cointegrating vector has been found. Two cointegrating vectors have been found for Indonesia and Philippines.

Table 4: Results of Johansen's Cointegration Test

Countries	Vector	Trace Statistics	5% Critical Value for Trace Statistics	Conclusion
Malaysia	H_0: r = 0	15.9809**	15.47471	
	H_1: r ≥1	3.08701	3.84166	Co-integrated
Indonesia	H_0: r = 0	17.1867**	15.47471	
	H_1: r ≥1	5.22386**	3.84166	Co-integrated
Singapore	H_0: r = 0	20.05771**	15.47471	
	H_1: r ≥1	0.774643	3.84166	Co-integrated
Thailand	H_0: r = 0	6.899424	15.47471	
	H_1: r ≥1	0.582266	3.84166	Not co-integrated
Philippines	H_0: r = 0	17.70355**	15.47471	
	H_1: r ≥1	3.915335**	3.84166	Co-integrated

India	H_0: $r = 0$	9.149	15.494	
	H_1: $r \geq 1$	1.022	3.814	Not co-integrated

** Significant at 5% level

We now test for causality between FDI and Growth for all five countries. The Null hypothesis of „FDI does not Granger Cause GDP" and „GDP does not Granger Cause FDI" is rejected at 5% level for Malaysia and Philippines and India implying that there is bidirectional causality between FDI and GDP for both these countries (see Table 5). For Indonesia, the Null Hypothesis of „GDP does not Granger Cause FDI" is rejected at 5% level while „FDI does not Granger Cause GDP" is not rejected. So the causality is from GDP to FDI that is GDP growth rate has attracted FDI to Indonesia but FDI has not helped in GDP growth rate. For Singapore and Thailand, the Null hypothesis „GDP does not Granger Cause FDI" is not rejected but the Null hypothesis of „FDI does not Granger Cause GDP" is rejected at 5% level. So there is causality from FDI to GDP. That is, FDI has helped GDP grow but GDP growth rate has not attracted more FDI to these countries. So we find bi-directional causality for Malaysia and Philippines and unidirectional causality for Thailand, Singapore and Indonesia.

Table 5: Results of Standard Granger Causality Tests

Country	Null Hypothesis	Lags	*F*-Statistic	Inference
Malaysia	GDP does not granger cause FDI FDI does not Granger Cause GDP	2	4.96006* 3.97653*	*FDI→GDP* *GDP→FDI*
Indonesia	GDP does not granger cause FDI FDI does not Granger Cause GDP	4	4.66132* 0.79736	*GDP→FDI*
Singapore	GDP does not granger cause FDI FDI does not Granger Cause GDP	4	1.87427 10.7616*	*FDI→GDP*
Philippines	GDP does not granger cause FDI FDI does not Granger Cause GDP	3	3.95565* 5.66150*	*FDI→GDP* *GDP→FDI*
Thailand	GDP does not granger cause FDI FDI does not Granger Cause GDP	4	1.85426 4.88127*	*FDI→GDP*
India	GDP does not granger cause FDI FDI does not Granger Cause GDP	2	4.03093* 4.46499*	*FDI→GDP* *GDP→FDI*

*significant at 5% level

Discussion & Concluding Remarks

The objective of this study was to find the relationship between FDI and GDP for both India and 5 ASEAN countries. The Johansen Cointegration technique followed by the standard Granger Causality test was employed to investigate the causal nexus between FDI and Growth in these countries. Though researchers such as Bende-Nabende and Forde (1998) have observed a positive relationship between FDI and growth, our study is one of the few studies that investigate causality as well as direction in the countries mentioned above. Thus, it adds to the growing body of knowledge that is trying to understand economic development in two veryprominent growth oriented economies. The results reveal a long run bidirectional causal link between GDP and FDI as well as unidirectional causal linkages depending on the countries investigated.

Our findings validate Zhao and Du‟s (2007) contention that not only can FDI influence GDP growth (for Singapore & Thailand) but that GDP growth can also affect FDI inflows (for Indonesia). In revealing a two-way causality (for Malaysia & Philippines), we find further support for researchers such as Shan (2002) as well as Chakraborty and Basu (2002) who also found similar bidirectional causality. However, due to the limited number of countries investigated, caution must be exercised when trying to generalise our findings to other country contexts. Thus, a larger sample of countries would provide more concrete and generalizable findings. However, our findings do have some policy implications regardless of country context due to the discovery of bi-directional causality.

Thus, policy guidelines which emphasise the importance of FDI for growth should be revisited to further focus on the role of growth as an important determinant of FDI. An important learning is the importance of creating a growth oriented environment conducive for attracting FDI inflows. This could revolve around quality of human capital, infrastructure, institutions and governance, tax systems etc. that enhance willingness and confidence amongst the investor community to identify further opportunities in the host countries.

References:

1. Caves, R. (1996): Multinational Enterprises and Economic Analysis, 2nd edition (Cambridge: Cambridge University Press).
2. Bajpai, Nirupam and Jeffrey D. Sachs, (2000). "India‟s Decade of Development", CID Working Paper No. 46, Center for International Development, Harvard University.
3. Bende-Nabende A., and Ford, J.L., (1998). FDI, Policy Adjustments and Endogenous Growth: Multiplier Effects from a Small Dynamic Model for Taiwan, 1959 – 1995, World Development, Vol. 26, No. 7, pp. 1315 – 1330.
4. Chakraborty, Chandana and Parantap Basu,“Foreign Direct Investment and Growth in India:A Cointegration Approach,” *Applied Economics* 34 (2002):1061–73.
5. Chen, Chung; Chang, Lawrence; Zhang, Yimin (1995), “The Role of Foreign Direct Investment in China‟s Post-1978 Economic Development”, World

Development, Vol.23, No.4, pp 691-703.

6. Eichengreen, Barry and Tong, Hui (2007) " Is China‟s FDI coming at the expense of other countries? " ,Journal Of Japanese and international Economics, pp153-172
7. Girma, Sourafel and Gong, Yundan (May 2008) "FDI, Linkages and the Efficiency of State- Owned Enterprises in China", Journal of Development Studies, Vol.44, No.5, pp 728-749.
8. Kholdy, S., (1995). Causality between foreign investment and spillover efficiency. Applied Economics, 27.
9. M.C McDermott, M. C. (1989), Multinationals: Foreign Divestment and Disclosure,McGraw-Hill: London
10. Oxelheim, Lars and Ghauri, Pervez (2008)"EU-China and the non-transparent race for inward FDI" , Journal Of Asian Economics, Vol-19, pp 358-379
11. Pradhan, R. (2010) "Interdependence of FDI between India and ASEAN- 5: Evidence from Causality Approach", International Business Research, Vol. 3, No. 4
12. Ran, Jimmy; Voon, P. Jan; Li, Guangzhong (2007)"How does FDI affect China? Evidence from industries and Provinces" , Journal of Comparative Economics, Vol. 35 , pp774-799
13. Rensick, Adam and Li, Quan (2003) " Reversal of Fortunes: Democratic Institutions and Foreign Direct Investment Inflows to Developing Countries", International Organization, Vol-57, No.1, pp175-211
14. Siddhartan, N.S.(2004), "Business Environment, Investment Climate and FDI: Chinese and Indian Experiences", Economic and Political Weekly, Vol.39, No.6, pp3986-3988
15. Singh, Kulwinder "Foreign Direct Investment in India: A Critical Analysis of FDI from 1991-2005", Centre for civil society, New Delhi.
16. Srinivasan, P., Kalaivan, M. and Ibrahim, P. (2010) "FDI and Economic Growth in the ASEAN Countries. Evidence from Cointegration Approach and Causality Test"; The IUP Journal of Management, Vol. 9, No. 1.
17. Vadlamannati, K. C. and Tamazian, A. (2009), "Growth effects of FDI in 80 developing economies: the role of policy reforms and institutional constraints", Journal of Economic Policy Reform, Vol. 12, No. 4, pp. 299-322
18. Wei, Wenhui (2005), "China and India: Any Difference in their FDI performances? ", Journal of Asian Economics, Vol16, pp 719-736.
19. Xing, Yuqing (2006), "Why is China so attractive for FDI? The role of exchange rates", China Economic Review, Vol.-17, pp198-209
20. Yew, S., Yong, C. and Tan H. (2010) "Impact of Economic Integration on Foreign Direct Investment into ASEANS" Malaysian Journal of Economic Studies, Vol. 47, No. 1
21. Zheng, Ping (2009), "A comparison of FDI determinants in India and China", Thunderbird International Business Review, Vol.51, No.3.

Commercial Prospects of Floriculture: A Study on Purba Medinipur District of West Bengal

Dr. Sanjit Kumar Das♦

Abstract

Floriculture is a lucrative line of business and its importance is ever-increasing. In addition to the traditional lines of business floriculture is venturing into some value-added lines such as bouquets, floral baskets, pot-pouri etc. It is one of the main-stream commercial activities in some parts of West Bengal. Within the state of West Bengal Purba Medinipur and Nadia districts are the chief producers of flowers. The present study has been designed to make an evaluation of the commercial prospects of floriculture in the Purba Medinipur District. Flower producers in this area are suffering some problems in the form of scarcity of healthy planting materials, timely replacement, problem of transportation, adequate and timely credit facilities etc. Despite lack of knowledge on modern floricultural production techniques, difficulty in obtaining the latest varieties and the lack of infrastructure, the industry is continuously attracting new entrants. Demand for cut flowers is growing tremendously as more and more people are becoming aware of the beauty of flowers as decorative items. Yielding high return from a small area is improving the quality of life of farmers of this locality.

Key Words: *Floriculture, standard of living, Cost-Benefit Analysis, SWOT*

Introduction

Going beyond invaluable beauty, flowers have commercial value. Flower is a part of life in our country and its commercial and economic use is increasing day by day. Floriculture industry is a lucrative business comprising traditional flowers, cut flowers, pot plants, dry floral crafts and planting materials, besides value-added products like bouquets, garlands, floral baskets, floral concretes, pot-pouri and oils. It has proved to be a highly profitable agro-business generating maximum returns per unit area. The global trade of floriculture is quite promising.

Development of floriculture has assumed considerable importance for its economic uses, such as for cut-blooms and for extracting perfumes and other products. It is to be noted that Germany, U.S.A. Japan, France, Netherland, U. K. and Switzerland consumed 77 % of world's total flowers in 2008. Although India's share in world exports for floriculture produce is nominal, it is

♦ *Reader in Commerce, Bhairab Ganguly College, Belghoria, Kolkata-700056,West Bengal, India, Email: sanjit_msdl@yahoo.com - sanjitbgc@gmail.com*

a fact that in 2007-08, flower was exported to around 113 countries compared to 37 countries in 1992-93. India's export of floriculture increased from Rs. 115.39 lakh to Rs. 299.41 lakh, i. e. 2.59 times from 2001-02 to 2005-06. The U.S.A, Japan, U. K., Netherland, France, Belgium Spain constituted 81% of the total value of flower exports from India in 2007-08. Demand of Flowers in the foreign market is increasing at a very fast rate and it is the right time to take the initiatives so that we can improve our foreign exchange earnings and create more employment opportunities. If we consider the foreign exchange earning potentiality of the crop, floriculture is required to be strengthened in the interest of the nation.

India is endowed with varied agro climatic conditions suitable for growing a number of flowers. The country is known for growing the traditional flowers such as rose, jasmine, marigold, chrysanthemum, tuberose and many more. Tamil Nadu, Karnataka, West Bengal, Maharashtra, Jammu and Kashmir, Sikkim and Andhra Pradesh are major flower growing states. The total area under flower crops is 89 thousand hectare, with a total production of 509 thousand MT of loose flowers and 681 million cut flowers. The volume of trade in the domestic market was around Rs. 200 crores in the beginning of the nineties, which has now grown in more than Rs. 500 crores. The trade figures have increased many folds due to significant increase in floriculture production during this period.

In our country, millions of people are engaged with the production and marketing of flowers as well as in some other related jobs. The area under flower cultivation in India increased from 53000 hectare in 1993-94 to 136000 hectare in 2007-08.

West Bengal is the third largest producer of flowers in the country. The emphasis is on cut flowers, bulbous flowers, traditional flowers and high end exotic flowers like orchids. The main flowers cultivated are rose, carnation, gerbera, tuberose, jasmine, marigold and hibiscus. Introduction of improved cultivation techniques through area expansion in these crops, intervention for green house, protected cultivation, post harvest assistance and assistance for development of planting material is sought. West Bengal has the unique advantage for floriculture Industry, and is probably the only state where all types of Agro- Climatic conditions are available. Here all types of horticultural crops are grown very productively. Presently, in West Bengal, the area under cultivation for flower crops is about 17,328 hectare as against 1,06,477 hectare at the national level. Production of loose flowers in the state is about 43,575 M.T. and production of cut flowers is about 8,766.6 lakh in numbers. At the national level, loose flower production is about 5,34,576 M.T. and cut flower production is about 25,647 lakh numbers.

Statement of the Problem

There is no denying fact that floriculture continues to generate employment opportunities to the people in rural flower growing areas thriving on agriculture related means of livelihood. Floriculture can be an enterprise from which massive employment opportunities can be generated and the quality of life of the millions of rural poor can be improved. Floriculture is such an important area from which the small-farm economy of the country and the state can absorb a sizeable amount of surplus labour in the agricultural sector as well as can earn good amount of foreign exchange for its sustenance. Floriculture is one of the untapped potentials of agriculture where West Bengal, which has been facing continuous marginalization of size of

holdings, can tap the benefits in the era of liberalization, which may give a boost to the export-profile of the country. Since floriculture demands a heavy employment of human labour for different activities of cultivation, starting from production to the ultimate sales to consumers, and is contrasted to the requirements of traditional crop production, it can generate employment opportunities to the rural people. In spite of the tremendous economic potentiality of floriculture, it remains neglected by the government, scientists, policy makers and research scholars. Statistical data of floriculture is still scattered and messy while its agronomy remains to be a matter of personal experience gained through practice and traditional farming.
In West Bengal floricultural activities are expanding with the assistance of National Horticulture Mission Fund. So far 2,500 hectares have been brought under flower cultivation. The expansion started in 2006-07 with Rs 100 crore from the National Horticulture Mission Fund. The Techno-Economic Feasibility report on the Scope of Development of Horticulture in West Bengal, prepared by Agricultural Finance Corporation Limited states that more than 5.2 million workers were engaged in various operations of the floriculture enterprise in the state starting from production to marketing, which made an approximate turnover of Rs. 245 crore of rupees annually.

To make the marginal, small farms economically viable area-specific crop diversification towards high value, labour intensive crops, viz. vegetables, fruits and flower cultivation has been suggested by research organizations. In different parts of west Bengal and in different parts of India there have been attempts to produce high value crops. But it is a mere fact that increasing marginalization of size of holdings in India as well as West Bengal's agriculture has become a matter of concern to the policy makers. Considering the changing global economic situation along with making the small and marginal farm-dominant economy more viable, there has been attempts to produce export-oriented non-conventional, high-value, labour-intensive crops like vegetables, fruits, betel and flowers. The state has ample possibilities in production of flowers.

In West Bengal among the two leading flower-producing districts, viz, Purba-medinipur and Nadia, the flower area as percentage of gross cropped area was higher in Purba-Medinipur, which is also ranked first in terms of production of total flowers for last few years. But, unfortunately, floriculture in the district still remains in its infancy. Flowers like Marigold, Rose, Jasmine, Tuberose, Season flowers yields high return from a small part of land. Rose and Season flower fetch very high prices in the local market and many farmers grow these in small areas in their homestead gardens. This can be a good alternative and economic crop for the small stakeholders.

Significance of the Study

The present study has been designed to make an evaluation of the commercial prospects of floriculture in the Purba Medinipur District. Flower producers in this area are suffering some problems; scarcity of healthy planting materials, timely replacement, problem of transportation, credit facilities etc. Sometimes the farmers fail to combat the problems raised due to the changes in climate, marketing and value addition. Every year some part of this area is affected by flood which affects a large number of flower producers. There is wastage of flowers during storage and transportation. Inspite of facing several problems the farmers are able fetch a good return from floriculture in this area. Every year some farmers are converting their land from cultivation of traditional crops to floriculture. Floriculture can able to increase income level of thousands of

families in this area because there is a great potentiality of flower production particularly in three Blocks of this district namely Kolaghat, Panskura and Sahid Matangini.

Considering the mass production of flowers in these Blocks the study has been concentrated on the problems and prospects of floriculture in this particular area. The study area is purely an agrarian region where about 56 per cent people are dependent on agricultural activities. Here land is very much fragmented into small volumes and man-land ratio is in the higher side. It has been observed that a family of 5-6 members with a land holding of say 1 acre (100 decimals) is not able to earn enough to fulfill their requirements. It has been found from the record that the growth rate of *boro* cultivation has been slowed down for last 5-6 years and eventually agricultural activities in a small part of land are not so profitable. In this locality quality of land is not suitable for multi-cropping options and hence agriculture is not supporting for the growth of standard of living. On the contrary a flower cultivator may provide considerable net profit for maintaining a small family of four or five members.

Floriculture may be considered as a household bank since the flowers can be plucked and sold straight in the market when hard cash is required and this may continue for long time. The cultivation of flowers provides a continuous source of income to the farmer family. It does not require any sort of post-harvest processing for making the produce marketable. The present level of revenue may be increased by many folds if problems of the flower producers are analyzed and resolved. If merely transportation and marketing channels are developed then the revenue generated by flowers would easily exceed that generated by any major crop of the country. It is also necessary from the perspective of national economy as well as the national employment generation through proper exploitation of floriculture. The study is an attempt to assess and evaluate the economic opportunities and prospects of floriculture of this locality. This study may be helpful to the farmers to convert their land from traditional farming to floriculture after making a comparison of present earning and future earnings.

Review of Research and Development in the Subject

There is dearth of availability of literature on the subject of flower production especially in Indian context. Scattered materials relating to floriculture are available in different journals and websites. In spite of best effort any book or comprehensive research work on this topic is not found. However the following literatures have been consulted to find out the research gap.

Sarkar, Rahim and Misra (1997) have explained the use of floriculture in the Indian society in his book captioned “Floriculture in West Bengal; Problems and Prospects”. They analysed the possibilities of floriculture as one of the most profitable crop from the Indian perspective.

Randhawa and Mukhopadhaya (2010) have thoroughly investigated the production of flowers in the country. The authors critically assess the problems faced by the producers in the country in their book entitled ‘Floriculture in India’. In the same spirit, Alex Laurie (2012) has tried to give an idea on the changing pattern of floricultural activities in the country. He also discusses about how plants grow in our country. The author also has discussed about the different soil pattern, fertilizer used and horticultural taxonomy in the country in his book ‘Floriculture-Fundamentals and Practices’.

S Prasad (2010) in his book 'Commercial Floriculture' has discussed about the world scenario of floriculture vis-à-vis in India. Eiri Board (2008) has dealt with the process of flower production in the country in his book named 'Floriculture Handbook'. Anil Verma (2012) has discussed on the post harvest technologies for commercial production of flowers in India in his book 'Post harvest technologies for commercial Floriculture' D Sengupta (2009) had detected the problems faced by the Indian flower producers in marketing of flowers in his book "Floriculture Marketing in India". He has also suggested some remedial measures that could be adopted to tackle such problems.

G S Randhwa (2008) has discussed on the pattern of production of flowers in the country in his book "Floriculture in India". S Prasad (2005) has vividly discussed the commercial floricultural production in India and he has successfully correlated the process of expansion of floricultural,activities in the book captioned "Commercial Floriculture".

In Indian Horticulture Database Website, different types of information are available regarding volume of production and sales of various flowers produced in West Bengal. From the website of the Department of Food Processing Industries and Horticulture, Government of West Bengal, information is available on production and marketing of flowers in our state. From the website of Export Statistics for Agro & Food Products information is available regarding the earning of foreign exchange through floriculture. From the website of the Agricultural & Processed Food Products Export Development Authority information is available regarding the steps taken by the government for development of floriculture.

Objectives of the Study

Since the study relates to the development of floriculture in the small-farm economy of West Bengal, first of all, main flowers of West Bengal and the districts producing those have been identified. According to statistics, in terms of the flower area as percentage of gross cropped area and production of flowers, Purba-Medinipur District is highest among the districts of West Bengal for last few years. That is why the district has been selected for the study. Floriculture of this area expedites the process of development. We have started to identify the social and economic changes occurring gradually in the life of the people of this particular area due to floricultural activities. Under the above perspective the study has tried to analyze the characteristics of the flower growing farmers, their net earnings from the enterprise and the problems faced by them in flower cultivation in the district of Purba-Medinipur. The study is based on collected primary data from field survey on the villages of the Purba-Medinipur District comprising the different economic classes of flower-producers based on their operational landholdings. The objectives of the study are as follows:

1) To compare the costs and the returns of floriculture with other traditional crops
2) To develop micro-model using cost-benefit analysis of a particular land which may be converted from traditional crops to floriculture
3) To identify the constraints in flower farming
4) To suggest suitable strategies for improvement of floricultural activities

Methodology of the Study

In order to address the broad objectives, in the initial stage the study has examined the theoretical understanding of the process. After thorough literature survey and consulting books and journals

relevant to this topic, the study has formulated the theoretical aspect of the problem. At the later stage an empirical study is being undertaken through field survey in the selected villages of the district chosen. A two stage stratified random sampling method has been adopted in the selection of the final sample. In the first stage, ten villages have been selected from three flower-producing blocks of the district namely; Kolaghat, Panskura and Sahid Matangini. These are Khanadihi, Pulsita, Mihitukri and Barisha of Kolaghat block, Manur, Satyeswar and Mahatpur of Panskura block and Sonamui, Khukurdaha and Jagannathpur village of Shahid Matangini block. It has been found from the Agriculture Department of Purba Medinipur Zila Parishad that ten villages of this district are producing more than seventy per cent of the flowers. These ten villages are known for mass production of quality flowers and for this reason they have been chosen as the study area. In each village, at the second stage, an exhaustive list of farmers practicing floriculture has been prepared. From primary investigation it has been found that nearly 3000 farmers are producing flowers in these ten villages. From each village, ten per cent flower-producing farmers have been selected at random using Simple Random Sampling without Replacement to arrive at the final sample for the study. So the sample size is 300 farmers. Data is being collected from the respondents in relation to the landholding pattern, occupational pattern, type of farming, average costs per acre of different flowers, labour requirements, average net income from different flowers, standard of living etc. through structured and guided enquiry schedule. The farmers have been divided into four size classes in the following manner:

Type of Farmer	**Size of landholdings(in acres)**
Marginal	Up to 1.00 acre
Small	Above 1.00 to 3.00 acre
Medium	Above 3.01to 5.00 acre
Large	Above 5.00 acre

At the later stage the value of the variables has been calculated using suitable technique and the average values has been compared with the district and state figures. For undertaking this type of statistical analysis and data processing Microsoft Excel and SPSS (Statistical Package for Social Scientists) has been used. The data processing consists of office editing, data entry and computer programming. Computer based checks has been done to clean the data and to remove inconsistencies. At the final stage a Cost Benefit analysis of floriculture has been made in order to formulate a micro model for ascertainment of profitability of flower cultivation in 1 acre of land vis a vis traditional agriculture crops. This analysis is based on the capital budgeting techniques viz. Net Present value, Average Rate of Return, Profitability Index, Pay Back Period. The study also tries to find out the factors on which profitability per acre of the farmers (Y_i) depends. A multiple regression has been used to find out these factors.

$Y_i = \alpha + \beta_1 X_{1i} + \beta_2 X_{2i} + \varepsilon_i$; Where ε_i is the error term.

Area under cultivation (X_{1i}) and types of flower cultivated (X_{2i}) by the farmers are used as independent variables.

Comparative cost-benefit analysis

An analysis of the pattern of occupation of the sample households reveals that the majority of flower-producing farmers fall under the category of marginal and small size class holdings less than one acre. They are mainly poor farmers and they meet their labour requirement through the

employment of family members. Farmers apart from floriculture also cultivate paddy and vegetables. But it is needless to say that they depend on floriculture because of higher income prospects. Farmers falling under the category of medium and large class (one to five acres of holding) mainly cultivate more than two types of crop in a large area and employ labourers at the time of requirement. It has also been found that most of the farmers cultivate more than one flower. Some cultivators produce only one flower like rose or season flower due to their specialized knowledge and skills. Most of the flower producers cultivate more than one flower in order to reduce the risk factor associated with single flower-cropping. In case of any problem they can set off the loss suffered from one flower by the profit from other flower. It has been found that the highest percentage of cultivators produces the combination of rose, marigold and jasmine. It has also been found that one or two family members generally engaged in the floricultural activities particularly in case of small and marginal flower producer families. Some flower producers have an area of more than 3 or 4 acres of land. In that case sometimes all the family members are engaged in floricultural activities. There are verities of works involved e.g. picking of flowers, washing them, treatment with chemicals, packaging, transportation, marketing and selling etc. Generally they distribute the entire work among themselves.

From the comparative study of the cost and returns on floriculture it has been observed that floriculture is a high profit yielding activities. A farmer having an area of one or two acre of land can earn sufficient to maintain a small family of five members. On the other hand, in these villages, profit per acre earned by the farmers from the traditional crops like paddy is only Rs. 18,000 (Aprx.) per annum. On the contrary farmers involved in floriculture can earn much better than that. Due to high return from a small area, floriculture has become the sole occupation for the small and marginal farmers for improving the quality of their lives. The farmers, learning from their experiences try to cultivate more than two or three types of flowers in their available land. This not only reduces the risk of loss but also require lesser amount of investment and working capital. They try to strike a balance between investment, labour requirements and risks to get an expected return. For example, rose is a very high earning option but it requires higher investment and working capital. On the other hand, marigold requires lesser fund and it gives lesser amount of return with low risk. Most of the farmers cultivate at least two types of flowers. The farmers have reported that flower cultivation needs a great deal of nurturing compare to any traditional crop. The risk involved is high; lack of application of proper doses of fertilizer and pesticides in time may result in severe damage.

In the study area, Mahatpur is known for production of quality season flowers like chrysanthemum, snowball, star, aster, gladiolus etc. Most of the flowers are directly sent to Mallikghat by the farmers. Some buyers from different states directly purchase flowers from the farmers after negotiation. On the other hand, in Khanadihi, farmers mainly produces rose, tuberose, marigold and jasmine. A very interesting observation during the study is that farmers do not want to increase the cultivated area after a certain limit. They are willing to restrict themselves in that size class which can be controlled by them without employing too many hired workers. Engagement of hired labour increases the cost and reduces net earnings. The farmers reported that in one acre if they want to convert the traditional agricultural land to floriculture for cultivation of season flower, then the cost of conversion is nearly Rs. 72,000. They have to spent around Rs. 75,000 as initial investment and Rs. 30,000 throughout the year as working capital in every year and they can earn a net profit of at least Rs. 1,50,000 per year for a minimum of five

years. If they produce rose, tuberose and marigold in one acre in 2:1:1 ratio, their cost and earning remains more or less like season flower.

The study also tries to find out the factors on which profitability of the farmers depends. A multiple regression has been used to find out these factors. Area under cultivation and types of flower cultivated by the farmers are used as independent variables. Results show that types of flower cultivated is negatively significant even at 1% level of significance with p value 0.002. This implies profitability decreases with the cultivation of more than one flower. It should be note worthy in this respect that the flower cultivators should concentrate on cultivation of one single flower like rose or season flower rather than to cultivate a combination of flowers. This will definitely increase the profitability of the flower cultivators.

Table: 1

Dependent Variable: Profitability in 1 acre			
	Coefficients	**t stat**	**p value**
Area under Cultivation	0.4	9.44	1.12E-18
Type of Flower Cultivated	-0.15	-3.17	0.002
Adj. R square 0.23			

It is to be mentioned that cost of conversion is a fixed cost and once the land has been prepared for cultivation of flower the only capital which is required is for plantation of flowering plants. After that they only need fertilizer, pesticides and other maintenance costs. They sell their flowers and get the money back so working capital is not a real problem for them. They have to invest for fresh plant after a certain time, say five years for rose. Once they invest they only need working capital for continuation of production. The following two tables show comparative cost-benefit analysis of different flowers (per acre) and comparative Net Present Value, Pay Back Period, Profitability Index and Average Rate of Return different flowers (per acre) in the locality.

Table: 2

Comparative cost-benefit analysis of different flowers (per acre) **Amount in Rs. (Aprx.)**

Type of flower	**Conversion cost**	**Initial investment**	**Working Capital p.a.**	**Net Profit p.a.**
Rose	65,000	60,000	36,000	1,98,000
Season Flower	72,000	75,000	30,000	1,84,000
Tuberose	26,000	30,000	20,000	1,05,000
Marigold	20,000	24,000	15,000	95,000
Jasmine	28,000	36,000	22,000	1,02,000

Source: Field Survey by the author

Table: 3
Comparative NPV, PBP, PI and ARR of different flowers (per acre)

Type of flower	NPV (at 10%) Rs.	PBP in Years	PI	ARR
Rose	4,47,400	10 months	3.89	123%
Season Flower	2,86,280	12 months	3.29	104%
Tuberose	1,76,850	9 months	4.37	138%
Marigold	1,82,150	9 months	5.10	161%
Jasmine	1,49,340	8 months	3.75	118%

Source: Field Survey by the author

Constraints

Flower producers of this area are suffering some problems; scarcity of healthy planting materials, timely replacement, problem of transportation, credit facilities etc. Sometimes the farmers fail to combat the problems raised due to the changes in climate, marketing and value addition. The different constraints that are faced by the farmers may be classified into three categories.

The first one is environmental constraints. This includes unsuitable land situation, lack of healthy planting materials, lack of assured irrigation etc. Nearly fifty per cent of the farmers get water supply throughout the year from the canals and ponds adjacent to their agricultural land. But the rest have to depend on the shallows and rain water as source of water. In case of lack of rainfall they face severe problems. There is wastage of flowers during storage, transportation and if surplus flower are not disposed off it may cause environmental pollution.

The second one is socio-economic constraints which include lack of capital, fluctuation of price of outputs and high cost of inputs. Non availability of institutional credit is most important barrier to the farmers. Since investment per unit area in floriculture is much higher than other traditional crops, availability of finance is a pre-requisite for its successful operation for these farmers. From the field survey it is found that nearly ninety per cent sample farmers do not get financial support from government or any other agency. They have to depend on informal sector like professional money lenders. In addition to the charging of exorbitant rate of interest timely availability of required amount of loan causes problems. Since floriculture fetches high return from a small area in contrast to the traditional crop, farmers often depends on professional money lenders at a higher rate of interest.

The third constraint is infrastructural problems. Unavailability of metal road in the interior villages creates obstacle for timely delivery of flower in the market. The farmers have lack of knowledge about infestation of pest and diseases. All the farmers have reported that they have not got any government assistance through training and camp for last ten years. Absence of storage facility also compels the farmers to sell their crops at low price in the time of low demand.

In the process of marketing, a large number of market intermediaries exist in the flower market comprising whole sellers of traders, or commissioner's agent's retailers and above all exporters who undertake the export of flowers. In many cases the market structure also compels the

farmers to sell their products at reduced process. The main problem of the farmers is the crisis of fund. If the government makes arrangement of the needed fund, then the crisis may be solved. The farmers at their experiences tried to combat with the constraints. The present level of revenue may be increased by many folds if problems of the flower producers are analyzed and resolved.

SWOT Analysis

The strengths, weakness, opportunities and threats for the floricultural activities in this area are presented below:

Strengths

- Good climate enables round-the-year production of flowers.
- Rains spread over 4-5 months in most parts of this area and drought situation is very rare.
- High literacy helps in gathering new ideas and innovations faster.
- Good infrastructural facilities with roads, railway stations, airport, markets etc. help in timely access to the markets.
- Proximity to export markets like gulf countries such as UAE, Iraq, Mauritius etc. insists the producers to export their production.
- The area produces some unique flowers which have good export potential.

Weaknesses

- High wage rates increases cost of production.
- Very small land holdings reduces profit margin.
- High price of land as well as lease rental increases initial investment.
- Very little Government support reduces the confidence of the flower producers.
- Most of the producers are financially weak. So, they are, very often, skeptical to invest further.
- Exploiting role of intermediaries and *Mahajans* reduces the share of profit.
- The productivity of crops still remains lower as compared to other states.

Opportunities

- Global trade of flowers is very promising as there is an increasing demand from the foreign countries.
- With use of appropriate post-harvest technology coupled with better preservation system may increase profit margin.
- Growing demand for cut flowers needs to be tapped.
- Family members' assistance in production and marketing of flowers reduces dependence on the hired workers.
- Trends towards mixed cropping pattern are coming in a big way.

Threats

- States like Tamil Nadu, Karnataka and Maharastra are capturing a high share of the national market due to high productivity and lower cost of production.
- Acute shortage of labour for field operations during peak seasons causes serious problems.

Conclusion

Despite lack of knowledge on modern floricultural production techniques, difficulty in obtaining the latest varieties and the lack of infrastructure, the industry is continuously attracting new

entrants. This document is being prepared and is intended to provide general information on the opportunity for an investor in the floricultural sector to cultivate flowers for supply in its surrounding markets. Growing cut flowers, especially roses, is a very profitable business if done properly on commercial basis. Demand for cut flowers is growing tremendously as more and more people are becoming aware of the beauty of flowers as decorative items. Weddings, birthday parties, seminars, and other such social gathering events are incomplete without floral decorations. Besides earning money one also helps keep the environment clean and beautiful. A recent trend noticed is that some of the large-scale producers have direct link with the commission agents/traders and the produce is directly taken to the wholesale markets bypassing the intermediaries. In developing countries like India, bio-technology has the potential to contribute in particular to sustainable agriculture and horticultural production. The emergence of bio-technology as a powerful manipulation tools in recent times has bestowed man with power to tinker with life forms on a scale unimagined before. In the next decade, farmers around the world will have to produce more than they have done from the beginning of agriculture till now. The government, concerned authorities and the researchers have to take initiatives to focus on this untouched issue of floriculture.

From the study it can be concluded that floriculture is improving the earning capacity of the sample farmers of these villages in the district of Purba Medinipur. Yielding high return from a small area is improving the quality of life of farmers of this locality. Every year some farmers are shifting themselves from agriculture to floriculture because of expectation of higher income. The floricultural activities in this area can be expanded and income of the farmers can be improved if their problems can be solved. In this context, from our experience we may humbly submit some suggestions before the various institutional authorities associated with the floricultural activities in this district that may be considered for future course of planning.

1) Promoting the rapid growth of horticulture by bridging the gap of knowledge and skill both managerial and technical by training people to become entrepreneurs or self-employed in the floricultural sector.
2) Development of skills for employment in the floriculture unit farms and upgradation of the knowledge of departmental staff in the field.
3) More emphasis should be given to produce only one flower like rose or season flower.
4) To train up the farmers through transfer of modern technology and post harvest management of flowers.
5) Infusion of technology competent human resource for the development of floriculture.
6) Technical upgradation of the people concerned with floricultural development.
7) Support for area expansion, generation of planting material, replanting, training and demonstration.
8) The support shall also be provided to corporations to achieve productivity measures.
9) Arrangement of financial support in the form of subsidies, interest free loan etc.
10) To improve preservation and storing system of flowers particularly in Deulia and Kolaghat, the two main flowers marketing centres.
11) To develop selected high quality infrastructure through implementation of Biotech park, Bioinformatics park in different regions of the district.
12) To ensure better coordination between different R&D organizations working in the area of biotechnology and bioinformatics.

13) The organizations should be encouraged to enter partnership with private companies for floricultural activities.
14) To create an environment for growth of biotech industry by opening up the locked resources in the universities and research institutions through entrepreneurship development program.
15) To set up service centers either by the governments or in partnership with business groups for diagnosis of diseases by sophisticated methods.
16) Infrastructure support for the implementation of grass root and biotechnology programmes should be set up at the district level highlighting the needs of agriculture, animal husbandry, fisheries, waste management, biomass development for animal, poultry, fish etc. at the rural level.
17) To offer incentives in terms of land power and tax concessions in making, setting up biotech industries an attractive proposition.
18) To facilitate flow of venture capital funds and bank credit.
19) To spread awareness about investment opportunities in floriculture.
20) To set up a marketing structure to popularize and commercialize the selling and buying of flowers.
21) To bring more land under horticultural crops in all seasons.
22) Economic upliftment of small and marginal farmers through all sorts of floricultural activities.
23) Utilization of high, medium and low land which under waste/ barren/bushy land as well as coastal embankment, canal or road side area for floricultural purposes.
24) To create opportunities for employment generation for skilled and unskilled persons.
25) To establish convergence and synergy among multiple ongoing programs for floricultural development.

References

Jameson, A. K., (1918) Report on the survey and settlement operations (Midnapur).
Malley (1911): Bengal District Gazetteers, Midnapur.
Nehru, J. (1946), The Discovery of India, Oxford University Press, New Delhi, 1986.
Prasad, S. (2010), Commercial Floriculture, Agrobios.
Randhawa, G. S. (2008), Floriculture in India, Allied Publisher Limited.
Randhawa, G. S. & Mukhopadhaya, A. (2010), Floriculture in India, Allied Publisher Limited.
Sarkar, Rahim, Misra. (1997), Floriculture in West Bengal: Problems and Potentials, New Academic.
Sen, A. & J. Dreze. (1995), Indian: Economic Development and Social Opportunity, Oxford University Press, Oxford.

Impact of Post-Liberalisation on Profitability of Public Sector General Insurance Companies in India: A Study of Pre-Liberal and Post-Liberal Periods

Anirban Sarkar[♦]

Abstract

In year 2000, the insurance sector in India was opened for the private companies with a maximum of 26% of foreign holding. The entry of large number of private companies in the general insurance sector threw new challenges before the existing four public sector companies. This study brings out that post-liberalization has adversely affected the underwriting results of all the public sector general insurance companies, which is mainly due to their increase in expense ratio and claim ratio. However, the higher investment returns of the public sector general insurance companies in the post-liberal period have compensated their underwriting losses. Therefore, no significant difference is found in the return on equity of the public insurers during the pre-liberal & post-liberal periods.

Key words: General Insurance, Non-Life, Public Sector, Profitability, Return on Equity, Net Premium, Net Retention, Underwriting Profit/Loss, Operating Profit/Loss.

Introduction

The Government of India nationalized the General Insurance Business under the General insurance Business Nationalization Act, 1972 to ensure orderly and healthy growth of the business. The then existing 107 companies including branches of foreign companies operating in India were brought under the aegis of General Insurance Corporation (GIC) of India. The GIC was thus entrusted with the responsibility of superintending, controlling, and ensuring smooth and healthy conduct of the general insurance business in India along with its four subsidiaries in all the zones in India, namely: National Insurance Co. Ltd. (Kolkata), United India Insurance Co. Ltd. (Chennai), New India Assurance Co. Ltd. (Mumbai) and Oriental Insurance Co. Ltd. (New

♦ Research Scholar, Dept. of Commerce with Farm Management, Vidyasagar University, Midnapore, West Bengal, India, PIN– 721 102

Delhi). They commenced general insurance business with effect from 1st January, 1973. Private entry in the insurance market was restricted till 2000. During 1973-2000, these public companies had tendency to focus their efforts on maintaining a strong status and market position within their local region rather than competing with one another. They rendered outstanding service by providing insurance cover for small and medium enterprise located in small towns and major panchayats and initiated a number of schemes to extend cover to households, small shop keepers and occupational groups involved in hazardous professions.

The following table shows the trend in gross direct premium of the public sector companies during the last few years of the pre-liberal period:

Table I
Gross Direct Premium of Public Sector General Insurance Companies in Pre-liberal Period

(Rs. in crore)

Year/Player	**1993-94**	**1994-95**	**1995-96**	**1996-97**	**1997-98**	**1998-99**	**1999-00**
National	860.1	957.4 (11.31)	1207.3 (26.10)	1456.5 (20.64)	1636.5 (12.35)	1853.5 (13.26)	2042.1 (10.17)
New India	1616.6	1777 (9.92)	2131.9 (19.97)	2433.6 (14.15)	2688.5 (10.47)	3017.6 (12.24)	3306.5 (9.57)
Oriental	1006.4	1098.1 (9.11)	1325.6 (20.71)	1524.2 (14.98)	1709.5 (12.15)	1969.9 (15.23)	2166.5 (9.98)
United India	1151.8	1319.2 (14.53)	1554.8 (17.85)	1798.3 (15.66)	1962.7 (9.14)	2260.8 (15.18)	2390.5 (5.73)
Total	4634.9	5151.7 (11.15)	6219.6 (20.73)	7212.6 (15.96)	7997.2 (10.87)	9101.8 (13.81)	9905.6 (8.83)

Source : Annual Reports of Public Sector General Insurance Companies from 1993-94 to 1999-00. Figure in parentheses show growth rate in Gross Direct Premium.

There is an upward trend in gross direct premium income of the public sector general insurance companies in pre-liberalization period. New India Assurance emerged as the largest public sector general insurance company during all the years of pre-liberal period followed by United India Insurance, Oriental Insurance and National Insurance.

It was felt in 1990s that the momentum generated through the reforms process in other sectors of the economy cannot be sustained by state controlled insurance industry and that general insurance penetration and enlargement of the market can be accomplished only when a large number of companies compete with each other. There was a growing recognition that the consumer did not benefit in the absence of competition in terms of wider choice and competitive pricing. There was a wide gap in terms of market potential and its exploitation by the nationalized four public sector insurer.

Following the recommendations of the Malhotra Committee (1994), in December 7, 1999, the government passed the IRDA Act to abolish its own monopoly in the insurance business Insurance Regulatory & Development Authority (IRDA) which was incorporated as a statutory

body in April 2000, opened up the insurance market in August 2000 with the invitation of application for registrations of private companies allowing collaboration with foreign companies to enter in to the market with a maximum 26% stake. In December, 2000, the four subsidiaries (National, United, New India & Oriental) of GIC were restructured as independent companies and at the same time GIC was instructed to stop writing direct business and was converted into a national re-insurer.

Post-Liberal Period: Year 2000 Onwards

Competition was reintroduced with entry of large number of private companies into the field. It has thrown a new challenge before the public sector companies. Many large and well established world class private companies have entered into the general insurance sector in collaboration with suitable domestic partner to grab new opportunities. Such as, IFFCO Tokio, TATA AIG, Bajaj Allianz, ICICI Lombard, Reliance General etc. Now it has become quite tough to work in a competitive environment for the public companies who were habituated in receiving assistance from the government and did not concentrate to improve their levels of efficiency in the pre-liberal period. The benefits of post-liberalization can be seen with increase in volumes of premium of both the public and private sector, market penetration, insurance density; and innovation in all areas, like underwriting, product pricing, marketing, policyholder servicing etc.

Table II
Gross Direct Premium of General Insurance Companies during the Post-liberal Period

(Rs. in crores)

Year/ Player	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
National	2227.7 (9.09)	2439.4 (9.50)	2869.9 (17.65)	3399.9 (18.47)	3810.7 (12.08)	3536.3 (-7.20)	3827.1 (8.22)	4022.0 (5.09)	4279.9 (6.41)	4625.1 (8.07)
New India	3493.1 (5.64)	4198.1 (20.18)	4812.7 (14.64)	4921.5 (2.26)	5103.2 (3.69)	5675.4 (11.21)	5936.8 (4.60)	6152.0 (3.62)	5508.8 (-10.5)	6042.5 (9.69)
Oriental	2247.1 (3.72)	2498.6 (11.19)	2868.2 (14.79)	2899.7 (1.10)	3090.5 (6.58)	3609.8 (16.80)	4020.9 (11.39)	3900.2 (-3.00)	3964.2 (1.64)	4736.7 (19.49)
United India	2524.0 (5.58)	2781.5 (10.20)	2969.6 (6.76)	3063.5 (3.16)	2944.5 (-3.88)	3154.8 (7.14)	3498.8 (10.90)	3739.6 (6.88)	4277.8 (14.39)	5239.1 (22.47)
Total Public Sector	10491.9 (5.92)	11917.6 (13.59)	13520.4 (13.45)	14284.7 (5.65)	14948.8 (4.65)	15976.4 (6.87)	17283.5 (8.18)	17813.8 (3.07)	18030.7 (1.22)	20643.4 (14.49)

Source: Annual Report of IRDA from 2000-01 to 2009-10.
Figures in Parenthesis show growth in gross direct premium in percentage.

Table II shows that there has been an increasing trend in volume of business in terms of Gross Direct Premium of the public sector general insurers during the post-liberal period.

Even after the opening up of the insurance sector, the general insurance business was predominantly governed by the tariffs prescribed by Tariff Advisory Committee (TAC). Detariffication has been the most awaited reform in the general insurance industry ever since the Malhotra Committee recommended gradual removal of tariffs in the non-life insurance sector. Considering prevalence of such tariffs against the principles of competition, there was a constant demand from insurers and other industry experts to abolish the tariffs. In a competitive market, the products need to be priced equitably based on their individual risk experience which was not practiced due to tariff restrictions. Removal of tariffs is a natural way for any market to develop and grow, diversify and innovate. Thus, the Authority has accordingly considered moving to a tariff free regime in a phased manner. The de-tariffing exercise has two phases. The first phase started on January 1, 2007 when the IRDA allowed companies to charge their own premium for all classes of business barring Motor Third Party Liability Insurance for commercial vehicles in view of its large volume. The second phase which started from January 1, 2009 provided the General Insurance Companies more freedom to design their own products.

Objective of the Study

Specifically, the objective of the study is to make a comparative analysis of profitability of the public sector general insurance companies in both the pre-liberal and the post-liberal periods and also identifying the factors affecting profitability.

Hypothesis of the Study

To achieve the specific objective of this study, the main hypotheses formulated are:

H_0 - The profitability of the public sector general insurance companies is significantly higher during the post-liberal period than the pre-liberal period.

H1- The profitability of the public sector general insurance companies is not significantly higher during the post-liberal period than the pre-liberal period.

Research Methodology

Keeping in view the objective and hypotheses formulated for this study the methodology/techniques which will be used for collection and analysis of data in this study are as follows:

A) ***Collection of data:***

The data used in this study has been collected from secondary sources i.e. the published annual reports of the public insurance companies and from the publications including annual reports of the Insurance Regulatory & Development Authority (IRDA) during 2000-2010. To assess the effect of market post-liberalization on the profitability of the public sector general insurance companies, a comparison has been made of all the four public sector general insurance companies during the pre-liberal and post-liberal period. The pre-liberal period consists of the years 1993-94 to 1999-00, and the post-liberal period 2000-01 to 2009-10.

B) ***Analysis of data:***

For analyzing data, the technique of ratio analysis, simple mathematical tools like percentages, averages, median, standard deviation etc. and statistical techniques like Karl Pearson's correlation analysis, multivariate regression analysis has been used. The 't' test has been applied at appropriate places. The IBM SPSS Version 19 statistical software has been used for the purpose of data analysis. The hypotheses regarding profitability have been tested by the

application of Wilcoxon-Mann-Whitney test. To asses the profitability performance of the general insurance companies, the following ratios (expressed in percentage form) has been analyzed:

1. Expense Ratio (commission & expenses of management to net written premium).
2. Claim Ratio (Net incurred claims to net written premium).
3. Underwriting Results Ratio (Underwriting profit/loss to net written premium).
4. Investment Income Ratio (Investment income to net written premium).
5. Net Retention Ratio (Net written premium to gross direct premium).
6. Operating Ratio (Net Profit before tax to net written premium).
7. Net Earning Ratio (Net Profit after tax to net written premium).
8. Return on Equity Ratio (Net Profit after tax to net worth).

Concept of Profitability and Its Drivers

Profit can be defined as the difference between total earnings from all earning assets and total expenditure on managing entire asset-liabilities portfolio. The term 'profitability' is a relative measure of profit earning capacity of an entity generally measured with the help of ratios. Profitability depicts the relationship of the absolute amount of profit with various other factors. Profitability is the most important and reliable indicator of the ability of an insurance company to raise its income level.

To analyze the drivers of profitability in respect of an insurer, it is useful to decompose Return on Equity (ROE) into its main components. Profits are determined first by underwriting performance i.e. the core business of an insurer which is influenced by product pricing, risk selection, claims management, and marketing and administrative expenses; and second, by investment performance, which is a function of asset allocation and asset management as well as asset leverage. The pre-tax profit margin is the sum of the underwriting result and the investment result. An insurer's ROE is determined by profit after taxes realized for each unit of net premiums (or profit margin) and by the amount of capital funds used to finance and secure the risk exposure of each premium unit (solvency).

Analysis and Findings of the Study

1. Ratio Analysis

(a) Expense Ratio

Expenses of a general insurance company largely comprises of commission expense and expenses of management. Commission expense is derived after considering commission payable and receivable on reinsurance business accepted or ceded respectively. Expenses of Management are generally operating expenses which include employees' remuneration and benefits, office and administrative expenses, etc. Expense ratio is calculated as a percentage of net premium, which reflects the percentage of revenue which is being utilized on account of commission and management expenses. This ratio is a pointer of the cost effectiveness and productivity. A higher ratio reflects financial instability of the business as a decrease in revenue may result in losses, whereas lower ratio is an indicator of better operational performance. It becomes important to examine, how far the public sector general insurance companies have been in a position to reduce their operating cost during the post-liberal period.

Table III presents the comparative expense ratio of the four public sector general insurance companies during the pre-liberal and post-liberal period. The study shows that during the pre-liberal period, the average expense ratio of National, New India, Oriental and United India was 27.17 %, 22.84 %, 26.07 % and 23.03 % respectively. Similarly, during the post-liberal period, the average expense ratio of National, New India, Oriental and United India was 32.66 %, 34.58 %, 34.20 % and 35.53 % respectively. The results indicate that the expense ratio of all the public insurers have increased during the post-liberal period as compared to the pre-liberal period. However, the increase in expense is not the same for all the four public insurers.

Table III
Expense Ratio of Public Sector General Insurance Companies during Pre-liberal and Post-liberal Periods

(Percentage)

Pre-liberal period							
Year	**National**	**New**	**Oriental**	**United**	**Mean**	**Median**	**S.D.**
1993-94	23.36	20.45	21.33	18.18	20.83	20.89	2.14
1994-95	25.62	18.70	22.19	18.69	21.30	20.44	3.31
1995-96	27.61	22.15	32.95	25.65	27.09	26.63	4.51
1996-97	31.10	29.31	27.12	25.91	28.36	28.21	2.30
1997-98	24.56	22.52	24.07	24.91	24.02	24.31	1.05
1998-99	28.75	22.42	24.58	23.36	24.78	23.97	2.79
1999-00	29.23	24.34	30.28	24.54	27.10	26.88	3.09
Mean	27.17	22.84	26.07	23.03	24.78		
Median	27.61	22.42	24.58	24.54			
S.D.	2.77	3.3	4.27	3.25			
Post-liberal Period							
Year	**National**	**New**	**Oriental**	**United**	**Mean**	**Median**	**S.D.**
2000-01	27.21	28.07	26.53	24.75	26.64	26.87	1.41
2001-02	30.59	27.95	32.22	31.56	30.58	31.08	1.88
2002-03	30.39	30.83	33.70	28.82	30.94	30.61	2.04
2003-04	32.08	43.05	41.70	38.77	38.9	40.24	4.89
2004-05	33.11	39.70	37.25	41.92	38.00	38.48	3.77
2005-06	38.13	38.76	38.16	46.75	40.45	38.46	4.21
2006-07	32.20	32.48	29.65	38.04	33.09	32.34	3.54
2007-08	34.55	30.08	33.17	36.42	33.56	33.86	2.67
2008-09	31.87	36.65	34.48	35.06	34.52	34.77	1.99
2009-10	36.46	38.27	35.13	33.17	35.76	35.80	2.15
Mean	32.66	34.58	34.20	35.53	34.24		
Median	32.14	34.57	34.09	35.74			
S.D.	3.13	5.36	4.31	6.39			

Source: IRDA Annual Reports from 2000-01 to 2009-10, Handbook on Indian Insurance Statistics 2007-08, Annual reports of National, New India, Oriental & United India from 1993-94 to 1999-00.

Wilcoxon-Mann-Whitney test (*U*-test)

Ratio	Value of '*U*' statistic		Significance
	U_{PL}*	U_L*	
Expense Ratio	67	03	Means of pre-liberal and post-liberal periods are significantly different
*At 10% level of significance, Z value for 90% of the area (acceptance region) under the normal curve is 3.28. So, upper limit and lower limit of '***U'** are 51.81 and 18.19 respectively where n_{pl}=7 & n_l=10, U_{PL} **&** U_L are 'U' values considering pre-liberal and post-liberal period respectively.			

The highest average increase of expense ratio during the post-liberal period as compared to the pre-liberal period of United India was 12.50% followed by New India (11.74%), Oriental (8.13 %) and National (5.49 %). During the pre-liberal period, National Insurance Company registered the highest average expense ratio, whereas during the post-liberal period, it registered the lowest average expense ratio.

Overall, the average expense ratios of all the public insurers during the pre-liberal and post-liberal period were 24.78% and 34.24% respectively which shows an increase of 9.46% during the post-liberal period. During the post-liberal period, the public insurers collectively registered the highest average expense ratio in the year 2005-06 (40.45 %) which is much higher than the highest value in the pre-liberal period i.e. 28.36 % in 1996-97. The results of Wilcoxon-Mann-Whitney test also depict a significant increase in average expense ratio during the post-liberal period over the pre-liberal period as the '***U'*** values are beyond the upper & lower limits. The increase in expense ratio is probably due to higher spending of the public insurers on advertisements, commission and other expenses to cope up with the rapidly expanding competitive insurance market.

(b) Claim Ratio

Claim ratio is expressed as a percentage of total net incurred claims to net premium underwritten. A lower claim ratio signifies the efficiency of the risk underwriting team and also a better claims management mechanism. **Table IV** explains the comparative claim ratio of the four public sector general insurance companies during the pre-liberal and the post-liberal periods. The average claim ratio of all the public insurers during the pre-liberal period was 78.76 % which increased to 85.26 % during the post-liberal period.

The average claim ratio was highest, i.e., 90.00 % in the year 1994-95 which belongs to the pre-liberal period whereas in the post-liberal period year 2001-02 registered the highest claim ratio i.e. 91.50 % followed by 90.87 % in 2005-06. Among the public insurers, in the pre-liberal period, United India's average claim ratio was the highest, i.e., 82.56% followed by Oriental, National and New India with the respective percentages of 82.20%, 76.19% and 74.08% which exhibits that during the pre-liberal period United India registered the highest claim ratio, whereas New India recorded the lowest claim ratio. During the post-liberal period, National showed the highest claim ratio of 86.90% followed by United India (86.46%), Oriental (86.06%), and New India (81.61%). The Wilcoxon-Mann-Whitney test also indicates

that claim ratio of the public insurers is significantly higher during the post-liberal period than the pre-liberal period. Individually, during the pre-liberal period, National Insurance registered both the highest claim ratio of 91.58 % in 1994-95 and lowest claim ratio of 63.56 % in 1995-96 whereas in the post-liberal period also it registered the highest individual claim ratio of 105.49 % in 2005-06. On the contrary, United India registered the lowest claim ratio of 71.65 % in the year 2008-09 which belongs to the post-liberal period.

Table IV
Claim Ratio of Public Sector General Insurance Companies during the Pre-liberal and Post-liberal Periods

(Percentage)

Pre-liberal Period							
Year	**National**	**New India**	**Oriental**	**United**	**Mean**	**Media**	**S.D.**
1993-94	66.70	69.43	71.59	73.90	70.40	70.51	3.07
1994-95	91.58	89.61	88.83	89.98	90.00	89.80	1.16
1995-96	63.56	69.87	82.96	83.99	75.09	76.42	10.02
1996-97	73.92	69.90	83.56	82.42	77.45	78.17	6.62
1997-98	78.42	71.43	80.26	82.29	78.10	79.34	4.72
1998-99	78.51	71.41	86.61	78.15	78.67	78.33	6.22
1999-00	80.68	76.94	81.63	87.22	81.62	81.16	4.25
Mean	76.19	74.08	82.20	82.56	78.76		
Median	78.42	71.41	82.96	82.42			
S.D.	9.33	7.31	5.52	5.38			
Post-liberal Period							
Year	**National**	**New India**	**Oriental**	**United**	**Mean**	**Media**	**S.D.**
2000-01	81.00	85.34	87.06	94.30	86.93	86.20	5.54
2001-02	95.14	83.28	100.52	87.06	91.50	91.10	7.79
2002-03	76.01	82.46	77.23	91.06	81.69	79.85	6.84
2003-04	84.10	74.65	78.09	85.63	80.62	81.10	5.14
2004-05	79.92	74.58	86.04	91.99	83.13	82.98	7.54
2005-06	105.49	83.64	82.57	91.77	90.87	87.71	10.58
2006-07	83.85	76.68	81.91	84.68	81.78	82.88	3.59
2007-08	89.05	85.01	90.40	87.00	87.87	88.03	2.36
2008-09	92.88	84.94	94.50	71.65	85.99	88.91	10.43
2009-10	81.59	85.50	82.28	79.45	82.21	81.94	2.51
Mean	86.90	81.61	86.06	86.46	85.26		
Median	83.98	83.46	84.31	87.03			
S.D.	8.83	4.49	7.34	6.79			

Source: IRDA Annual Reports from 2000-01 to 2009-10, Handbook on Indian Insurance Statistics 2007-08,
Annual reports of National, New India, Oriental & United India from 1993-94 to 1999-00.

Wilcoxon-Mann-Whitney test (*U*-test)

Ratio	Value of '*U*' statistic		Significance
	U_{PL}*	U_L*	
Claim Ratio	61	09	Means of pre-liberal and post-liberal periods are significantly different

*At 10% level of significance, Z value for 90% of the area (acceptance region) under the normal curve is 3.28. So, upper limit and lower limit of '***U'** are 51.81 and 18.19 respectively where n_{pl}=7 & n_l=10. U_{PL} & U_L are 'U' values considering pre-liberal and post-liberal period respectively.

(c) Underwriting Results Ratio

Underwriting results indicate the performance of an insurance company from core insurance business. To ascertain the underwriting performance, first net underwritten premium is adjusted with the increase/decrease in unexpired risk reserve to arrive at net premium (earned). Thereafter, underwriting profit/loss of a general insurer is ascertained after deducting the commission expenses, claims incurred and management expenses from net premium (earned). The underwriting results ratio is calculated by dividing underwriting results by net underwritten premium.

The underwriting results of the four public sector general insurance companies for the pre-liberal and post-liberal periods are presented in **Table V**. This table highlights underwriting losses in all the years of the pre-liberal and post-liberal period except in the year 1993-94 when the four public sector insurers earned an average underwriting profit of 1.79%. The average underwriting loss of the four public insurers during the pre-liberal and post-liberal period is 9.08 % and 23.34 % respectively which reveals that there were more underwriting losses in the post-liberal period than the pre-liberal period. During the pre-liberal period under study, Oriental suffered the maximum underwriting loss in 1995-96 (26.55 %) whereas in 2005-06, National suffered the maximum loss of 40.64 % among all the four public sector companies in the post-liberal period. A glance at the year-wise underwriting losses during the pre-liberal period provides that the year 1994-95 showed the highest average underwriting loss of 15.30% followed by 12.84% in the year 1995-96. However, during the post-liberal period, the year 2005-06 registered the highest average underwriting loss of 33.65% followed by 2008-09 with a loss of 26.75%.

The Wilcoxon-Mann-Whitney test also signifies the increase in underwriting losses during the post-liberal period. The main reason of higher underwriting losses of the four public insurers during the post-liberal period is mainly due to their higher expenses of management and incurred claims. The public insurers are gradually realizing the need of experienced underwriting agents rather than mere selling agents. A 360 degree view of the risk is to be considered before insuring any risk otherwise it may lead to huge claims which adversely affect the underwriting results of the public insurers. Public sector general insurance companies must reduce their staff strength specifically their own in-house sales agents and use better sophisticated technology to reduce their expense of management.

Table V
Underwriting Results Ratio of Public Sector General Insurance Companies during the Pre-liberal and Post-liberal Periods

(Percentage)

Pre-liberal Period							
Year	**National**	**New India**	**Oriental**	**United**	**Mean**	**Median**	**S.D.**
1993-94	0.71	3.08	1.59	1.80	01.79	1.70	0.98
1994-95	-20.14	-13.31	-15.91	-11.84	-15.30	-14.61	3.64
1995-96	-3.53	-1.70	-26.55	-19.57	-12.84	-11.55	12.17
1996-97	-11.94	-4.37	-14.79	-12.90	-11.00	-12.42	4.58
1997-98	-7.35	2.94	-9.12	-12.29	-6.45	-8.24	6.59
1998-99	-14.52	0.60	-18.07	-7.92	-9.98	-11.22	8.21
1999-00	-14.36	-7.18	-1.83	-15.78	-9.79	-10.77	6.50
Mean	-10.16	-2.85	-12.10	-11.21	-9.08		
Median	-11.94	-1.70	-14.79	-12.29			
S.D.	7.18	5.95	9.73	6.77			
Post-liberal Period							
Year	**National**	**New**	**Oriental**	**United**	**Mean**	**Median**	**S.D.**
2000-01	-13.74	-16.97	-16.00	-22.35	-17.27	-16.49	3.65
2001-02	-25.51	-18.05	-32.62	-22.15	-24.58	-23.83	6.17
2002-03	-14.14	-13.82	-13.21	-19.08	-15.06	-13.98	2.71
2003-04	-21.00	-18.96	-22.77	-25.09	-21.96	-21.89	2.61
2004-05	-18.96	-17.57	-27.56	-34.37	-24.62	-23.26	7.86
2005-06	-40.64	-27.50	-26.52	-39.94	-33.65	-33.72	7.68
2006-07	-19.13	-13.72	-18.12	-28.90	-19.97	-18.63	6.4
2007-08	-28.92	-17.18	-23.65	-29.62	-24.84	-26.29	5.76
2008-09	-31.09	-26.15	-34.18	-15.58	-26.75	-28.62	8.15
2009-10	-22.12	-28.64	-26.79	-21.03	-24.65	-24.46	3.65
Mean	-23.53	-19.86	-24.14	-25.81	-23.34		
Median	-21.56	-17.81	-25.09	-23.72			
S.D.	8.27	5.52	6.84	7.42			

Source: IRDA Annual Reports from 2000-01 to 2009-10, Handbook on Indian Insurance Statistics 2007-08,
Annual Reports of National, New India, Oriental & United India from 1993-94 to 1999-00.

Wilcoxon-Mann-Whitney test (*U*-test)

Ratio	**Value of '*U*' statistic**		**Significance**
	U_{PL}*	U_L*	
Underwriting Results Ratio	01	69	Means of pre-liberal and post-liberal periods are significantly different

*At 10% level of significance, Z value for 90% of the area (acceptance region) under the normal curve is 3.28. So, upper limit and lower limit of '***U'** are 51.81 and 18.19 respectively where n_{pl}=7 & n_l=10. U_{PL} & U_L are 'U' values considering pre-liberal and post-liberal period respectively.

(d) Investment Income Ratio

Income from investments creates a significant impact on profitability of an insurance company. Insurers collect huge amount of money as premium and invest it efficiently to maximize its return. The investment income ratio is determined by investment income to net written premium. This ratio indicates the effectiveness and efficiency of investment decisions.

Table VI
Investment Income Ratio of Public Sector General Insurance Companies during the Pre-liberal and the Post-liberal Periods

(Percentage)

Pre-liberal Period							
Year	**National**	**New India**	**Oriental**	**United**	**Mean**	**Median**	**S.D.**
1993-94	19.83	23.86	19.89	20.69	21.07	20.29	1.90
1994-95	22.00	25.66	21.72	22.63	23.00	22.32	1.81
1995-96	21.39	26.78	22.69	24.86	23.93	23.78	2.38
1996-97	21.67	25.26	25.23	26.29	24.61	25.25	2.02
1997-98	22.54	29.51	25.26	26.00	25.83	25.63	2.87
1998-99	21.63	26.95	23.97	25.75	24.58	24.86	2.31
1999-00	21.33	27.68	22.52	25.35	24.22	23.94	2.86
Mean	21.48	26.53	23.04	24.51	23.89		
Median	21.63	26.78	22.69	25.35			
S.D.	0.84	1.82	1.94	2.08			
Post-liberal Period							
Year	**National**	**New**	**Oriental**	**United**	**Mean**	**Media**	**S.D.**
2000-01	22.35	29.79	22.94	25.77	25.21	24.36	3.4
2001-02	24.26	28.00	24.06	30.53	26.71	26.13	3.12
2002-03	22.80	25.05	25.38	32.07	26.33	25.22	4.00
2003-04	26.42	34.85	46.39	43.95	37.90	39.40	9.12
2004-05	24.19	38.32	48.79	49.26	40.14	43.56	11.77
2005-06	37.64	47.96	44.69	62.92	48.30	46.33	10.65
2006-07	36.94	47.46	40.29	51.96	44.16	43.88	6.80
2007-08	37.04	47.74	39.71	54.75	44.81	43.73	8.04
2008-09	28.45	30.49	30.78	30.98	30.18	30.64	1.17
2009-10	33.90	35.66	29.51	40.30	34.84	34.78	4.46
Mean	29.4	36.53	35.25	42.25	35.86		
Median	27.44	35.26	35.25	42.13			
S.D.	6.32	10.19	9.83	12.35			

Source: IRDA Annual Reports from 2000-01 to 2009-10, Handbook on Indian Insurance Statistics 2007-08,
Annual Reports of National, New India, Oriental & United India from 1993-94 to 1999-00.

Wilcoxon-Mann-Whitney test (*U*-test)

Ratio	Value of '*U*' statistic		Significance
	U_{PL}*	U_L*	
Investment Income Ratio	69	01	Means of pre-liberal and post-liberal periods are significantly different

*At 10% level of significance, Z value for 90% of the area (acceptance region) under the normal curve is 3.28. So, upper limit and lower limit of '***U'** are 51.81 and 18.19 respectively where n_{pl}=7 & n_l=10. $\boldsymbol{U_{PL}}$ **&** $\boldsymbol{U_L}$ are 'U' values considering pre-liberal and post-liberal period respectively.

Table VI exhibits the results of investment income to net written premium ratio of the four public insurers for both the pre-liberal and post-liberal periods. The results indicate that during the pre-liberal period, New India showed the highest average investment income ratio of 26.53 % followed by United India (24.51%), Oriental (23.04%) and National (21.48%). During the post-liberal period, United India exhibited the highest average investment income ratio of 42.25% followed by New India 36.53%, Oriental 35.25% and National 29.40%. The average investment income ratios of the four public insurers during the pre-liberal and post-liberal period are 23.89 % and 35.86 % respectively which shows that investment income ratio increased during the post-liberal period than the pre-liberal period. The result of Wilcoxon-Mann-Whitney test also supports this observation. The less fluctuation in standard deviation results also reveals that investment income ratio was much more consistent in the pre-liberal period than the post-liberal period.

(e) Net Retention Ratio

Net retention ratio signifies an insurer's ability to bear risk. It is expressed as a percentage of business retained (net of reinsurance ceded) in relation to gross direct premium. As per the latest IRDA guidelines issued in April 2007, every insurer has to compulsorily cede a minimum of 15% (earlier it was 20%) of their business to the national re-insurer, i.e. GIC. In general, the companies having a stronger capital base and huge amount of reserve & surpluses are able to retain more of their portfolios, whereas the companies, with relatively lower capitalization (and hence lower capacity to retain risks) have resorted to higher utilization of reinsurance.

Table VII explains the net retention ratio of the four public sector general insurance companies under study for the pre-liberal and post-liberal periods. The average net retention ratios of the public insurers during the pre-liberal and post-liberal period are 75.17% and 75.88% respectively which indicates a marginal increase of 0.71% during the post-liberal period.

Year-wise study shows that during the pre-liberal period, year 1993-94 exhibited the highest net retention ratio of 76.83% followed by 1995-96 with 76.78%, while during the post-liberal period, the year 2009-10 exhibited the highest average net retention ratio of 82.94% followed by 2008-09 with 82.91%. The Wilcoxon-Mann-Whitney test also indicates that there is no significant gap between the net retention ratio of the public insurers during the pre-liberal and post-liberal period.

Table VII

Net Retention Ratio of Public Sector General Insurance Companies during the Pre-liberal and Post-liberal Periods

(Percentage)

Pre-liberal Period							
Year	**National**	**New India**	**Oriental**	**United**	**Mean**	**Median**	**S.D.**
1993-94	83.90	74.11	73.78	75.53	76.83	74.82	4.77
1994-95	80.31	75.04	74.85	71.02	75.31	74.95	3.82
1995-96	82.39	75.83	76.13	72.78	76.78	75.98	4.03
1996-97	79.72	74.25	73.31	70.67	74.49	73.78	3.80
1997-98	77.19	72.34	72.29	71.47	73.32	72.32	2.61
1998-99	79.09	72.47	72.28	71.46	73.83	72.38	3.54
1999-00	79.07	74.93	75.33	73.33	75.67	75.13	2.43
Mean	80.24	74.14	74.00	72.32	75.17		
Median	79.72	74.25	73.78	71.47			
S.D.	2.25	1.31	1.50	1.70			
Post-liberal Period							
Year	**National**	**New India**	**Oriental**	**United**	**Mean**	**Median**	**S.D.**
2000-01	81.00	76.48	76.78	74.66	77.23	76.63	2.68
2001-02	74.33	73.09	72.78	73.52	73.43	73.31	0.67
2002-03	74.25	73.06	66.21	70.46	71.00	71.76	3.56
2003-04	73.78	73.86	70.11	70.23	72.00	72.01	2.11
2004-05	74.32	76.33	71.77	73.79	74.05	74.06	1.87
2005-06	75.87	76.52	69.27	70.55	73.05	73.21	3.68
2006-07	74.61	80.04	71.62	72.30	74.64	73.46	3.82
2007-08	79.26	79.88	73.81	77.03	77.50	78.15	2.74
2008-09	85.05	85.20	79.33	82.06	82.91	83.56	2.79
2009-10	85.61	84.55	81.62	79.98	82.94	83.09	2.60
Mean	77.81	77.9	73.33	74.46	75.88		
Median	75.24	76.5	72.28	73.66			
S.D.	4.63	4.41	4.71	4.08			

Source: IRDA Annual Reports from 2000-01 to 2009-10, Handbook on Indian Insurance Statistics 2007-08,
Annual Reports of National, New India, Oriental & United India from 1993-94 to 1999-00.

Wilcoxon-Mann-Whitney test (*U*-test)

Ratio	**Value of '*U*' statistic**		**Significance**
	U_{PL}*	U_L*	
Net Retention Ratio	34	36	Means of pre-liberal and post-liberal periods are significantly identical

*At 10% level of significance, Z value for 90% of the area (acceptance region) under the normal curve is 3.28. So, upper limit and lower limit of '***U'** are 51.81 and 18.19 respectively where n_{pl}=7 & n_l=10. U_{PL} & U_L are 'U' values considering pre-liberal and post-liberal period respectively.

(f) Net Earning Ratio

The Net Earning Ratio has been calculated by dividing net profit after tax to net premium underwritten. This ratio is an acceptable measure of profitability of the insurance business. This ratio discloses the net result of the underwriting and investment activities.

Table VIII highlights the net earning ratio of all the four public sector insurers under study during the pre-liberal and post-liberal period. During the pre-liberal period, New India recorded the highest average net earning ratio of 14.83% followed by United India, National, and Oriental companies with the respective ratios of 9.23%, 8.18% and 5.78%. However, during the post-liberal period, United registered the highest average net earning ratio of 13.98% followed by New India, Oriental, and National with the ratios of 13.34%, 5.13% and 3.20% respectively. During the pre-liberal period, Oriental Insurance Co. exhibited the lowest average net earning ratio, whereas during the post-liberal period, National Insurance Co. exhibited the lowest average net earning ratio. The average net earning ratio of all these four insurers during the pre-liberal period was 9.50%, whereas it was 8.91% during the post-liberal period. Hence, the decrease was quite marginal during the post-liberal period. A year-wise analysis of average net earning ratio provides that there had been an upward trend (from 5.62 % to 14.73 %) during the years 1994-95 to 1997-98, but during the year 1999-00 the ratio reached at the level of 6.97%. During the post-liberal period, the average net earning ratio of the four public insurers was the highest in the year 2006-07 followed by the year 2007-08. The standard deviation indicates that consistency in net earning was higher during the post-liberal period than the preliberal period. The Wilcoxon-Mann-Whitney test also indicates that there is insignificant gap between the net earning ratio of the public sector insurers during the pre-liberal and post-liberal period.

Individually, New India registered the maximum net earning ratio in both the pre-liberal and post-liberal period (24.21% in 1997-98 and 30.72% in 2006-07 respectively) while the Oriental Insurance Co. registered the lowest net earning ratio in both the study period (-04.56 % in 1995-96 and -12.96 % in 2001-02 respectively).

Table VIII
Net Earning Ratio of Public Sector General Insurance Companies during the Pre-liberal and Post-liberal Periods

(Percentage)

Pre-liberal Period							
Year	**National**	**New India**	**Oriental**	**United India**	**Mean**	**Median**	**S.D.**
1993-94	12.67	16.15	13.16	13.62	13.90	13.39	1.55
1994-95	1.80	8.87	3.74	8.06	5.62	5.90	3.40
1995-96	12.62	14.93	-4.56	4.14	6.78	8.38	8.87
1996-97	7.06	10.89	8.18	9.35	8.87	8.77	1.64

1997-98	11.68	24.21	12.45	10.59	14.73	12.07	6.36
1998-99	5.45	17.15	4.06	11.89	9.64	8.67	6.06
1999-00	5.98	11.60	3.38	6.94	6.97	6.46	3.43
Mean	8.18	14.83	5.78	9.23	9.50		
Median	7.06	14.93	4.06	9.35			
S.D.	4.21	5.11	6.12	3.18			
Post-liberal Period							
Year	**National**	**New India**	**Oriental**	**United India**	**Mean**	**Median**	**S.D.**
2000-01	5.69	8.37	4.30	-0.12	4.56	5.00	3.55
2001-02	-4.99	4.59	-12.96	7.50	-1.47	-0.20	9.34
2002-03	6.33	7.28	3.34	8.17	6.28	6.81	2.10
2003-04	2.84	16.24	15.56	17.68	13.08	15.90	6.88
2004-05	4.63	10.33	14.90	14.16	11.01	12.25	4.70
2005-06	-3.96	16.50	11.35	19.10	10.75	13.93	10.32
2006-07	14.75	30.72	17.27	20.91	20.91	19.09	7.01
2007-08	5.13	28.51	0.32	21.93	13.97	13.53	13.41
2008-09	-4.08	4.08	-1.63	13.56	2.98	1.23	7.84
2009-10	5.65	6.74	-1.12	16.89	7.04	6.20	7.43
Mean	3.2	13.34	5.13	13.98	8.91		
Median	4.88	9.35	3.82	15.53			
S.D.	6.08	9.59	9.60	6.95			

Source: IRDA Annual Reports from 2000-01 to 2009-10, Handbook on Indian Insurance Statistics 2007-08,
Annual Reports of National, New India, Oriental & United India from 1993-94 to 1999-00.

Wilcoxon-Mann-Whitney test (*U*-test)

Ratio	Value of '*U*' statistic		Significance
	U_{PL}*	U_L*	
Net Earning Ratio	32	38	Means of pre-liberal and post-liberal periods are significantly identical

*At 10% level of significance, Z value for 90% of the area (acceptance region) under the normal curve is 3.28. So, upper limit and lower limit of '***U'** are 51.81 and 18.19 respectively where n_{pl}=7 & n_l=10. U_{PL} & U_L are 'U' values considering pre-liberal and post-liberal period respectively.

(g) Operating Ratio

Table IX highlights the operating ratio (i.e. profit before tax to net premium underwritten) of the four public sector general insurance companies under study during the pre-liberal and post-liberal period. The average operating ratio of all the four public sector insurers during the pre-liberal period was 13.54%, whereas it was 11.05% during the post-liberal period. It indicates that the ratio is lower by 2.49 % during the post-liberal period. This ratio depicts similar trend with Net Earning ratio. Year-wise analysis provides that during the pre-liberal period, the public insurers showed the highest average operating ratio of 22.70 % in the year 1993-94. The average operating ratio showed an upward trend during the period 1994-95 to 1997-98 when it rose from 7.70% to 18.81%.

Table IX
Operating Ratio of Public Sector General Insurance Companies during the Pre-liberal and Post-liberal Periods

(Percentage)

Pre-liberal Period							
Year	**National**	**New India**	**Oriental**	**United**	**Mean**	**Median**	**S.D.**
1993-94	20.03	26.91	21.36	22.49	22.70	21.93	2.98
1994-95	2.18	12.62	5.32	10.70	7.70	8.01	4.81
1995-96	16.56	24.44	-4.17	4.84	10.42	10.70	12.63
1996-97	8.84	20.23	9.93	13.10	13.02	11.52	5.13
1997-98	14.71	31.91	14.86	13.75	18.81	14.79	8.75
1998-99	5.69	25.82	4.71	16.18	13.10	10.94	9.94
1999-00	6.22	17.57	3.73	8.58	9.02	7.40	6.03
Mean	10.61	22.79	7.96	12.81	13.54		
Median	8.84	24.44	5.32	13.10			
S.D.	6.57	6.45	8.30	5.66			
Post-liberal Period							
Year	**National**	**New India**	**Oriental**	**United**	**Mean**	**Median**	**S.D.**
2000-01	6.15	10.81	4.32	0.43	5.43	5.24	4.31
2001-02	-5.18	6.75	-12.93	7.66	-0.93	0.79	9.91
2002-03	6.54	8.90	9.23	10.24	8.73	9.07	1.57
2003-04	2.91	17.82	22.35	18.29	15.34	18.06	8.53
2004-05	4.99	20.48	21.27	14.65	15.35	17.57	7.51
2005-06	-2.22	19.70	13.37	20.34	12.8	16.54	10.49
2006-07	15.96	33.96	21.86	20.57	23.09	21.22	7.68

2007-08	5.40	30.96	15.37	22.85	18.65	19.11	10.89
2008-09	-3.65	5.40	-2.73	14.33	3.34	1.34	8.38
2009-10	6.75	5.99	2.23	19.64	8.65	6.37	7.59
Mean	3.77	16.08	9.43	14.90	11.05		
Median	5.20	14.32	11.3	16.47			
S.D.	6.21	10.32	11.73	7.01			

Source: IRDA Annual Reports from 2000-01 to 2009-10, Handbook on Indian Insurance Statistics 2007-08 Annual Reports of National, New India, Oriental & United India

Wilcoxon-Mann-Whitney test (*U*-test)

Ratio	Value of '*U*' statistic		Significance
	U_{PL}*	U_L*	
Operating Ratio	27	43	Means of pre-liberal and post-liberal periods are significantly identical

*At 10% level of significance, Z value for 90% of the area (acceptance region) under the normal curve is 3.28. So, upper limit and lower limit of '***U'** are 51.81 and 18.19 respectively where n_{pl}=7 & n_l=10. U_{PL} & U_L are 'U' values considering pre-liberal and post-liberal period respectively.

After this period, it showed a downward trend and reached at 9.02% in the year 1999-00. During the post-liberal period, the average operating ratio was the highest, i.e., 23.09% in the year 2006-07. It showed an upward trend during the period 2001-02 to 2004-05, when it rose from -0.93% to 15.35%. The Mann-Whitney test indicates that there is no significant gap between the operating ratio of the public insurers during the pre-liberal and post-liberal period.

(h) Return On Equity

Return on Equity is the most popular measure of profitability of a business concern irrespective of its nature of business. It measures the return available for accruing to owners' capital. It is calculated by dividing net profit after tax to Net Worth.

Table X reveals the data showing the comparative return on equity ratio of the four public sector general insurance companies for the period under study. During the pre-liberal period, New India recorded the highest average return on equity, i.e., 15.96% followed by United India, National and Oriental companies with the respective ratios of 15.30%, 13.66% and 9.55%. Further, the return on equity of all the public insurers during the pre-liberal period is positive except Oriental company where it is -09.29% during the year 1995-96. During the post-liberal period, United India exhibited the highest average return on equity of 14.67%. It was followed by New India, Oriental, and National with the respective returns of 11.13%, 6.94% and 6.40%. The average return on equity of all the four public insurers during the pre-liberal period is 13.62%, whereas it is 9.79% during the post-liberal period showing a decline of 3.83% in the average return on equity during the post-liberal period. A year-wise analysis of the pre-liberal period discloses that the public insurers showed the highest average return on equity of 20.55% during the year 1993-94. From 1994-95 to 1997-98 there was an upward trend in the average returns on equity when it increased from 8.03% to 20.14%. However, after this

period it showed a downward trend and reached to 9.27% during the year 1999-00. During the post-liberal period, the public insurers showed the highest average return on equity of 24.34% in the year 2006-07 followed by 17.70 % in the year 2003-04.

Table X
Return on Equity of Public Sector General Insurance Companies during the Pre-liberal and Post-liberal Periods

(Percentage)

Pre-liberal Period							
Year	**National**	**New India**	**Oriental**	**United**	**Mean**	**Median**	**S.D.**
1993-94	20.44	20.48	18.93	22.37	20.55	20.46	1.41
1994-95	2.96	10.94	5.69	12.53	8.03	8.32	4.47
1995-96	21.63	18.33	-9.29	7.37	9.51	12.85	13.94
1996-97	12.70	13.09	16.50	17.24	14.88	14.80	2.32
1997-98	18.75	23.97	21.24	17.92	20.47	20.00	2.73
1998-99	9.23	14.86	7.33	19.02	12.61	12.05	5.34
1999-00	9.91	10.05	6.48	10.65	9.27	9.98	1.89
Mean	13.66	15.96	9.55	15.30	13.62		
Median	12.70	14.86	7.33	17.24			
S.D.	6.89	5.16	10.47	5.27			
Post-liberal Period							
Year	**National**	**New India**	**Oriental**	**United**	**Mean**	**Median**	**S.D.**
2000-01	9.73	7.29	8.00	-0.19	6.21	7.65	4.39
2001-02	-9.38	4.42	-35.04	11.77	-7.06	-2.48	20.61
2002-03	12.58	7.52	7.59	11.83	9.88	9.71	2.70
2003-04	6.39	14.97	28.20	21.22	17.70	18.1	9.27
2004-05	10.78	9.32	23.30	15.16	14.64	12.97	6.28
2005-06	-9.57	14.90	17.25	18.04	10.16	16.08	13.22
2006-07	29.39	24.25	24.55	19.16	24.34	24.40	4.18
2007-08	10.49	20.09	0.46	19.46	12.63	14.98	9.22
2008-09	-10.59	3.06	-2.67	13.17	0.74	0.20	10.00
2009-10	14.21	5.45	-2.29	17.05	8.61	9.83	8.78
Mean	6.40	11.13	6.94	14.67	9.79		
Median	10.11	8.42	7.80	16.11			
S.D.	12.77	7.11	18.62	6.17			

Source: IRDA Annual Reports from 2000-01 to 2009-10, Handbook on Indian Insurance Statistics 2007-08, Annual Reports of National, New India, Oriental & United India from 1993-94 to 1999-00.

Wilcoxon-Mann-Whitney test (*U*-test)

Ratio	Value of '*U*' statistic		Significance
	U_{PL}*	U_L*	
Return On Equity	27	43	Means of pre-liberal and post-liberal periods are significantly identical
*At 10% level of significance, Z value for 90% of the area (acceptance region) under the normal curve is 3.28. So, upper limit and lower limit of '***U'** are 51.81 and 18.19 respectively where n_{pl}=7 & n_l=10. U_{PL} & U_L are 'U' values considering pre-liberal and post-liberal period respectively.			

The public insurers also showed a negative average return on equity of -7.06% in the year 2001-02. The standard deviation results reveal that variations in the return on equity of the public insurers are more during the post-liberal period than the pre-liberal period. The Wilcoxon-Mann-Whitney test implies that there is no significant difference between the return on equity of the public insurers during the pre-liberal and post-liberal period.

2. Karl Pearson's Correlation Analysis

Correlation analysis helps to measure the magnitude and direction of the relationship between two or more variables. Interdependence among variables is a common characteristic of most multivariate techniques and correlation matrix is a table used to display correlation coefficients between these variables. t-test has been used as a parametric tool for testing the significance of correlation coefficient. The study aimed at identifying the most important variable or variables which have higher significant association with the dependent variable.

In **Table XI & Table XII**, the degree of association, i.e., strength and direction of correlation coefficients, between the selected variables and public general insurers' profitability is studied for both the pre-liberal and post-liberal periods and is presented in the form of correlation matrices.

Table XI
Pearson's Correlation Matrix of Public Sector General Insurance Companies during the Pre-liberal Period (1994-2000)

	Return on_Equity	Expense	Claim	Underwriting Results	Investment Income	Net Retention
Return On Equity	1					
Expense	-.305	1				
Claim	-.653	-.114	1			
Underwriting Results	.836*	-.416	-.739	1		
Investment Income	-.056	.610	.221	-.449	1	
Net Retention	-.238	-.132	-.292	.185	-.772*	1

*. Correlation is significant at the 0.05 level (2-tailed).

It can be seen from **Table XI** that during the pre-liberal period underwriting results ratio had a significant positive correlation with the public sector general insurers' return on equity and the

coefficient is 0.836. Net retention has a significant negative correlation with investment income (-0.772). Claims and Underwriting Results ratios depict a negative correlation (-0.739) but is not significantly correlated at 5% level.

Table XII
Pearson's Correlation Matrix of Public Sector General Insurance Companies during the Post-liberal Period (2000-2010)

	Return on_Equity	Expense	Claim	Underwriting Results	Investment Income	Net Retention
Return On Equity	1					
Expense	.370	1				
Claim	-.652*	-.138	1			
Underwriting Results	.191	-.693*	-.555	1		
Investment Income	.648*	.713*	.013	-.574	1	
Net Retention	-.270	-.091	.017	-.216	-.122	1

*. Correlation is significant at the 0.05 level (2-tailed).

From **Table XII**, it is evident that in the post-liberal period the public sector general insurance companies' return on equity is significantly correlated with claims and investment income ratio. Significant negative correlation coefficient of -0.652 lies in between return on equity and claim while the investment income and return on equity depicts a positive correlation of 0.648 which is statistically significant at 5% level. The expense ratio seems to be a significant determinant of the underwriting results in the post-liberal period showing a negative correlation of 0.693.

3. Multiple Correlations and Multiple Regression Analysis

In **Table XIII** & **Table XIV**, an attempt has been made to examine the combined impact of some selected factors on public sector general insurers' profitability in the pre-liberal and post-liberal period. Accordingly, multiple correlation and multiple regression techniques have been applied to study the joint influence of the selected ratios, namely Claim Ratio (CR), Expense Ratio (ER) & Investment Income Ratio (IR) on Return on Equity (ROE) and the regression coefficients have been tested with 't' test. For this purpose, CR, ER & IR have been considered as the independent variables and ROE has been used as the dependent variable. The regression model used in this analysis is $ROE = a + b_1 CR + b_2 ER + b_3 IR$ where a, b_1, b_2, b_3 are the parameters of the ROE line.

Table XIII
Multiple Correlations and Multiple Regression Analysis of Public Sector General Insurance Companies during the Pre-liberal Period (1994-2000)

Details	**a/b**	**Std. Error**	**t value**	**Significance**	
Constant (a)	56.849	26.875	2.115	0.125	R=0.880
Claim Ratio (CR)	-0.757	0.257	-2.950	0.060	R^2=0.774
Expense Ratio (ER)	-1.385	0.651	-2.128	0.123	Adj. R^2=0.549
Investment Income Ratio (IR)	2.125	1.294	1.642	0.199	Std. Error of R=3.51808

Table XIII shows the results of the multivariate correlations and regression analysis of the public sector general insurance companies during the pre-liberal period (1994-2000). It depicts the strength of relationship between the dependent variable, Return on Equity (ROE) and the independent variables (CR, ER and IR) taken together and the impact of these independent variables on the profitability of the public sector general insurance companies during the pre-liberal period (1994-2000). The results provide the following regression equation: ROE = 56.849 – 0.757 CR – 1.385 ER + 2.125 IR. It is observed that when CR and ER increase by one unit; the ROE decreased by 0.757 unit and 1.38 units respectively. Again, an increase in one unit of IR favourably affects the Return on Equity by 2.125 units which is statistically significant at 5% level. The Multiple correlation coefficients between the dependent variable ROE and the independent variables CR, ER and IR taken together were 0.880. It indicates that the profitability was highly influenced by CR, ER and IR. It is also evident from the value of R^2 that 77.40 % of variation in ROE was accounted by the joint variation in CR, ER and IR.

Table XIV
Multiple Correlations and Multiple Regression Analysis of Public Sector General Insurance Companies during the Post-liberal Period (2000-2010)

Details	a/b	Std. Error	t value	Significance	
Constant (a)	138.725	23.422	5.923	0.001	R=0.965
Claim Ratio (CR)	-1.588	0.242	-6.559	0.001	R^2=0.931
Expense Ratio (ER)	-0.828	0.323	-2.564	0.043	Adj. R^2=0.897
Investment Income Ratio (IR)	0.970	0.159	6.086	0.001	Std. Error of R=2.80799

Table XIV shows the results of the multivariate correlations and regression analysis of the public sector general insurance companies during the post-liberal period (2000-2010). It provides the following regression equation: ROE = 138.725 – 1.588 CR – 0.828 ER + 0.970 IR. It is observed that when CR and ER increase by one unit, the ROE decreased by 1.588 units and 0.828 unit respectively. However, when IR increases in one unit, the ROE is affected positively by 0.970 unit. The Multiple correlation coefficients between the dependent variable ROE and the independent variables CR, ER and IR taken together were 0.965. It indicates that the profitability was almost perfectly influenced by CR, ER and IR. It is also evident from the value of R^2 that 93.10 % of variation in ROE was accounted by the joint variation in CR, ER and IR.

It is evident from the multiple regression equations of pre-liberal and post-liberal periods that the ROE was highly influenced by the change in IR in the pre-liberal period than the post-liberal period (unstandardized co-efficient of IR was 2.125 and 0.970 in pre-liberal and post-liberal period respectively) while an unit change in CR effects the profitability much more notably in the post-liberal period (unstandardized co-efficient of CR was -0.757 and -1.588 in pre-liberal and post-liberal period respectively).

Conclusion

It is evident that the total volume of business of the public companies operating in the general insurance industry as a whole has recorded profound growth after liberalization, though the reforms have adversely affected the underwriting results of all of them owing to increase in

expense ratio and claim ratio in the post-liberal period. The public companies have been compelled to increase spending on commission expenses, advertisements and information technology in the changed competitive environment. However, the higher return on investment of the public sector general insurance companies have compensated their underwriting losses. The higher investment income of the public sector general insurance companies is due to their aggressive investment portfolio policy and better performance of share market in the recent past. The study implies that there is no significant gap between the return on equity of the public insurers during the pre-liberal and post-liberal period. Therefore, the study rejects the null hypothesis that the profitability of the public sector insurers is significantly higher in the post-liberal period than the pre-liberal period, and accepts the alternative hypothesis.

References

- Annual Reports of IRDA from 2000-01, 2001-02, 2002-03, 2003-04,2004-05,2005-06, 2006-07, 2007-08, 2008-09.
- Annual Reports of National Insurance Company Limited from 1993-94, 1994-95, 1995-96, 1996-97, 1997-98, 1998-99, 1999-2000.
- Annual Reports of New India Assurance Company Limited 1993-94, 1994-95,1995-96, 1996-97, 1997-98, 1998-99, 1999-2000.
- Annual Reports of Oriental Insurance Company Limited from 1993-94, 1994-95, 1995-96, 1996-97, 1997-98, 1998-99, 1999-2000.
- Annual Reports of United India Insurance Company Limited from 1993-94,1994-95, 1995-96, 1996-97, 1997-98, 1998-99, and 1999-2000.
- Handbook on Indian Insurance Statistics 2007-08

Guidelines for Contributors

Business Spectrum, the e-Journal published by Indian Accounting Association, Midnapore Branch, welcomes original and research based papers, articles and abstracts of doctoral dissertations in different areas pertaining to business, economy and society. Review of Books and findings of Project works are also invited for publication in this e-Journal.

While sending the aforementioned materials to the Executive Editor and Desk Editor through e-mail at samirghosh_commerce@rediffmail.com and anupam_parua@rediffmail.com, respectively the following matters may kindly be noted by the contributors.

1. The manuscript is to be typed in MS Word format with double spacing, Times New Roman font and 12 font size.

2. The manuscript should accompany the following:

A cover page containing the title of the manuscript, contributor's name, his/her affiliation, mailing address, e-mail address and contact number.

An abstract of the material within 150 /200 words.

A list of key-words.

An undertaking by the contributor that "the article / paper titled "……." is an original one and has neither been published nor been submitted for publication elsewhere".

3. The first page of the text should show the title but NOT the name(s) of the author(s). Headings and sub -headings should be serially numbered using Roman numerals and Alphabetical letters respectively.

4. Foot notes in the text must be numbered consecutively in the text with superscript Arabic numerals and typed at the bottom of the respective page.

5. All tables must be numbered consecutively with Roman numerals along with an appropriate caption in Title case format. The source of the table along with notes thereto is to be given at the bottom of the respective table.

6. Figures / charts / graphs must be captioned and numbered consecutively with Arabic numerals and, wherever necessary, the source should be indicated at the bottom.

7. References should be typed on the separate page at the end of the text and arranged in Alphabetical order. The following pattern should be maintained.

a) In case of journal references the pattern should be:

Vij, M. and M. Tamimi, (2010), "Trade-Off between Risk and Return", Finance India**, Vol. XXIV, No. 4, Pp. 1197-1210.**

b) In case of book references the pattern should be:

Sherlekar, S.A., (2006), Marketing Management **(13th ed.), Himalaya Publishing House, Mumbai, pp 167.**

8. One scanned photograph of the author(s).

9. The review process usually takes about 3 months after which information regarding acceptance of the manuscript for publication in the journal shall be communicated by the editor to the contributor through e-mail only. Correspondence and proof for correction will be sent to the first author unless otherwise indicated.

10. Business Spectrum reserves the right of making editorial amendments in the final draft of the manuscript to make it suitable for publication in the journal.