Infrastructure refers to the physical framework of facilities through which goods and services are provided to the public. The infrastructure sector covers a wide spectrum of services such as transportation (including roadways, railways, airways and water transportation), power generation, transmission and distribution, telecommunication, port handling facilities, water supply, sewage disposal, irrigation, medical, educational and other primary services. A strong and well developed infrastructure forms the backbone of all the developed and healthy economies. Be it in power, roads, ports, airports, water, railways, urban facilities or even telecommunication, the country’s infrastructure needs are enormous. There is a massive and urgent need to increase investment in these sectors. Its financing therefore is an important aspect of the development dynamics. The fact that India needs at least $25 billion per year for the next 8-10 years clearly underlines the role of infrastructure in creeping economic growth. Infrastructure projects call for not only massive investments and their efficient execution but also to maintain them efficiently.
Financing infrastructure is a challenging subject, whether in India or anywhere else in the world. It is widely recognised that neither the private sector nor the public sector can be relied upon fully for adequate provision of infrastructural services. With the resource crunch and expanding infrastructure needs, budgetary allocations for infrastructure projects have reduced; role of the government has shifted from infrastructure ‘provider’ to that of infrastructure ‘facilitator’. Thus, there is a need of a combination of both, public-private partnership (PPP) based on their inherent strengths and weaknesses. The positive characteristics of PPP arrangements for infrastructure development appear particularly attractive to developing countries like India given the enormous financing requirements and equally large funding shortfall.

In recent years, efforts have been made by the Government of India (GoI) to step-up investment in infrastructure, and particularly to catalyze greater private investment. In the Union Budget 2005, the Finance Minister emphasised on the importance of infrastructure for rapid economic development and noted that, in the Government’s view, “the most glaring deficit in India is the infrastructure deficit”. In this context, he proposed to continue (and enhance) budgetary support for investment in infrastructure, including through initiatives to catalyze
greater private financing of infrastructure through a proposed viability gap fund (VGF) and a special purpose vehicle (SPV). Efforts have also been made, over the years, to strengthen the policy and regulatory framework underpinning some of the key infrastructure sectors, with notable success achieved in the telecommunications sector.

The present work was undertaken as an attempt to highlight the trends of financing in the infrastructure sector of the country in the post-reforms period.

**OBJECTIVES OF THE STUDY:** The main objective of my endeavour in this study is to analyse the present scenario of infrastructure in India and try to find out financing trends of public and private sector in this field separately as well as jointly.

I also aim to justify the questions: “To what extent financing is essential in infrastructure development by public as well as private sector including foreign investors? What are the constraints of such developmental efforts? The major issues involved in such an endeavour would also be the focus of our attention in this work.
**HYPOTHESES:** Keeping in view the above mentioned objectives the hypotheses of the present research effort are –

a. Energy, Transport and Communication being the major components of economic infrastructure and essential ingredients of rapid economic development require massive investments and latest technological know-how.

b. Lack of finance is the major constraint in the growth of Energy, Transport and Communication sectors as the major components of infrastructure in the country.

As India is a developing country, the public sector of the country, with all sorts of constraints; deficiencies and shortages of physical and financial resources cannot afford to invest huge capital in these sectors. Therefore, in order to overcome the deficiency of public sector capital and to obtain advanced technology, India must undertake substantial development of economic infrastructure with the help of private and foreign capital & investments.

**METHODOLOGY:** Keeping the above mentioned objectives in mind this study is divided into three stages: -
In the initial stage a detailed study of the existing published literature on energy sector, transport sector and communication sector in India was made so as to get fully acquainted with the subject.

During the second stage of this study, the data and literature available pertinent to the study was collected from various resources such as Journals, Government Reports, and Plan Documents.

Finally during the third phase of this study the data and information which was collected, arranged, analyzed, and interpreted for arriving at some meaningful conclusions and recommendations.

**SCOPE OF THE STUDY:** This study is a maiden effort in highlighting the impact of infrastructural development on the Indian Economy as a whole. The evaluation of the impact of financing of infrastructural development of the country may provide insights to private investors into the planning process of investing in infrastructure sector, and a direction to the Government policy makers in devising future policies for infrastructural development.

For academicians, the study would be useful for a critical appraisal of financing of infrastructure of different sectors. The study shall prove helpful in providing a direction for future research in this area. To
students, this research study may serve as a tool for understanding the Government's financing policy in the field of infrastructure. Moreover, they would also come to know about how private investors shape their policies for its development in a rapidly changing environment.

To many others, the study may prove of interest in knowing as to what extent finance can be proved useful for the development of infrastructure of India and what are the relative contributions of public, and private sectors including foreign sector in the development of infrastructure in India.

**LIMITATIONS OF THE STUDY:** The study covers the most important components of infrastructure in Indian economy. However, there are other components as well but covering each and every component would not have been practically possible. Therefore, other components have not been covered and are beyond the scope of the study. It is needless to say that analysis of the whole is a gigantic task and it has not been possible to cover each and every aspect of infrastructure which needs to be addressed by further research work.
OUTLINE OF THE CHAPTERS: The thesis has been divided into six chapters.

In Chapter 1, an introduction of the present study "Financing of Infrastructure" has been given. In addition, the chapter describes about the importance of financing in infrastructure sector of the country. Moreover, the chapter also outlines the objective, hypothesis, scope, methodology, and limitations of the study.

Chapter 2 of the thesis relates to the brief review of literature on Infrastructure and its relation with the economic development of the country. The chapter also discusses financing structure of infrastructure projects and different sources of infrastructure finance. Moreover, in the end chapter has taken into consideration some recent reforms in the sector.

In Chapter 3, entitled "Financing of Energy Sector", the principal topics discussed are: Introduction of Energy Sector with special emphasis on the Power sector, Development of Energy Sector till 1991, Financing issues before energy sector, Trends in Energy Sector since 1991, and Issues and Solutions related to the development and financing of energy sector. The purpose of this chapter is to present a brief view of
the financing trends in energy sector, the major financing issues that the sector is currently facing with suggested remedies.

Chapter 4 of the thesis entitled "Financing of Transport Sector" unfolds the introduction and trends of financing of transport sector, including all modes of transport viz., rail, road, air and water transport. The chapter also outlines the development of the sector since 1991 and important financing issues before the sector with the problems and prospects in the end.

Chapter 5 entitled "Financing of Communication Sector" deals with the financing of communication sector including post and telecommunication. The chapter starts with the brief introduction of the sector and moves forward outlining the development of the sector, financing trends of the sector and problems and prospects related to the financing of the sector.

Chapter 6 pertains to the conclusive part of the thesis. It includes the brief summary of the study. The chapter also outlines major inadequacies found in the financing of infrastructure with recommendations to remove these inadequacies.
CONCLUSION AND RECOMMENDATIONS: The study revealed that infrastructure projects are complex, capital intensive, long gestation projects that involve multiple and risks to project financiers. There was an increase in the level of government as well as private sector investment in the sector during the period but it was not up to the mark.

The study found that infrastructure projects are characterized by non-recourse or limited recourse financing, i.e., lenders can only be repaid from the revenues generated by the project. This aspect is further aggravated by two factors. First, a combination of high capital costs and low operating costs implies that initial financing costs are a very large part of the total costs. Second, infrastructure project financing calls for a complex and combination of financial and contractual arrangements amongst groups like the project sponsors, commercial banks, domestic and international financial institutions (FIs), and government agencies.

Moreover, the study also found that though the private sector has taken initiatives in various infrastructure sectors, yet there is a significant scope for the expansion of private sector investment in the sector. Still, private sector investment is 3 times less than that of public sector in energy, transport other than railways and communication.
Thus, there is a need to address number of financial sector related constraints to facilitate greater private financing of infrastructure, it is not sufficient to reform the financial sector alone without paying adequate attention to other aspects of infrastructure. Following are some recommendations which address the financial sector and financing instruments as well as focus on other key issues which have a direct bearing on infrastructure investments.

1. There is a need to remove interest rate caps on ECBs to encourage foreign investors for using instruments like mezzanine and take out financing for infrastructure investment.

2. The stamp duties for transactions related to infrastructure projects need to be rationalized as high duties hamper financing of infrastructure.

3. As India still lacks a wide corporate bond market for infrastructure projects for long term financing, a well developed government bond market is a critical prerequisite to the development of the corporate bond market.

4. Insurance companies and pension funds are ideal for supplying long term financing but restrictive government policies and regulatory
guidelines have constrained their ability to participate in infrastructure financing. Thus, there is a need to deregulate these sources of long-term finance and formulate prudential norms for infrastructure related projects. Moreover, there exists an urgent need for specialized infrastructure financing institutions such as IL&FS and IDFC to participate at the design stage of a project. This would make it easier for project developers to obtain finance from other sources and would provide the developer with the opportunity to use the expertise of such institutions in project designing and financial structuring.

5. The Ministry of Finance need to consider reducing the customs duty on capital goods and machinery that are critical for roads, ports, airports, power, railways, telecommunication which would reduce the cost of many infrastructure projects.

6. Governments need to reduce uncertainties arising out of policy implementations and arbitrary actions in contractual commitments of the governments in order to attract potential investors towards the sector.

7. As all infrastructure projects involve multiple clearances from different Ministries and Departments, it leads to significant delays. In
order to reduce this problem, the Government of India needs to set up ministerial groups for roads, power, telecom, ports and airports having different ministries in each of groups according to the sector. These groups need to meet once every 45 or 60 days to discuss and resolve all outstanding inter-ministerial issues.

8. Most of the time, it is often found in the infrastructure projects that the actual cost turns out to be several times more than the original estimates while the returns are not according to the expectations. Thus, there is a need of detailed social cost-benefit analysis of the project.

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1 Mezzanine finance is debt capital with fixed payment or repayment requirements, but with the right to convert to an equity interest in a company.