Chapter 1

INTRODUCTION

Theoretically there exists a cumulative and circular relationship between investment and economic development of a nation, i.e., investment - production - employment - income - saving - investment, one leading to the other. Thus investment, normally, should result in greater income generation and capacity creation in the economy. So most of the discussions in India about raising the rate of economic growth and expanding employment opportunities have centered around the quantum of plan outlay and its sectoral allocation. Similarly the economic development of states is increasingly related to the quantity of plan outlay and the quantum of Central-State Financial Transfers. For example, often the poor economic performance of Kerala is related to the comparatively less flow of funds from centre to the state.

India is a country deficient in capital outlay resulting mainly from law availability of investment funds, paradoxical though it may seem that the very fact that we were short of capital, has encouraged us to rely excessively on capital as the principal resource in all our developmental projects as well as in the pursuit of social
justice. By virtue of this attitude towards capital in economic development and social activities we often stress more on the quantity of capital in economic development.

In India development is not taking place commensurately with increase in savings and investment. During 1950's the main hurdle in the way of raising the growth rate was the paucity of capital. The saving level was less than 10 per cent of the gross domestic product. This was pointed out as the major constraint in stepping up levels of investment and raising the growth rate. But by 1985-86 the level of savings has risen to around 25 per cent of the gross domestic product. But there was no corresponding spurt in the overall rate of growth, which varied between 2.5 to 4.5 per cent during this period.

The sad fact is that though India surpassed most of the developing countries, in respect of the level of savings, she remained far behind in the rate of economic growth. With the present level of saving and investment around 25 per cent of the G.D.P., India could have achieved much higher rate of growth.

The experience of the developed countries shows that both the quantity of investment funds and the
effectiveness of its use are equally important for economic development. The incremental capital-output ratio (ICOR) is one of the traditional methods of measuring the efficiency of investment. The experience that we gather from our developmental investment expenditure shows that the effectiveness of investment is also highly influenced by the timely completion of the developmental projects and programmes at the original estimated cost. So the more the output per unit of investment at the shortest possible period, the better the criterion of efficiency of investment. The level and rate of growth of an economy is largely determined by the size of investment and the achievement of targets at the scheduled time and at the original estimated cost.

One of the major factors that contributed to inefficiency and low growth rate in the Indian economy is the slippage of projects and the consequent cost overrun. Slippage of projects and the consequent overrun not only result in wasteful use of the scarce capital but also reduce and delay the income generating and capacity creating effect of investment.

Even today it takes nearly 36 months to set up a steel plant in India against only 16 months in Japan or in
Korea. This shows that the original time schedule and cost of the projects in India are comparatively higher and the time-lag and cost overrun occur over and above this higher original time and cost schedule. As a result the economy of our country is adversely affected.

The occurrence of time-lag and cost overrun adversely affects the economic viability of the project itself. The formative stage of a project is crucial to the particular project itself because it substantially determines its competitive and survival prospects in its subsequent years of production and marketing. Once escalation of cost gets embodied in the capital outlay of a project it adversely affects the operational results right through the life expectancy of the project. Where the escalation is a multiple of the original estimate, its adverse consequences cannot be offset easily even by the most mature and efficient management.

Time lag and cost overrun may also result in the generation of disproportionality crises in the economy. This results in the retarded development of the related sectors. For example a cut in power supply resulting from time-lag and cost overrun of power projects, as in Kerala, adversely affects all vital areas of production.
Further, ultimately, time-lag and cost overrun restrict the current and future rate of growth of the economy. The size of the investment, the target achievement, and the consequent growth rate are limited by time-lag and cost overrun factors. The size of the current investment and its resource base have its origin in the success of earlier investment on projects and programmes. Time lag in the earlier investments on projects delays target attainment and cost overrun reduces the real size of investments. It reduces the extent of the success of the earlier investments. So the income generating and capacity creating effect of the earlier investments both through direct and linkage effects is delayed or reduced. Thus the current rate of growth of the economy is reduced or delayed by time-lag and cost overrun. This delayed and reduced growth rate of the economy also reduces rate of growth of its resource base, in financial front and material aspect. This again reduces the size of the future investments and the future rate of growth of the economy.

Further, time-lag causes cost 'overrun' and spill over the effect. The delay caused by time-lag results in the extension of the current project work to future plan periods and it often leads to the diversion of the scarce
resources of the plans for the completion of the earlier plan projects. Thus it reduces the size of future plan projects and programmes. This situation is aggravated by cost overrun. Normally time-lag breeds cost overrun which makes transfer of funds that could be used for the current plan to the projects of the earlier plans at a higher level and rate. Thus time-lag and cost overrun can reduce or delay the current and future rate of growth of the economy of any nation. This reduced current growth rate makes the availability of resources scarce for the future plans and restricts the size of investment and future growth of the economy. Thus time-lag and cost overrun act as a cause and an effect of reduced investment. The resultant effect is that the economy gets weakened and the growth rate slows down.

In a state like Kerala with a retarded development, low resource base, time-lag and cost overrun in project implementation are bound to cause certain economic problems in the state economy, which will reinforce each other heavily and spread to other areas. This can lead to a vicious circle and ultimately pushing the economy into the trap of low development and economic stagnation.
Time lag normally results in revision of original estimated cost which leads to cost overrun. The heavy investments in projects unaccompanied by increased output due to time-lag adds to the rate of inflation. The resultant increase in prices of inputs required in the project cause further increases in cost.

In a state like Kerala where fiscal and financial crises are acute, cost overrun makes investment funds more scarce, which breeds further time-lag.

To meet increased demand for funds due to spill over effect generated by time-lag and cost overrun, along with the proliferation of new projects and programmes of the new plan, the government is forced to borrow heavily. The borrowed funds and its investment are kept barren for a long period due to time-lag. This results in cost overrun which consumes away a sizeable portion of the borrowed funds on the existing projects without any corresponding increase in output and income. So the repayment of the principal amount along with interest adds to the gap between the revenue and expenditure of the government. Thus the government is forced to impose additional taxes on the society.
In Kerala the lion's share of the tax revenue is from indirect tax. This increase in indirect tax system adds to the inflationary tendency in the state leading to further increase in the prices of inputs of the projects. This increase in input price calls for further revision of the already revised estimate, leading to further cost overrun. In the context of acute shortage of funds, this cost overrun, along with other factors, causes further time-lag and delay of the project. This results in further cost overrun. Thus time-lag and cost overrun obstruct the efficient and optimum use of investment funds and it prevents the generation of new capacity, increase output, employment and income.

If time-lag and cost overrun occur in infrastructural sectors like Hydro-electric Projects (HEP) its negative impact on the growth rate of the economy will be very high. This is because of the very high linkage effect of investment, both forward and backward.

Power generation in Kerala is entirely hydro based and the scarcity of power is increasing over the years. The worsening disequilibrium in the supply and demand for power has come to a grave situation. Enough and assured
supply of power is a pre-condition for the growth of new projects and the better utilisation of existing capacity. Power is both an input and an output. If time-lag occurs in power projects, particularly in a power deficit state, it will cause a disproportionality crisis in the state leading to under-utilisation of existing plant capacity in different sectors as a result the growth of new enterprises is adversely affected.

Time lag and cost overrun of projects and programmes have been a common feature in the economy of Kerala. This can be realised from the following facts: Only one example each from different areas is analysed here. Kallada Irrigation Project which started in 1961 has a long history of 32 years of project construction and it still remains incomplete despite frequent revisions. This ultimately led to time-lag and high cost overruns. The project had an original estimated cost of Rs.1,328 lakhs, but had increased to Rs.45,780 lakhs as on 1.1.1990, giving birth to a cost overrun of Rs.44,452 lakhs. This comes to about 3347.1 per cent increase over the original estimate, still the project is not yet complete.
Almost all the public sector industries in Kerala, both Central and of the State, witnessed years of time-lag and heavy cost overrun. Kerala Mineral and Metals Ltd., Quilon which started in 1978 has resulted in a time-lag of 32 months which comes to about 76 per cent increase over the original estimated time schedule of project completion. The project also resulted in a cost overrun of Rs.3,340.18 lakhs, which is calculated as 51.5 per cent increase over the original estimated cost.

The infrastructural sector of the state economy is also not an exception to the phenomenon of time-lag and cost overrun. All the hydro-electric projects of the state, which are the only source of power generation in this power scarce state, met with time-lag and cost overrun. Projects like Edamalayar took nearly 25 years to get completed bringing in 500 per cent increase in cost.

So time-lag and cost overrun are very common defects persistently prevalent in the case of most of the projects in all the sectors of Kerala economy.

At the all India level too time-lag and cost overrun are so common and the consequences are too high.
It has been estimated that the cost of 181 major irrigation projects has gone up from Rs.13,154 crores to Rs.32,633 crores and the cost has risen up spirally by Rs.19,476 crores. The increase in project cost due to time-lag and cost overrun is more than the initial project outlay. This means that Rs.19,479 crores more have to be spent on the existing projects to meet cost overrun alone. At this instance, it is to be noted that a good number of these 181 irrigation projects are not yet completed and hence could not be commissioned. The additional expenditure on the projects will still increase if this trend is continued. Also, here we have to take into account the loss of employment output and income that could have been generated by the projects, had they been commissioned as planned originally.

REVIEW OF LITERATURE

The role of investment, both the quantity of investment and the quality of investment, in economic development are well recognised by economists from the classical period onwards. With the development of Keynesian Economics, the role of investment on economic development has become all the more important. The availability and accessibility of financial resources and
the volume of investment are closely related. This fact is all the more important when we realise the fact that the state is facing serious financial crisis and low rate of growth.

A few studies are available relating to the financial crisis and the low level of development of Kerala economy. But almost all these studies are centered around the scarcity of investment funds and the resultant low growth rate of the economy. So, naturally, only limited literature is available on the inefficient use of financial resources and the resultant low growth rate of the state. No comprehensive academic study is made on time-lag and cost overrun of projects and programmes in the state, which is an important factor contributing to the inefficient use of scarce resources and the resultant low growth rate of the economy. Here an attempt is made to survey the available literature on the subject.

Sankaranarayanan (1985) observes that finance is the life blood of all the economic activities. Developmental schemes get stuck and achievements fall short of targets because of the non-availability of adequate finance. The author further highlights the fact that ever
since the formation of the state, Kerala witnessed financial stringency characterised by successive budget deficits and continued depletion of cash balances.

While analysing the financial and fiscal position of Kerala Economy, George (1990) finds that the financial crisis and the economic crisis reinforce each other.

Gupta and Lal (1981) have come to the conclusion that the Indian Economy is facing serious financial resource crisis, particularly after the fifth plan period. The authors comment that India will find it difficult to attain the estimated targets of savings and investment required to finance the public sector projects of the subsequent plans. This will make the public sector plans not feasible.

Pandit (1986) explains that the generation of surplus funds in different sectors of the economy is not at all promising. He further goes to the extent of saying that the surplus generated by the public sector is poor, irrespective of the fact that the share of the public sector in the Net Domestic Product (NDP) has been constantly growing but the rate of public sector savings has decreased sharply over the past years.
Trivedi (1986) argues that the inefficient use of investment funds in public sector enterprises has resulted in poor generation of surplus funds for investment in India. This inefficiency in public enterprises should make Indian planners to move from a policy of big push to a policy of big stick, i.e., a new policy which should stress the efficient use of resources should be introduced.

Nayar (1981) is of opinion that owing to the institutional and policy framework related defects of the planning system of Kerala, the efficient use of the available resources and the generation of additional financial resources are poor in the state. So we are not yet able to achieve the plan targets of rapid growth, social justice, self-reliance, eradication of poverty and unemployment.

The study of Sinha (1990) shows that most studies in India about economic growth are centered around the quantum of plan outlay and its sectoral allocations and there is little discussion about raising efficiency.

While analysing the need for efficient use of resources, Jha (1986) highlights the fact that India
succeeded in doubling the rate of savings in the first quarter of a century of planned development. But due to the inefficiency in the use of resources there was no corresponding increase in the rate of growth of the economy. He recommends a measure for the efficient use of resource, i.e., the plan resource should only be used for new projects and should not be used for meeting time-lag and cost overrun of projects and if these occur, should be financed by non-plan resources. So to the author time-lag and cost overrun stand in the way of efficient use of resources.

Gulati (1988) brings out the fact that the occurrence of time-lag and cost overrun is a common feature of the projects implemented in India.

The existence of time-lag and the resultant cost overrun is considerable in Kerala State, both in sanctioning and starting new units of traditional industries and in the expansion of existing units (Baby Thomas, 1983). Time-lag and cost overrun are so common and their extent is very high in all the hydro-electric projects and
in all the irrigation projects of Kerala (Roy, 1986 and Rajendhran, 1991). To them time-lag and cost overrun consumes away a good share of the state's resources.

Johnson (1990) argues that, in comparison with other states in India, time-lag and cost overrun are higher in Kerala, particularly in the irrigation projects and Hydro Electric projects. Ravi Varma Thampuran (1992), by taking the Kakkadu Hydro Electric project, points out that the extent of time-lag and cost overrun is higher in the case of ongoing Hydro Electric projects of Kerala.

The occurrence and the extent of time-lag and cost overrun are very high in the industrial and power projects of Kerala (The High Level Committee Report on Industry, Trade and Power, 1984). The committee on public undertakings (1986-87) also identifies the existence of time-lag and cost overrun in the projects of Kerala.

The Annual Report of KSEB (1973-92) contains certain cases of delay, and cost overrun in the generation and transmission projects of KSEB. The 8th plan proposal of KSEB (1991) analyses some cases of time-lag and cost overrun of the projects of KSEB.
The report of the assisted projects of IDBI (1984) on time-lag and cost overrun shows that both in the private sector and in the public sector majority of the projects met with time-lag and cost overrun. The study reveals that this kind of time-lag and cost overrun of projects is found in all the states. The Annual Reports of the Ministry of Programme Implementation (1986-91), throw light on the fact that time-lag and cost overrun is a common feature of almost all the central sector projects in different sectors in all the states.

Rangachari (1987) points out that even in the utilisation of foreign aid extended by the IMF and the World Bank, there is considerable time-lag which results in cost overrun and frequent revisions of their foreign exchange component.

Today time-lag and cost overrun of projects and programmes have become a common feature in India and are treated as a routine matter (Chowdhry, 1991). So they do not evolve much discussion and the implementing agency seek upward revision of the estimates and the competent authority sanctions the escalated cost.
Jha (1986) has identified the basic cause of the massive occurrence of time-lag and cost overrun as the proliferation of controls and controlling systems in India. To him decontrol and delicensing are the measures to avoid time-lag and cost overrun.

Rajendhran (1991) argues that the thin spreading of resources, lack of priorities in allocation of funds, mismanagement etc. are the reasons for time-lag and cost overrun in the irrigation projects and HEP of Kerala. But Roy (1986), stresses the legal issues, contract related issues, labour problems etc. as the major reasons for time-lag and cost overrun of the irrigation projects of Kerala. Corruption, favouritism, red tapism and ecological issues etc. are the major factors responsible for time-lag and cost overrun. Johnson (1990) and Radhakrishnan (1990) also underline these reasons as the major factors of cost overrun.

Jain (1988) comments that the impact of time-lag and cost overrun on the project itself is crucial. If time-lag and cost overrun occurs in the project then will adversely affect the operational efficiency of the project.
Sebastian Morris (1990) says that the delays and cost overrun in the public sector investment can raise the capital-output ratio in the sector and in the related sectors, which will bring down the efficiency of investment.

Patodia (1987) commends that Indian Economy has turned to be a high cost economy. The capital cost of setting up industrial units in India is much higher compared to that of other countries. Sethuraman (1987) highlighted the high cost of energy production in India, particularly in the area of the thermal power generation. Among other reasons, time-lag and cost overrun also have played its role in making things so.

In an economy like Kerala which is characterised by low levels of concentration of capital and industry, time-lag and cost overrun in the infrastructural sectors have created a disproportionality crisis in Indian Economy, contributing much to the economic stagnation of the State (Ahuluwalia, 1984). With the help of a distributive lag model of investment, Majumdar (1985) has shown the total plan investment as a function of pre as well as post terminal rates of growth of capacity output. Time-lag and cost overrun dilute this relationship and reduces the plan size.
RESEARCH DESIGN

The Statement of the Problem

The size of the investment and the achievement of targets in the original time schedule and at the original estimated cost are the best indicators of the economic performance of an economy. This is one of the most important factors that determine the level and rate of growth of the economy. The quantity and quality of investment are adversely affected by time-lag and cost overrun. Time-lag delays the target attainment and reduces the capacity creating and income generating effect of investment, which often affects the resource base of the economy and the size of investments and the growth rate.

In an economy like Kerala which is characterised by low level of development and poor supply of investment funds; the negative impact on growth on account of time-lag and cost overrun is high. If time-lag and cost overrun occur in the infrastructural sector, particularly, in the power generation, its adverse impact will be very high as the inter-industrial and inter-sectoral linkages of power and hydro-electric projects are very high. In Kerala, power is entirely hydro-based and about 19 per cent of the plan outlay of the state is made on power projects. But in
the state no hydro-electric project is completed in time and at the original estimated cost. Slippages of the project and the consequent cost overrun are seen to be high in all the hydro-electric projects of the state. This is all the more paradoxical when we realise the fact that such things are happening when the state is experiencing acute power shortage. Time-lag and cost overrun in the hydro-electric projects are not only high but show an increasing trend.

Hence the problems posed in the study are:

1. To what extent are time-lag and cost overrun high in the infrastructural investments in Kerala?

2. Whether the present extent of time-lag and cost overrun are able to affect negatively the economic viability of the projects and their future profitable running?

3. To what extent the time-lag and cost overrun of the infrastructural investments create disproportionality crisis in the state, contributing negatively to the growth rate of the related sectors of the economy?
4. Whether time-lag and cost overrun cause a major burden on the resource base of the economy and negatively contribute to the attainment of targets.

5. Whether time-lag and cost overrun restrict the level and rate of growth of the economy, and whether it can explain the present economic stagnation of the state economy?

The Objectives of the Study

1. To analyse the extent and trends in time-lag and cost overrun in the infrastructural investments in Kerala, particularly in the hydro-electric and irrigation projects of Kerala.

2. To make a causative analysis of time-lag and cost overrun.

3. To analyse the relationship between time-lag and cost overrun.

4. To analyse the impact of time-lag and cost overrun of the hydroelectric projects
   i) on the concerned project
   ii) on the related industries and
   iii) on the economy.
Hypothesis

Time-lag and cost overrun are high in the infrastructural investments in Kerala, particularly in the hydro-electric and irrigation projects. Hence it is hypothesised that there is a positive and significant relationship between time-lag and cost overrun.

Methodology

The present study consists of an empirical documentation and analysis of time-lag and cost overrun of infrastructural investments, particularly power and irrigation projects which consumed 36 per cent of the total plan expenditure of the state during 1951-1990. The role of time-lag and cost overrun in restricting or reducing the rate of growth of the economy is tried to be identified in the study.

A census study of all the ongoing and completed Hydro-electric and irrigation projects of Kerala during the period 1933-1991 is carried out. In order to have a microlevel analysis of the extent and causes of time-lag and cost overrun, a case study of Sabarigiri HEP is done. The extent of time-lag and cost overrun of secondary sector...
is also studied through the sample study of public sector and private sector industries.

**Time-lag and cost overrun of central sector investment** is studied by considering all the 331 mega, major and medium ongoing projects, based on the data made available by the monitoring system of Ministry of Programme Implementation (MPI), Government of India as on 1-1-1990. The trends in time-lag and cost overrun at the all India level are analysed by studying all the completed central sector mega, major and medium projects during 1988 to 1991.

The primary information used for the study are also collected by means of personal interview method. Interviews and discussions were held with the officials of KSEB, the retired persons from KSEB, leading contractors, workers, and trade union leaders.

The primary data were supplemented by secondary data which were collected from publications, reports, and documents of KSEB. The State Government publications like Economic Review, Statistics for Planning, Five-Year Plan Documents, Budget Papers, Working Committee Reports etc. were the other major sources.

Statistical tools like average, percentage and ratio are used to analyse and interpret the data.