PERFORMANCE, CHALLENGES AND POTENTIAL OF PUBLIC SECTOR UNDERTAKINGS OF KERALA SINCE REFORMS

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DECLARATION

I hereby affirm that the research work for the thesis "**Performance, Challenges and Potential of Public Sector Undertakings of Kerala since Reforms**" being submitted to Calicut University for the award of Ph.D. in Economics was carried out entirely by myself under the supervision and guidance of Dr. C. Krishnan, Associate Professor in Economics, Govt. College, Kodanchery. I further affirm that the same has not been previously formed for the basis for the award of the any degree, diploma, associateship or other similar title of recognition.

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This is to certify that the thesis entitled "**PERFORMANCE, CHALLENGES AND POTENTIAL OF PUBLIC SECTOR UNDERTAKINGS OF KERALA SINCE reforms**" is a bonafide research work done by **ANSU ABY** research Scholar for the award of the Degree of Doctor of Philosophy under my guidance and supervision. I also certify that the candidate has incorporated all the suggestions recommended by the adjudicator in the copy of the thesis.

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to

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CHAPTER I
INTRODUCTION

1.1 Introduction

A public sector enterprise is an agency of the government or a state owned enterprise, owned by central government or state government or local government or a combination of these, through which the government manages its commercial and economic activities. It has been recognized by policy makers as a crucial element leading to economic growth. Many economists argue this to be an agency through which government can attain distributive justice.

The public enterprise is a sub-system of the public sector system. It refers to activities that are carried out by entities, which are legally separated from the government and are made to maintain in a separate account of all their financial transactions and to set them out in the form of a profit and loss account. Public sector activities other than enterprises are financed from the government budget, while public enterprises may not always or entirely depend on budgetary support from the government. Public enterprises no doubt have a public dimension but they also have an enterprise dimension which should be predominant if they are to function effectively. Though they are considered as providers of infrastructure, they are also required to have commercial viability. (Role of Public Enterprises in Industrial Development, Seminar Paper)

Government owned and managed industrial undertakings have been widely accepted as instruments of accelerating economic growth in underdeveloped countries. They have long crossed the initial hurdle of ideological opposition in most countries. Their absolute size is growing rapidly and their relative share in the gross national product of developing countries is assuming significant proportions. As

viable economic entities they are competing for limited national resources with private undertakings. The urgency of rapid economic development has only accentuated the need for their success. It is imperative that public enterprises accomplish what they have set out to achieve in under- developed countries. Periodic evaluation of the performance of public enterprises is important for the success of economic plans of developing countries as operations of public enterprises are often interdependent. Performance or lack of it of one enterprise could accelerate or stall the performance of many other undertakings. This paper attempts to develop a criterion for evaluating the performance of public enterprises in general and that of India in particular. (Chandra, 1975)

Public sector enterprises have been assigned a major role in India's Five Year Plans for two important reasons: one, as a necessary corollary to economic planning; and two, as a part of economic policy of attaining a "socialist pattern of society" to which the Indian Government has committed itself. The importance of public enterprises has increased considerably in the continuing period in India's economy, until the introduction of new economic policy and the subsequent adoption of privatization measures. (Chandra, 1975)

Objectives of public sector enterprises can be classified into three categories which have fairly distinct characteristics. First, there are those which are financial, in that they deal with the revenues and costs of the firm or the budgetary relationship between the enterprise and the government. In short, the government may prefer that an enterprise generate enough revenue to pay its bills, or to produce a surplus to pay for other expenditures in this or another sector. Secondly, there are economic objectives which are related to the efficient allocation of the country's scarce resources and to the net contribution of the enterprise to the output and growth of the economy in general. Thirdly, public enterprises are usually given distributional or "social" objectives. Distributional objectives are usually related to the way in which

any potential surplus of the enterprise is to be divided between the subgroups of the population. These might take the form of employment objectives for specific groups of people, services provided to specific people or communities. lower prices and thus income transfers to consumers in general or to certain categories of consumers, or transfers of wealth and privilege to particular individuals. (JENKINS, 1979)

The traditional approach to the economic analysis of public enterprise pricing and investment policy has a welfare economics orientation, and in particular is concerned with the issue of allocation efficiency. An allocation is said to be efficient if the existing resources in the economy cannot be reallocated without making somebody worse off even when lump-sum transfers are feasible. Necessary conditions for an efficient allocation include the well-known marginal equivalences consistent with a competitive equilibrium - for present purposes the most important of these is that output be Priced at the marginal cost of production. In a market economy, the assumption is conventionally made that competitive forces will generate a pattern of resource use which approximates an efficient allocation; this scenario provides a rationale for central authority inter- vention when, in certain circumstances, the competitive market mechanism ‘fails’. (DOMBERGER, S., & PIGGOTT, J., 1986).

Most empirical studies conclude that public enterprises in mixed economies are less efficient compared to their private sector counter- parts. The explanations for relative inefficiency of public enterprises are based on several lines of reasoning, mainly the multiplicity of the objectives pursued by public enterprises, the lack of clearly defined targets, the form of public enterprise ownership, the structure of the market in which public enterprises operate and the limited economic incentives of the public enterprise management. (VAVOURAS, 1988)

1.2 Public Sector Undertakings in India

The government-owned corporations are termed as Public Sector Undertakings (PSUs) in India. In a PSU majority (51% or more) of the paid up share capital is held by central government or by any state government or partly by the central governments and partly by one or more state governments. The Comptroller and Auditor General of India (CAG) audits government companies. In respect of government companies, CAG has the power to appoint the Auditor and to direct the manner in which the Auditor shall audit the company's accounts. (india.gov.in, 2012)

Post Independence, India was grappling with grave socio-economic problems, such as inequalities in income and low levels of employment, regional imbalances in economic development and lack of trained manpower, weak industrial base, inadequate investments and infrastructure facilities, etc. Hence, the roadmap for Public Sector was developed as an instrument for self-reliant economic growth. The country adopted the planned economic development polices, which envisaged the development of PSUs. (india.gov.in, 2012)

Initially, the public sector was confined to core and strategic industries. The second phase witnessed nationalization of industries, takeover of sick units from the private sector, and entry of the public sector into new fields like manufacturing consumer goods, consultancy, contracting and transportation etc. (india.gov.in, 2012)

The Industrial Policy Resolution 1948 outlined the importance of the economy and its continuous growth in production and equitable distribution. In this process, the policy envisaged active engagement of the State in development of industries. (india.gov.in, 2012)

The Industrial Policy Resolution 1956 classified industries into three categories with respect to the role played by the State -

- The first category (Schedule A) included industries whose future development would be the exclusive responsibility of the State
- The second (Schedule B) category included Enterprises whose initiatives of development would principally be driven by the State but private participation would also be allowed to supplement the efforts of the State
- And, the third category included the remaining industries, which were left to the private sector.

In 1969, the government nationalized 14 major banks.

The Industrial Licensing Policy 1970 placed certain restrictions on undertakings belonging to large industrial houses, defined on the basis of assets exceeding Rs 350 mn.

In 1973, the definition of large industrial houses was adopted in conformity with that of the Monopolies and Restrictive Trade Practices Act (MRTP) 1969 and included companies whose assets exceeded Rs 200 mn. (india.gov.in, 2012)

The Statement on Industrial Policy in July 1991 was also significant. It brought in fundamental changes in the MRTP Act as well. The statement revised the priority of the public sector.

Public Sector Undertakings (PSUs) can be classified as Public Sector Enterprises (PSEs), Central Public Sector Enterprises (CPSEs) and Public Sector Banks (PSBs).

The Central Public Sector Enterprises (CPSEs) are also classified into 'strategic' and 'non-strategic'. Areas of strategic CPSEs are:

- Arms & Ammunition and the allied items of defence equipments, defence air-crafts and warships
- Atomic Energy (except in the areas related to the operation of nuclear power and applications of radiation and radio-isotopes to agriculture, medicine and non-strategic industries)
- Railways transport.

All other CPSEs are considered as non-strategic.

Public Sector Enterprises having objects to promote commerce, art, science, religion, charity or any other useful purpose and not having any profit motive can be registered as non-profit company under section 25 of the Companies Act, 1956. This section empowers the Central Government to grant a licence directing that such an association may be registered as a company with limited liability, without the addition of the words `Limited' or `Private Limited' to its name.

Such companies are also called as the Non-profit or 'No Profit - No Loss' companies. (india.gov.in, 2012)

1.3 Role of Public Sector Undertakings

Public Sector Undertakings (PSUs) have laid a strong foundation for the industrial development of the country. The public sector is less concerned with making profits. Hence, they play a key role in nation building activities, which take the economy in the right direction. (india.gov.in, 2012)

PSUs provide leverage to the Government (their controlling shareholder) to intervene in the economy directly or indirectly to achieve the desired socio-economic objectives and maximize long-term goals. (india.gov.in, 2012)

As agriculture is the backbone of Indian economy, Public Sector Banks (PSBs) play a crucial role in pushing the agricultural economy on to the progressive pathway and helping develop rural India. Moreover, PSUs play a substantial role in the rural development by providing basic infrastructural services to citizens. (india.gov.in, 2012)

The Government provides Public Sector Enterprises (PSEs/PSUs) the necessary flexibility and autonomy to operate effectively in a competitive environment. The Boards of Navratna and Miniratna companies are entrusted with more powers in order to facilitate further improvement in their performance. The government has also implemented revised salaries for executives of PSEs/PSUs. Moreover, some innovative measures such as Performance Related Pay have been introduced to make them more efficient. These incentives for the employees have been linked to individual, group as well as company performance. For further strengthening, the government is also encouraging the listing of Public Sector Enterprises on the stock markets. (india.gov.in, 2012)

Good corporate governance practices are essential for sustainable business. It generates long term value to all its shareholders and other stakeholders. The Ministry of Corporate Affairs has been working towards strengthening of the corporate governance. The ministry encourages the use of better practices through voluntary adoption. For this purpose, a set of voluntary guidelines has been drafted. The Corporate Governance Voluntary Guidelines serve as a benchmark for the corporate sector and also help them in achieving the highest standard of corporate governance. (india.gov.in, 2012)

1.4 Scope and Importance of the Study

Public enterprises were once considered as the backbone of the economy, which will protect the economy from any adverse external and internal shocks, and

moreover, acts as a mechanism through which government can effectively implement its policy and achieve the objectives therein. Public enterprises all around the world were established with the following general objectives:

1. To achieve the economic growth objectives
2. Providing more employment opportunities
3. Improve the standard of living the people
4. To accelerate industrial development
5. To prevent monopoly practices
6. To reduce income inequalities
7. To make available to the public and others the industrial products at a fair price
8. Technological improvement in the production
9. To promote research and development in the country

In India also, public enterprises were established with almost similar objectives. But with the 'efficiency vs equity' debate to the fore, many people started evaluating the public enterprises with emphasis on the financial achievements made. Poor performance of some of these enterprises has been used as a weapon to categorize them as inefficient and as an argument for privatization. Various studies have been conducted to find out the reasons behind the poor performance of these public enterprises and identified poor financial management as the most important one. The major problems with the financial management of public enterprises as indicated by different studies can be listed as follows:

- High cost of production and huge losses along with low level of output
- Inefficient working with low profit and lack of well planned investment decision mechanism
- Making huge investments without proper planning resulting in poor returns

- High overhead expenditures, and absence of sound pricing policy
- Inefficient management of circulating and fixed assets, coupled with lack of proper cash estimates and under utilization of cash credit facility

With this background, the argument for privatization reforms was made strong in anticipation of reducing fiscal burden, and improving the efficiency. In this context, the present study has been made to analyze and examine the financial performance of the public enterprises in the state of Kerala. Kerala is a state well known for its socialistic pattern of development, where public sector as a whole occupies an important place. Though industrially backward, public enterprises were considered to be a huge contributor to the economic development of the state. With policies of the government always stressing on welfare of the public, it is interesting to know how the public enterprises has performed over the years, especially on the financial front.

1.5 Objectives of the study

1. To analyze the financial and operating performance of the firms over the period of the study

2. To examine the evolving nature of financial and operating performance of the firm

3. To estimate the factors affecting the financial and operating performance of the firms

1.6 Limitations of the study

The period of the study is from 1990-91 to 2014-15. The choice of the data period is mainly constrained by the availability of data.

This study could have been a census study, but due to constraints of time and resources it was made a sample study. Best available secondary data are used for the study.

1.7 Scheme of the study

The study is arranged in six chapters.

The **first chapter** contains an introduction related to the topic. It also covers the scope and importance of the study, objectives of the study, and the limitations of the study.

Chapter 2 reviews the available literature related to the area of study.

Chapter 3 explains the data used for the study and the methodology adopted

Chapter 4 gives a description of public sector enterprises in Kerala and a brief profile of the selected public enterprises in Kerala.

Chapter 5 analyses the performance of selected public sector manufacturing enterprises.

Chapter 6 presents the findings and conclusion of the study. This chapter also presents certain suggestions to overcome the problem of poor performance of public sector enterprises.

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CHAPTER II
REVIEW OF LITERATURE

2.1 Introduction

Public Sector Enterprises (PSEs) are vital pillars of strength of a country's economy. This is more so in case of India which is a welfare state. The state of Kerala, which leads the other Indian states in many aspects also, thrives mainly based on its Public Sector Enterprises. Hence it is important to study the efficiency of Public Sector Enterprises of the state. This section briefly reviews the national and state literature on the efficiency of PSEs.

2.2 Efficiency of the Public Sector Enterprises in India

Sonachalam (1965) analyzed the problems related to financing of public enterprises. According to the study there are two main issues: choosing the right type of finance and choosing the right type of public enterprises to be promoted. The study observed that there are many sources of finance that the public enterprises can rely upon and creation of internal financial resources is a precondition of tapping them. At the same time, inflationary pressures should be restrained to keep the trend of price index below the rate of interest on public loans which is a major source of finance. The study suggested the use of surplus from the already existing public enterprises for financing fresh projects.

Mascarenhas (1974) in his study presented a systems approach to the measurement of the performance of public enterprises in India. The paper examined three-tier objectives framework-the national, sectoral and unit level to identify the areas of responsibility, and the agencies responsible for evaluation. The author argues that such a measure would enable to move from the narrow concept of

efficiency to a broader approach wherein measurement of performance is linked to the achievement of objectives. In other words, the author notes, the systems approach takes into account multiple variable which may affect the performance of PSEs instead of a single variable. This the author argues is important because of the multitude of objectives the PSEs are supposed to achieve which sometimes are interlinked and has a negative association. All three levels of objectives are interrelated and the performance at each level affects performance at other levels. Thus the three levels are convenient categories and are not exclusive, linked to this are a set of criteria and agencies for evaluation. The author concludes by calling for developing various techniques and methods to ensure the optimum allocation of resources for clearly defined objectives and achievement of the same.

In his research work **Satyanarayana (1974)** made an enquiry into the factors like cost of sales, inventories and capacity utilization that affects the profitability of public enterprises. The study observed that concerted efforts were required for the improvement of financial performance of public enterprises by way of adopting modern techniques of financial management.

Dholakia (1978) studied the relative performance of public and private manufacturing enterprises in India. The study argues that performance evaluation of public sector enterprises cannot be judged solely on the basis of profit criterion alone as these enterprises also stand for welfare objectives. It also points out that it is the index of total factor productivity that represents the most appropriate criterion for evaluating the performance of public sector enterprises. The study covered a period from 1960-61 to 1975-76. The study uses the decomposition of total factor productivity from neoclassical production function and finds that public sector enterprises contribute more to total factor productivity compared to their private peers. The study also reports the faster growth of factor inputs in the case of public enterprises towards the end of the study period. The study concluded that the

performance of PSEs from 1960-61 has been remarkable compared to private enterprises if the relative performance is measured by growth of total factor productivity rather than profitability.

Chakravarthy (1979) while examining the extent of financial resources required by public enterprises, their financing patterns, source of financing and cost of funds noted that public enterprises exaggerated their financial needs and paid little attention to debt-equity ratio and diversification of resource base. The study suggested granting financial autonomy and exploiting different ways of tapping financial markets.

Chattopadhyay (1983) made the observation that improper financial management policies and their faulty execution were mostly responsible for the poor performance of public enterprises. He identified the areas like working capital management, cash flow analysis and project cost analysis among others as crucial in the field of financial management of public enterprises.

Gupta (1984) analyzed several aspects of performance of public enterprises. He identified factors like over-capitalization, large overhead expenditure, over employment, delay in construction of project, absence of trained manpower, below rated capacity and absence of sound pricing policy primarily responsible for the poor performance of public enterprises. The study concluded that employment of cost accounting techniques, removal of external influences, fixing of norms of efficiency, sound pricing, grating financial autonomy to the public enterprises and optimum utilization of capacity can help to improve the performance of public enterprises.

Pierre Pestieau and Henry Tulkens (1984) provide a definition and a way to measure the performance of a public enterprise or service. Economists widely use several performance indicators in both the public and the private sector. These factors include nature of ownership, the firm's objectives, the regulatory setting, or

the market structure. In general performance is assessed in terms of productivity growth, employment functions, prices, and standard accounting ratios. These indicators have a merit that they are readily available. This paper precisely wants to advocate the use of a performance indicator that is to be free of many of the drawbacks just alluded to. A productive efficiency approach is used to analyze all these factors and to measure how close a public firm comes to achieving all the objectives. This approach offers two attractive contributions to recent public economics. One is it focuses on a single objective ie, productive efficiency and the other is it is backed by a set of fairly robust techniques of measurement. The big advantage of productive efficiency approach is that it provides evidence on the impact of ownership, competition and regulation on firms' performance which is conceptually robust. This paper finally concluded that the contribution of productive efficiency approach is not only to yield more robust comparisons among enterprises operating in different settings but it also to provide firms' managers with guidance for improvement.

Iyyer (1985) conducted a 'Macro-economic' study of the public enterprises sector. The study examines the size and extent of the public enterprise presence in the economy as a whole or in specific segments of the economy (eg, in particular industries); and the flow of resources from the government to public enterprises and vice versa. The study argues that a typical macro-economic study measuring the relative size of the enterprise as percentage of GDP or any other aggregate variable cannot be used to determine the importance of PSEs. Hence the study argues for efficiency analysis as compared to size analysis or share analysis. The study also opines that most problems of the PSEs are due to the individual management problems of the specific unit and not due to the ill management of the entire sector.

Trivedi (1985) studied the performance of the evaluators i.e. the Bureau of Public Enterprises (BPE). The study argues that the source of all the troubles BPE is

countered with is essentially due to its inability to evaluate public enterprise performance. The study identifies this as a evolving dynamic problem were lack of a convincing performance evaluation framework leads to the ineffective evaluation which in turn is the reason these enterprises are not able to attract good professionals which again causes ineffectiveness and the cycles goes on. The study puts forward the two criteria suggested by BPE for evaluation of the PSES namely rate of capacity utilization and the rate of return on capital employed. The author also opined that much of the problems are also caused by the welfare objective of fixing reasonable prices which makes most of the PSEs at a loss. The paper sets out three principles for effective performance evaluation of the BPEs.

B. Rajaiah (1987), in his study assessed the objectives, the prevailing conditions, finances and the pricing policy of public sector enterprises. The study observed that public enterprises have failed to generate satisfactory surplus, and identified unsound financial structure, faulty pricing policy and lack of profit planning mainly responsible for the poor performance of the public enterprises.

Mir Annice Mahmood and Shamim A. Sahibzada (1987) in their paper examine the operational performance of seven public sector enterprises in the large-scale manufacturing sector. The performance assessment is done in both financial and economic terms. To evaluate the performance of public sector enterprises shadow prices are used to estimate public profitability. The objective of this paper is to measure the performance of public enterprises using some economic indicators with the help of data taken from the annual reports of Experts Advisory Cell. This paper estimated trend growth rates in value added and employment, employment elasticities, profit per worker, capital-labour ratios, capital-output ratios and rates of return. The estimation results showed that the corporations that have performed the worst are the PIDC followed by PACO. This paper estimates that to evaluate enterprises in isolation from the original criteria is an unfair proposition. So a

narrow criterion based on financial or commercial profitability is followed which could be self defeating. This paper concludes that the performance evaluation of public enterprises is not limited to purely financial and economic evaluation but wider objectives like non-financial and economic ones as self-reliance and technology transfer are to be considered.

T. L. Sankar, R. Nandagopal and R. K. Mishra (1989) in his paper reviewed about the state level public enterprises (SLPEs) in India. These enterprises operates in central, state and municipal levels of administration. The Institute of Public Enterprise (IPE) is developing an extensive database on the SLPEs and on March 31, 1986 this database includes the aspects of functioning of 636 SLPEs in 24 states of country. This paper presents a macro analysis of the scenario of the SLPEs and outline policy implications for the control systems and enterprise managements to upgrade the performance of these enterprises. A large number of SLPEs ae born on the account of historical necessity while some of them are born on the account of decisions of the state governments. These institutions do not extend financial support to government departments. This paper concludes that the SLPEs are the vital instruments of public policy for the states of Indian Union. There is a spectacular growth in their number and investment but their financial performance is dissatisfying. So they need to take suitable steps for overcoming the internal and external constraints which hamper their performance. The final interpretation is that these enterprises need to formulate action plans and spell out the measures they indent to take in the short, medium and long run for upgrading teir performance and to wipe-off their accumulated losses.

V. Anil Kumar (1990) analyzed the problems of Kerala's industrialization which were discussed on the 72nd Annual Conference of Indian Economic Association. It deals with three areas, two general themes which were the problems and prospectus of industrialization of Kerala and the specific theme regarding the

labour and industrialization. Kerala is in the verge of an economic crisis results due to the stagnation in the producing sectors of the domestic economy. So there is an urgent need of climate favorable investment in agriculture and industry. A careful observation of the resource base of the state reveals that its position is not so sound. An in-depth analysis shows that during the last fifteen years the capacity of the state government enterprises to invest has progressively declined. One of the main issues faced by the economy of Kerala was the high wage cost. Another major issue relates to the role of private sector in the state. From the available evidences the paper suggests that there is a mushrooming of small enterprises in both manufacturing and services. Te findings also points out that the private firms do not enjoy much incentives as compared to the registered sectors.

P. Mohanan Pillai (1990) finds the performance of state sector manufacturing enterprises in Kerala. Studies shows that the financial performance of state sector enterprises been so poor. One of the reasons for this lackluster situation is due to the attitude and approach towards the state sector enterprises. The state sector enterprises are always treated similar to the central sector enterprises. The state sector enterprises need assistances like licenses, permits, quotas, extra financial needs etc at least from their government. One of the main points to underline is that there are inherent problems in treating the state sector enterprises similar to the central sector enterprises and accepting solutions to the problems in the same framework. The financial management which spreads into marketing, technology and linkage aspects, all of which accentuate the crisis. This paper presented a dynamic picture of transformation of state enterprises into a given situation of profit or loss making. The conclusion goes like there are a few initiatives at the governmental level to introduce organizational innovations like enterprise group, professionalism in management, widening the scope of labour participation in management etc. One of the great impacts on industrial advance is strengthening and

sensitizing the interface between government and enterprise by organisational reforms. It assures healthy interaction between the structural and organisational aspects of state sector enterprises in Kerala.

Nirmala Padmanabhan (1990) in her paper analyses the financial performance of private sector companies in manufacturing industry in Kerala over a period of 14 years from 1971-72 to 1984-85. The study concluded that the high capital gearing policy of the management and consequent interest burden combined with a low gross profit arising out of inefficient production have been mainly responsible for making Kerala companies less attractive for equity investment as compared to all-India. It concluded that the development implications of the growth of the stock market in Kerala during the period under study tend to be far from favourable for the industrial growth of the region. Thus investment in the private corporate sector has remained tardy in the state, and the limited growth that has taken place, though very small in numbers, has been largely related to borrowings, which in itself was related to and hence constrained by the gross profitability of the companies in the state.

K. K. Subrahmanian (1990) in his paper views the growth experience of manufacture in Kerala's factory sector. The author points out that in case of a society having high life standards the per capita output will be low. This paper did a comparison of the growth rates of Kerala for a period of 1970-71 and 1980-81 and found that the annual compound rate of SDP is 2.27 in Kerala as compared to 3.5 per cent in NDP. A contradiction is presented in this paper where the development process in Kerala is connected with the stagnant growth of productive sectors of the economy. For explaining this paradox 'peculiar' region specific characteristics like entrepreneurial-supply and labour-militancy in resource endowment are taken. But the conclusion is that it will not derive any empirical solution. The author finds out that public policy need not to be focused on public ownership and investment.

Private investments also help in accelerating the industrial growth in Kerala. Some priority areas have to be fixed for concerted development by public sector investment and providing incentives, subsidies etc for simulating private investment. Prime facie is that concentration are to be given on medium and light engineering industries where new technologies can be applied and human resources are considered as an important input in the production. Finally the author concludes that the priority should be given for developing sun-rise industries producing skill-intensive, technology-based and high value-added items.

According to **Mathur and Lodha (1991),** Memorandum of Understanding (MoU) system has emerged as an alternative to privatization. The study observed that MoU can be used effectively for the improvement of financial performance of public enterprises.

Bhargava (1991), in his study, the analyzed the financial position of public enterprises and the changes that have taken place therein over a given period of time. He concluded that except a few, all other management of the public enterprises under study, had failed to adopt any perspective planning and actually followed a haphazard path as far as generation of funds was concerned during the period of study. Therefore well planned targeted efforts can only make these units profitable, which presently lacked from their part.

Raghavan (1994), opined that the achievements made by the public enterprises was not up to the mark, in the light of huge investment made. Many of the public enterprises have made losses. He suggested a complete restructuring of the public enterprises with a clear redefining on the role and purpose it can play in the changed economic climate so that it is beneficial for the society.

Kaliranjan and Shand (1996) analyzed if privatization is the only answer to the problems faced by inefficient PSEs. The study brings out that most of the

measures used for performance evaluation are not applicable for PSEs as these enterprises have a different objective function and transfer payments like subsidies, easy credit availability etc. also affects their performance. Thus study employs the measure known as technological efficiency which is independent of such effects and is defined as the ratio of realized output to potential output. The authors make use of stochastic frontier production function to get potential output. The data for the study is based on survey of 50 manufacturing enterprises published by the department of public enterprises and the corresponding panel data have been employed for estimations. The results of the estimation indicates that PSEs in India can be made to improve their efficiencies by implementing reform measures directed towards achievement of best practices rather than the implementation of alternative method of privatization.

Simrit (1997), analyzed the financial performance of public enterprises and its significance in terms of initiating the process of economic development and diversification of the industrial structures of the economy via its linkage effects with the rest of economy. The study concluded that poor financial performance on the one side and lack of significant contribution to economic development with poor linkage effect on the other hand made the public enterprises vulnerable.

Naib (2003) studied partial divestiture and performance of Indian PSEs. The study aimed at testing the envisaged goal of improvement in performance was achieved. The study employed testing of major ratios like profitability ratios, operating ratios, liquidity ratios, leverage ratios etc. and tested the null of no difference in the mean of these ratios to the alternative of difference in the means. The study uses parametric tests to this end. The study found out that profitability dropped for the 38 partly disinvested enterprises while the fall in ROE in terms of PBDIT and PAT was statistically significant. The leverage ratios were also found to be reduced after disinvestment. Further, the results also shows that in case of partial

divestiture with majority of shareholding with the government, there has been no improvement in operational efficiency.

Kothari and Lekhawalla (2003), observed that the public sector undertakings, once considered as milestone of economic progress of country, now has become irrelevant in the context of changed economic scenario leading of huge losses to exchequer. The study suggested to use the funds blocked in these public sector undertakings could ensure better utilization elsewhere in the economy for the public welfare.

Satyanarayan, Mishra and Chandra (2004), in their study observed that those who criticize the public enterprises in India have been overlooking its achievements. The set up of public enterprises is different from those of private enterprises. Unlike private enterprises which rely only on profit motive, public enterprises are guided by the socialistic policy, maximum good for maximum members. It has been undertaken to build up the infrastructure in which the process of industrialization. The study suggested that instead of depending on disinvestments or privatizing the public enterprises putting forward the efficiency argument, it is desirable to grant executive autonomy and reduce bureaucratic and political interference in the administration of the public enterprises.

Pulapre Balakrishnan, M. Parameswaran, K. Pushpangadan and M. Suresh Babu (2006) using firm-level panel data in their study made an investigation whether 1991 industrial and trade reforms introduced in India resulted in a reduction in market power and/or an acceleration in productivity growth. The study with econometric estimation of a suitably transformed production function for every industry group at the two-digit level in India concluded that there is limited evidence of acceleration in productivity growth and no evidence of a reduction in market power. This is interpreted as suggesting that in the case of Indian industry trade liberalisation has not exhibited the potential often attributed to it.

Ravinder Vinayek and Rupinder (2007) in their work compared the pre disinvestment and post disinvested performance of 15 Public enterprises. It was found that there is some improvement in the profitability, sales, operational efficiency, earnings per share and dividend payment.

Aradhana, Dr. Sardar Singh, Manoj Kumar Singh (2009) in their work analyzed various issues and problems of disinvestment related to employees, restructuring of PSUs, mechanism of disinvestment, utilization of disinvestment receipts, parliamentary approval for disinvestment, political issues related to disinvestment, and consumer issues in post disinvestment. The study also suggested many measures to solve these issues.

Ashvinkumar H. Solanki and Vijay H. Vyas (2010) in their article observed that although public enterprises have played an important role in achieving the objective of economic growth with social justice, their poor performance in spite of these achievements had led to the adoption of disinvestment policy in 1991. The study concluded by supporting the disinvestment process after analyzing criteria, objective, process and procedures of disinvestment

Aurby lyimo, Dr. Reubenj. L. Mwamakimbullah kiko F.S. Hamza (2010), in their study observed that costs resulting from poles being rejected, reworked, or downgraded were the highest at the selected industry. The cost of quality were so high that it negatively affects the financial performance of the industry.

Dr. S. K. Khartik titto Varghese, (2011) concluded that the profitability more or less depends upon the better utilization of resources and manpower. It is worthwhile to increase production capacities and use advance technology to cut down cost of production and wage cost in order to increase profitability, not only against investment, but also for investor's return point of view.

Asha Sharma and R. B. Sharma (2011), made an attempt to identify and study the movement of key financial parameters and their relationship with profitability of textile industry. It is an attempt to study whether the key financial parameters move in a synchronous way going up and coming down with basic profitability parameters.

Singh and Chittedi (2011) evaluated the performance of PSEs in the pre and post reform period on some macroeconomic aggregates form 1981 to 2009 to assess the impact of liberalization of the performance of PSEs. They found that there was a positive impact of liberalization policy on performance of PSEs and performance has improved after liberalization

Kumar Pawan (2014) attempted a comparative analysis of performance of public sector units between pre disinvestments period and post disinvestments period. Author tested profit before depreciation interest and tax, profit after tax and dividend payout on profitability ratios like return on sales, return on assets and return on capital employed. The result shows an improvement in all the ratios in the post disinvestment phase in comparison to pre disinvestment

Ritu (2015) identified the major challenges of disinvestment as socio-political-economic problems, apart from lack of transparency and lack of co-operation and co-ordination. The study suggested that the Government should try to come out with a time bound programme for disinvestment and corporate governance, financial restructuring and business and technological restricting to enhance the value of shares and increase sale proceeds.

Gagan Singh (2015) analyzed the impact of disinvestment on the financial and operating performance of profit and loss making Central Public Sector Enterprises in terms of investment, employment, financial strength and corporate liquidity and asset usage. By comparing pre and post disinvestment phase of the

companies it was concluded that profit of profitable CPSEs declined but the profitability of the loss making CPSEs has improved in the post-disinvestment period as compared to the pre-disinvestment period and there was an increase in return on capital employed and total asset. Further, efficiency of employees has increased in post disinvestment phase. It was also found that dependence of the profit making CPSEs on outsiders' funds has increased in the post-disinvestment period. The examination of the asset usage reveals that the efficiency of the utilization of the assets of profit making CPSEs has improved significantly during the post-disinvestment Period but the management of loss making CPSEs failed in the efficiently management of its debtors.

2.3 Conclusion

A review of the available literature gives the indication that the performance of the public enterprises in India was far from satisfactory. In spite of a number of policies and programmes introduced by Government of India, the performance of public enterprises remained as dismal. Various studies have pointed out different reasons for the dismal performance like over dependence on external financial sources, poor accounting and auditing system, lack of proper financial management and absence of proper pricing strategies among others.

Thus, the reviewed literature has set up a framework within which a study in this regard can be conducted apart from providing proper guidelines for the work. Also it is helpful in understanding various concepts and relationship among different variables in connection with public enterprises in India.

The present study is an examination of financial performance of public enterprises in Kerala. The review made it clear that almost all the works were taken with reference to central government owned public enterprises. Of course, there are some works related to state owned public enterprises, but most of them were

conducted in other states and those conducted with reference to Kerala are either outdated or covered some other aspects of these public enterprises. Thus the present study is making use of this research gap as evident from the available literature to analyze the financial performance of state owned public enterprises in Kerala.

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CHAPTER III
DATA AND METHODOLOGY

This chapter briefly discuss about the data and methodology adopted for the empirical analysis of the efficiency of the public sector enterprises in Kerala. This chapter explains about the variables used in the study along with the sources in the first part. The second part of this chapter is further divided into two sub-sections, the first section of which defines the variables used in the study. The second subsection introduces the relevant econometric techniques used in the study.

3.1 Definitions and Sources of Data

The study focuses on the efficiency analysis of state-owned public-sector enterprises in Kerala after the introduction of New Economic Policy (NEP) and the era of Liberalisation, Privatisation and Globalisation (LPG). The study attempts to understand whether the performance (Financial and Operating) of state-owned public sector enterprises in Kerala has declined or shown improvement following the introduction of NEP. To this end, the study uses ratio analysis and trend analysis to identify the trends in performance. Secondly, the study uses panel regression analysis to understand the determinants of financial performance of the selected state-owned public-sector enterprises in Kerala.

The period of the study is from 1990-91 to 2014-15. The choice of the data period is mainly constrained by the availability of data. The data is mainly sourced from CMIE prowess data base, Bureau of public enterprises, other government reports and previous study. The 18 companies chosen for the study adequately represents sample (18 out of 100 working). The data as mentioned is scantly available especially for a long time period.

Table 3.1

Description and Sources of Variables

Abbreviation	Variable	Description	Source
NW	Net Worth	Value of the firm	Balance Sheet of the firm/ CMIE Prowess Database
CAP_EMP	Capital Employed	total amount of *capital* that has been utilized for acquisition of profits.	Balance Sheet of the firm/ CMIE Prowess Database
CAP_INV	Capital Invested	total cash *investment* that shareholders and debt holders have made in a company.	Balance Sheet of the firm/ CMIE Prowess Database
WC	Working Capital	money available to a company for day-to-day operations.	Balance Sheet of the firm/ CMIE Prowess Database
DER	Debt-Equity Ratio	total liabilities by its shareholder equity	Balance Sheet of the firm/ CMIE Prowess Database
CR	Current Ratio	Current Assets by its Current liabilities	Balance Sheet of the firm/ CMIE Prowess Database
ROI	Return on Investment	Net Profit divided by Total investment	Balance Sheet of the firm/ CMIE Prowess Database
RTR	Receivables Turnover Ratio	Receivables divided by Total Sales (Months)	Balance Sheet of the firm/ CMIE Prowess Database
SFGS	Stock of Finished Goods to Sales	Stock of Finished Goods divided by Sales	Balance Sheet of the firm/ CMIE Prowess Database
SRMC	Stock of Raw materials to	Raw materials divided to consumption	Balance Sheet of the firm/ CMIE Prowess

Abbreviation	Variable	Description	Source
	consumption ratio		Database
CS	Consumption to Sales (%)	Consumption divided Sales	Balance Sheet of the firm/ CMIE Prowess Database
NPR	Net Profit Ratio	Operating profit divided by Net Sales	Balance Sheet of the firm/ CMIE Prowess Database

Source: Author's Compilation

The above mentioned variables are categorised into two viz. financial and operational. Financial measures include Net Worth, Capital Employed, Capital Invested, Working Capital, Debt-Equity Ratio, Current Ratio and Working Capital. The Return on investment and Net Profit to Sales are indicators of profitability while Stock of finished goods to sales, Receivables Turnover Ratio and Stock of Raw materials to consumption measures operational efficiency. These ratios are discussed in detail as below:

(i) Current Ratio

Current ratio measures the proportion of current assets over current liabilities. This is an indicator of short term liquidity of the company. A high current ratio indicates the firm's ability to meet its current obligations. The ideal current ratio is considered to 2:1.

$$Current\ Ratio = \frac{Current\ Assets}{Current\ Liabilities}$$

Current assets include cash, short term investments, accounts receivables etc. while current liabilities include short term borrowings, accounts payables etc.

(ii) Debt-Equity Ratio

DE ratio measures the ratio of total liabilities of firm to shareholders equity. This is a measure of financial leverage or financial health of a company. A high DE ratio indicates that much of the firm's resources are from debt financing rather than own resources. A high DE ratio indicates that firms are more risky or the owners are not much confident about the firm's performance. On the other hand a low DE ratio indicates financial stability. The ideal DE ratio is considered to be 1 or where the company is equally financed with debts and owners funds.

$$Debt\ Equity\ Ratio = \frac{Total\ Liabilities}{Share\ Capital}$$

(iii) Return on Investment

ROI is a measure of profitability. It indicates the proportion of profit made or lost as a percentage of money invested. A higher ROI indicates the efficiency of the firm's project. This ratio is calculated by dividing the net profit by net capital employed.

$$Return\ on\ Investment = \frac{Net\ Profit}{Share\ Capital}$$

(iv) Receivables Turnover Ratio

Receivables turnover ratio indicates a company's effectiveness in collecting its credit sales. Higher the ratio, better is the performance of the company. It indicates the efficiency of the company or that the company is not extending much credit sales making it a safer investment for the investors. It is calculated as below:

$$Receivables\ Turnover\ Ratio = \frac{Net\ Credit\ Sales}{Average\ Accounts\ Receivables}$$

$$Receivables\ Turnover\ Ratio\ (in\ days) = \frac{Average\ Accounts\ Receivables}{Net\ Credit\ Sales} * 365$$

(v) Stock of Finished Goods to Sales

This ratio indicates how much of finished goods is sold within a period. It is also called stock turnover ratio. A high stock turnover ratio indicates goods sales policy, fresher stock of goods and customer satisfaction and competitive pricing policies. For a better understanding of the average days to take finished goods to get converted to sales.

$$Receivables\ Turnover\ Ratio = \frac{Net\ Credit\ Sales}{Average\ Stock\ of\ Finished\ Goods}$$

$$Receivables\ Turnover\ Ratio\ (in\ days) = \frac{Stock\ of\ Finished\ Goods}{Net\ Credit\ Sales} * 365$$

(vi) Stock of Raw Materials to Consumption

This ratio is an indication of how much of raw materials is converted to sales. It indicates the firm's efficiency in sales. Higher ratio indicates lesser stock of raw materials and thus less tied up funds. This also has implications for inventory management and cost of maintaining raw materials. This ratio is calculated as below:

$$Stock\ of\ Raw\ Materials\ to\ Sales = \frac{Stock\ of\ Raw\ Materials}{Net\ Sales}$$

(vii) Consumption to Sales

Consumption to sales ratio indicates how much of the sales rupees is consumed by the cost of goods. It shows the proportion of profits generated from the direct cost of the goods sold.

$$Stock\ of\ Raw\ Materials\ to\ Sales = \frac{Stock\ of\ Raw\ Materials}{Net\ Sales}$$

(viii) Net Profit to Sales

This ratio indicates the net profit after tax to sales. It gives the overall net profit from sales after accounting for all administrative and operational expenses including taxes. This is a good measure to compare companies and also the performance over time.

$$Net\ Profit\ to\ Sales = \frac{Net\ Profit\ after\ taxes}{Sales}$$

Apart from these ratios study also considers some other measures for measuring the efficiency of the firm and are discussed below:

(i) Net Worth

Net Worth is one of the most important tools for measuring financial progress of a company over the years. Put simply, Net worth is the difference between the total assets and total liabilities of a company. It is a quantitative measure that indicates the value of the company.

$$Net\ Worth = Total\ Assets - Total\ Liabilities$$

(ii) Capital Employed

Capital employed is the amount of money invested by the firm for generation of profits. Capital employed provides a glimpse of the usage pattern of funds by the company.

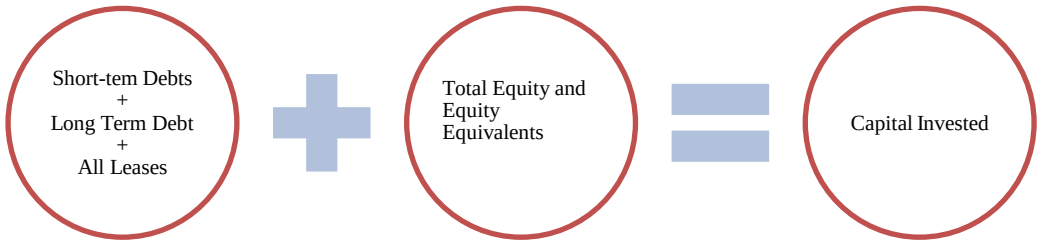
$$Capital\ Employed = Total\ Assets - Current\ Liabilities$$

(iii) Capital invested

Capital invested is the sum total of all the money invested by a firm since its inception. It is the total of money provided by the shareholders and debtors. The amount is raided by issuing shares to equity holders and bonds to debtors. The term can also refer to a company's acquisition of long term assets. Capital invested is calculated in two ways

(a) Financing Approach

(b) Operating Approach



(iv) Working Capital

Working capital indicates the short term financial health of the company. It is a measure of company's liquidity and operational efficiency. Company should have good working capital for the smooth operation of its day to day business. It includes cash, inventory, accounts receivables, accounts payable and other short term assets and liabilities.

$$Working\ Capital = Current\ Assets - Current\ Liabilities$$

A positive working capital indicates that the company is able to pay off its short term obligations while negative working capital might prove to be detrimental to company's interest.

3.2 Expected Relationship between variables

Table 1 presents the expected relationship between the independent variables and dependent variable which is Return on Investment (proxy for financial performance) while Table 2 presents the expected relationship between The expected relationships are based on the inference found from the extensive review of literature.

Explanatory Variable	Expected Sign
NW	Negative
CR	Positive
WC	Positive
CE	Positive
CI	Positive

Source: Author's Compilation

We also estimate the model using Net profit to sale as dependent variable.

Explanatory Variable	Expected Sign
SFGS	Negative
CR	Positive

3.3 Methodology

The present study employs the method of Ratio Analysis and Trend analysis for understanding the financial and operating performance of the firms over the period of the study. The study makes use of kernel density estimation to understand the evolving nature of financial and operating performance of the firm. The study also makes use of panel data regression models to estimate the factors affecting the financial and operating performance of the firms. To this extent, the study uses Fixed Effects and Least Squares Dummy Variable (LSDV) models to estimate the firm specific and time specific factor affecting the financial and operational performance of the firms. Descriptive statistics including correlation analysis is also conducted for the general information about the variables and to identify the association between different series.

3.3.1 Descriptive Statistics

Descriptive statistics are numerical figures represent the summary of data intended to describe the characteristics of data briefly. It comprises of first four moments called mean, variance, skewness, and kurtosis. Among the above measures, mean merely measures the central tendency of the data whereas the variance measures the dispersion from the central value. Moreover, skewness points out the degree of concentration of the distribution of a series while Kurtosis indicate the peakedness or flatness of the distribution curve. Mean is considered as an appropriate statistic for average if the distribution is normal. However, median and quartiles dominate in the analysis when the data shows leptokurtic and platykurtic distributions respectively. Conducting descriptive statistics is always desirable as a prior step in the in-depth analysis of data.

3.3.2 Correlation Analysis

Correlation is nothing but the association between two or more variables. It is a simple correlation when only two variables are under consideration. It also can be applied to multiple variables is called multiple correlation. Partial correlation is also another procedure when the association between two variables are considered among multiple variables by ignoring others. Thus the correlation coefficient indicates the robustness of the relationship between two variables which ranges from -1 to +1. The sign of the variable indicates the direction of the series. Positive sign point the movement of the variable in the same direction, while the negative sign shows the movement of the variable in the different direction. It also can be zero when there is no correlation among variable. When the correlation coefficient becomes close to zero implies a weak relation while it became stronger when the value moves away from zero to either side. The present study adopts simple correlation measured by the Pearson's correlation (r) method:

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2]\,[n\sum y^2 - (\sum y)^2]}}$$

It is also supplemented by the P-value from student test statistic (t-test) for the understanding of the significance of correlation coefficient. If the P-value is found less than 0.05, it does not provide sufficient evidence to accept the null hypothesis that 'there is no correlation', at 5% significance level. On the other hand, if the P- value is more than 0.05, it lacks substantial evidence to reject the null hypothesis at the 5% level of significance.

3.3.3 Trend Analysis

Trend analysis is a statistical technique to analyse the changing behaviour of a variable over time. Presence of a trend, upward or downward is a key

characteristic of a time series data. This helps in predicting about the future. The visual inspection of the trend of a series gives us a clear idea about the nature and evolving process of the data in hand which can then be formally estimated using econometric methods to reverse engineer the time series data generating process of the underlying series.

3.3.4 Kernel Density Estimation

Kernel density estimation is a technique to create a smooth curve from a given data. It is a non-parametric estimation technique. It eliminates the two disadvantages of histogram of disrupted curves and local estimators. KDE overcomes this by estimating the density of an individual observation on its neighbourhood. The Kernel is a non-negative function and is symmetric about zero and area normalised to one. More formally, Kernel estimators smooth out the contribution of each observed data point over a local neighbourhood of that data point.The extent of this contribution is dependent upon the shape of the kernel function adopted and the width (bandwidth) accorded to it. If we denote the kernel function as *K* and its bandwidth by *h*, the estimated density at any point x is

$$\hat{f}(x) = \frac{1}{n}\sum_{i=1}^{n} K\left(\frac{x - x(i)}{h}\right)$$

The kernel density estimate is probability density function. The value is an estimate of the probability density of the variable of interest at that point.

3.3.5 Panel Data Regression

Panel data refers to the data having both cross sectional and time series dimensions. It is also known as pooled data and longitudinal data. Since, the study uses the data of 18 companies over 25 years, it is obvious the data has both cross sectional and time series dimension. The cross section or individual units in the

study are the 18 selected public sector enterprises. The traditional time series regression of individual units fails over the years cannot be used to compare the unit specific effects. Time series and cross –section studies not controlling this heterogeneity can result in biased estimates (Moulton 1986, 1987). Panel data has the obvious advantage of capturing individual specific heterogeneity. It also has the advantage of a larger and richer dataset thereby containing more degrees of freedom and more sample variability. The panel data regression models also suffers less from the problem of bias due to aggregation of data.

A panel data model can be represented as below:

$$y_{it} = \alpha_i + X_{it}^{'}\beta + \mu_{it} \qquad i = 1 \ldots . N; t = 1 \ldots . . T$$

Where i denotes individual units and t represents time. α_i is a scalar or intercept term independent of i and t , β is a K×1 vector of slope coefficients again independent of i and t and $X_{it}^{'}$ is a K-dimensional vector of explanatory variables without a constant term. Note that α_i is time invariant and accounts for any individual specific effects not included in the regression.

(i) Pooled OLS estimator

The pooled OLS estimator assumes that individual cross sections are homogenous i.e. $\alpha_i = \alpha$ for all i. Thus the pooled panel data model can be represented as

$$y_{it} = \alpha + X_{it}^{'}\beta + \mu_{it} \qquad i = 1 \ldots . N; t = 1 \ldots . . T$$

The pooled estimator is unbiased and consistent given that X_{it} are exogenous and the intercepts are homogenous. The intercepts being homogenous imply that there is no difference across individual units which is rather unrealistic. If in case there is sufficient heterogeneity among the individual units, the pooled OLS

estimator could be biased depending on the heterogeneity across α_i and the extent of correlation between α_i and $X_{it.}$For example suppose,

$$\alpha_i = \alpha + \varepsilon_i$$

where ,ε_i is an IID (Independently and Identically Distributed) process with mean zero and constant variance. In such case the bias in pooled estimator arises due to the omission of ε_i which is correlated with$X_{it.}$ The way to deal with it is the fixed effects model which is discussed below.

(ii) Fixed Effects Model (FE)

Fixed effects model assumes that the unobserved heterogeneity arises from individual specific factors which are time invariant. The individual specific effect is a random variable that is allowed to be correlated with the explanatory variables. The FE model assumes that the within the individual unit characteristic affect the predictor variable. FE removes these time-invariant characteristics unique to each individual units. The assumption of no correlation of error term of each individual unit with other units is necessary for the inferences of the FE model to be valid. The FE model is given below:

$$y_{it} = \alpha_i + X_{it}^{'}\beta + \mu_{it}$$

The above model can be modified to estimate the individual specific effect. The model can also be modified to account for the period specific effect and thus remove the assumption of time invariance. Such models are more popularly known as the Least-Squares Dummy Variable (LSDV) models. The LSDV model for individual specific effect can be written as below

$$y_{it} = \alpha + X_{it}^{'}\beta + \gamma^{'} D_{j,it} + \mu_{it}$$

where γ_j is the coefficient of the individual unit and D is a dummy variable for n-1 entities. We can also account for the time specific effects by adding a time dummy for different time periods to the above regression. Because, the present study is concerned about the performance of the public sector enterprises in Kerala after the introduction of New Economic Policies (NEP), we will use LSDV model with both time and individual dummies to understand the company specific and firm specific performance. The model is as given below:

$$y_{it} = \sum_{j=1}^{N} \alpha_j D_{j,it} + \sum_{\tau=1}^{t} \gamma_\tau \delta_{\tau,it} + \beta_1 x_{1t} + \cdots .... \ \beta_k x_{kt} \ + \mu_{it}$$

(iii) Random Effects model (RE)

The RE model in comparison to FE model assumes that the individual unobserved heterogeneity across individuals are not correlated with X_{it}.This is especially the case is when N is very large compared to T and the effects can be considered as random and not incidental. In such cases, RE model is more appropriate as the number of parameters to be estimated is less as compared to the FE model and the model becomes more parsimonious.

3.3.6 Hausman Test

Hausman test is test for model misspecification in panel data. The test is to determine which of the model viz. FE or RE is appropriate. The null hypothesis of the test is that RE model is the appropriate one while the alternative hypothesis is that FE model is the appropriate one. The test essentially looks to see if there is correlation between unique errors and the repressors in the model. The test is given below

$$H_o: cov\ (\alpha_i, x_{it}) = 0$$

$$H_1: cov\ (\alpha_i, x_{it}) \neq 0$$

The test follows chi-square distribution with k degrees of freedom where k is the number of factors.

3.3.7 Breusch-Pagan Lagrange multiplier Test (LM)

Breusch and Pagan (1980) suggested a test based on Lagrange Multiplier (LM) principle for testing the presence of random individual effects in a panel data model. The test is formulated on the null hypothesis of pooled effects against the alternative of random individual effects. The test is conducted by obtaining the residuals from the OLS regression of the pooled model and then calculating the LM statistic as given below where the LM statistic follows chi-square distribution with two degrees of freedom.

$$LM = b^2 s^2$$

$$\text{where} b^2 = \frac{NT}{2(T-1)} \text{ and } s = \left[\frac{\sum_i \{\widehat{u_{i.T}}\}^2}{\sum_i \sum_t \widehat{u_{i,t}^2}}\right] - 1$$

The above mentioned methods and procedures are promptly followed in analysing the performance of the selected public sector enterprises in Kerala. The results are presented in the following chapter.

CHAPTER IV

PUBLIC SECTOR ENTERPRISES IN KERALA

There are 117 State Level Public Enterprises (SLPEs) in Kerala, including twenty one which have either been merged with other enterprises, ownership transferred, closed, taken over, liquidated or remained inactive in the past. The list of 21 enterprises which have either been merged with other enterprises, ownership transferred, closed, taken over, liquidated or remained inactive is shown in Table 4.1.

Table 4.1

Enterprises Merged, Transferred, Closed, Taken over, Liquidated or Inactive

Sl. No.	Name of Enterprise	Status during 2014-15
1	Kerala Hitech Industries Limited	Handed over to BrahMos Aerospace, Thiruvananthapuram
2	Kerala Soaps & Oils Limited	Transferred to Kerala State Industrial Enterprises Limited.
3	Kerala State Industrial Products Trading Corporation Limited	Merged with Travancore Titanium Products Limited
4	Keltron Crystals Limited	Merged with Keltron Component Complex Limited
5	Keltron Magnetics Limited	Merged with Keltron Component Complex Limited
6	Keltron Resistors Limited	Merged with Keltron Component Complex Limited

Sl. No.	Name of Enterprise	Status during 2014-15
7	Keltron Power Devices Limited	Taken over by KELTRON
8	Keltron Rectifiers Limited	Taken over by KELTRON
9	Trivandrum Spinning Mills Limited	Taken over by KSTC
10	Kerala State Salicylates & Chemicals Limited	Transferred 25 acres of land to SIDCO for setting up a Telecom City
11	The Metropolitan Engineering Company Limited	Transferred 1.26 acres of land to KSIE to establish a Hyper Super Market cum Office Complex
12	Keltron Counters Limited	Winding up in progress
13	Kerala Construction Components Limited	Liquidation in progress
14	Scooters Kerala Limited	Ownership transferred to Cooperative Academy for Professional Education (CAPE)
15	Kerala State Rural Development Board	Dissolved in July 2003
16	Kerala Garments Limited	Applied for Easy Exit Scheme on 18.01.2011
17	Kerala State Wood Industries Limited	No activity
18	Travancore Plywood Industries Limited	No activity
19	Kerala State Detergents & Chemicals Ltd.	No activity
20	Astral Watches Limited	No activity
21	Trivandrum Rubber Works Limited	Unit closed

Source: A Review of Public Enterprises in Kerala 2014-15

The 96 active SLPEs are grouped into 13 sectors depending on their field & type of activity for the purpose of review and analysis. The sectors and the number of enterprises in each sector are indicated in Table 4.2.

Table 4.2

Sector-wise Classification of SLPEs

Sector No.	Sector	No. of SLPEs	% of Total
1	Development & Infrastructural Agencies	20	20.83
2	Ceramics and Refractories	2	2.08
3	Chemical Industries	10	10.42
4	Electrical Industries	4	4.17
5	Electronics	3	3.13
6	Engineering & Manufacturing	9	9.38
7	Plantation/Agro & Livestock Based Units	12	12.5
8	Textiles	2	2.08
9	Traditional Industries	7	7.29
10	Trading Units	3	3.13
11	Welfare Agencies	11	11.46
12	Public Utilities	6	6.25
13	Others	7	7.29
	Total	**96**	**100**

Source: Ibid

It is found that Development and Infrastructural Agencies top the Table with 20 SLPEs (20.83%) followed by Plantation/Agro & Livestock Based Units with 12 SLPEs (12.50%) and Welfare Agencies with 11 SLPEs (11.46%).

Among the 96 working enterprises, eight (8.33%) are statutory bodies, while 62 (64.58%) are fully owned by the Government of Kerala. Eight enterprises

(8.33%) are jointly owned by the State and Central Governments. Details of the status of ownership of the enterprises are indicated in Annexure I. A summary of the status of ownership of the enterprises is shown in Table 4.3 below.

Table 4.3

Status of Ownership of SLPEs

Sl. No.	Status of Ownership	No. of SLPEs	% of Total
1	Wholly owned by the Government of Kerala	62	64.58
2	Joint ownership of Government of Kerala & Public	10	10.42
3	Statutory Bodies	8	8.33
4	Joint ownership of State & Central Governments	8	8.33
5	Joint ownership of Government of Kerala, Financial Institutions & Public	4	4.17
6	Joint ownership of Government of Kerala, Financial Institutions, Public & Foreign Firms	2	2.08
7	Joint ownership of Government of Kerala & NRIs	1	1.04
8	Joint ownership of Government of Kerala and Urban Local Bodies	1	1.04
	Total	**96**	**100**

Source: Ibid

The administrative control of the SLPEs is vested with 28 different government departments. Thirty eight enterprises (39.58%) are under the Industries department followed by 13 (13.54%) under the Agriculture department. The number of SLPEs under the different departments is summarized in Table 4.4.

Table 4.4

Administrative Departments of the SLPEs

Sl. No.	Administrative Department	No. of SLPEs	% of Total
1	Agriculture	13	13.54
2	Coastal Shipping & Inland Navigation	1	1.04
3	Cultural Affairs	1	1.04
4	Finance	1	1.04
5	Fisheries & Ports	3	3.13
6	Food, Civil Supplies & Consumer Affairs	1	1.04
7	Forests & Wild Life	1	1.04
8	General Administration Department	2	2.08
9	General Administration (Sainik Welfare) Department	1	1.04
10	General Education	1	1.04
11	Health & Family Welfare	2	2.08
12	Home	1	1.04
13	Housing	1	1.04
14	Industries	38	39.58
15	Information Technology	2	2.08
16	Labour & Rehabilitation	3	3.13
17	Local Self Government	1	1.04
18	Norka	1	1.04
19	Planning	1	1.04

Sl. No.	Administrative Department	No. of SLPEs	% of Total
20	Power	2	2.08
21	Public Works	2	2.08
22	SC/ST Development	3	3.13
23	Social Justice	2	2.08
24	ST Development	1	1.04
25	Taxes	4	4.17
26	Tourism Department	3	3.13
27	Transport	2	2.08
28	Water Resources	2	2.08
	Total	**96**	**100**

Source: Ibid

The total paid up capital of the active enterprises at the end of the year 2014-15 amounts to Rs.13815.24 crores (increase of 3.62% from previous year) and the capital invested totals to Rs. 40556.65 crores (increase of 10.06% from previous year).These enterprises have together achieved net sales of Rs. 32624.96 crores during the year (Increase of 6.81% from previous year). The number of profit earning enterprises during 2014-15 has come down to 44 (45.83% of total) as compared to 45 enterprises during the previous year and the total amount of profits earned by these 44 enterprises amounts to Rs. 700.96 crores (increase of 5.46%) as against total profit of Rs.664.67 crores earned by 45 enterprises in 2013-14. Forty Six enterprises have reported losses amounting to Rs. 2731.01 crores (increased by 97.66%) as against Rs. 1381.70 crores loss registered by 48 enterprises during the

previous year. The net position for the year is a net loss of Rs.2030.05 crores (gone up by 183.12%) as against a net loss of Rs. 717.03 crores in the year 2013-14.

The net worth of all these enterprises taken together amounts to Rs. 9367.07 crores (decrease of 13.70% from previous year), while the total accumulated losses (incurred by 52 enterprises)as on March 2015 amount to Rs. 11757.58 crores. During the year, the SLPEs together contributed an amount of Rs. 8610.05 crores (8.86% of increase) to the State Exchequer by way of taxes& duties and Rs. 53.59 crores was paid as Guarantee Commission. The total dividends declared/proposed for the year is worth Rs. 18.43 crores (Rs. 48.02 crores during 2013-14).

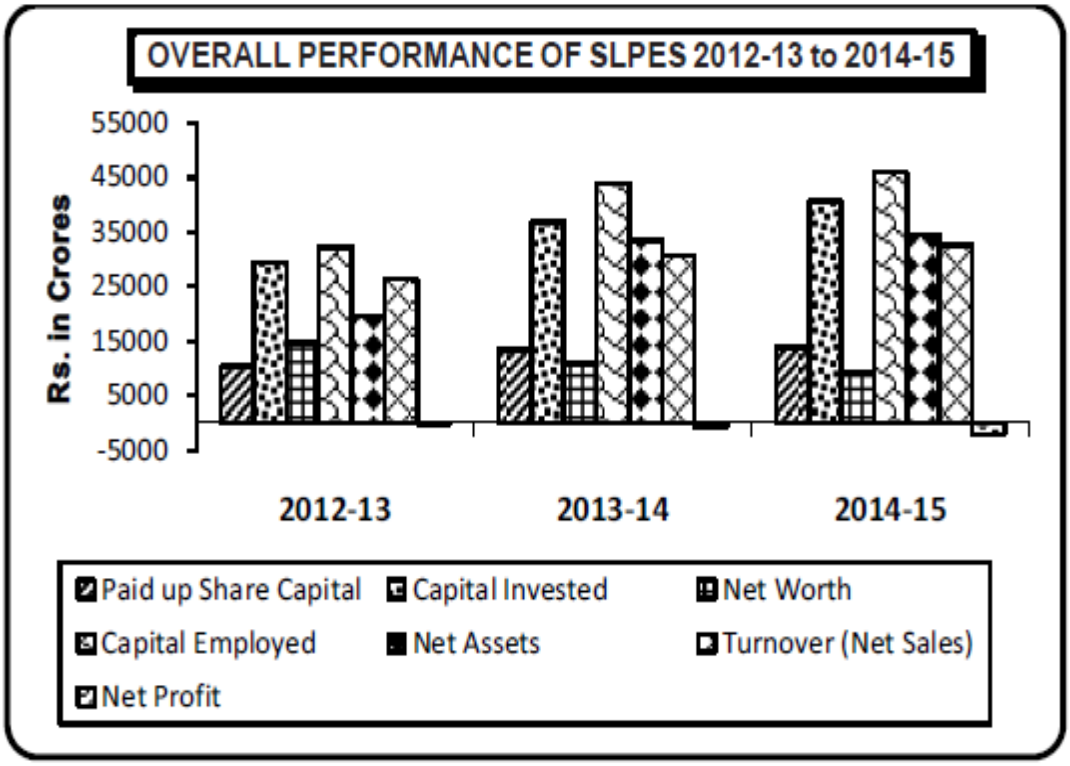


Figure 4.1: Overall Performance of SLPEs 2012-13 to 2014-15

During 2014-15, overall profitability is reported from four sectors only as against six sectors during the previous year. Increased net profit has been reported from Development & Infrastructural Agencies and Trading Units. The net profit has come down in Welfare Agencies and Plantation/Agro & Livestock based units. Chemical Industries and Others sector reported net loss as against net profit during

2013-14. Electrical Industries, Electronics, Textiles and Public Utilities have reported increased losses while Engineering &Manufacturing and Traditional Industries sectors have reported reduced net losses during 2014-15.

The SLPEs together provided employment to 142894 persons in different categories, including casual/contract employees, during 2014-15 as against 142394 persons during 2013-14. The list of enterprises ranked in terms of employment during 2014-15 is given in Annexure IX. The top ten in the list are given in Table 4.5. It is found that the top ten enterprises together provided 84% of the total employment in SLPEs in the State. The Kerala State Road Transport Corporation tops the list with 32.68% of total employment in SLPEs followed by Kerala State Electricity Board Limited (23.12% of total) and The Kerala State Cashew Development Corporation Limited (8.58 % of total).

Table 4.5

Top Ten Enterprises in terms of Employment

Sl. No.	Name of Enterprises	No. of Employees	% of Total
1	Kerala State Road Transport Corporation	46695	32.68
2	Kerala State Electricity Board Limited	33041	23.12
3	The Kerala State Cashew Development Corporation Limited	12262	8.58
4	Kerala Water Authority	7460	5.22
5	The Kerala State Financial Enterprises Limited	5572	3.9
6	The Kerala State Civil Supplies Corporation Limited	5400	3.78
7	The Plantation Corporation of Kerala Limited	3641	2.55
8	Kerala State Beverages (M&M) Corporation Limited	3164	2.21
9	Kerala State Electronics Development Corporation Limited	1811	1.27
10	The Kerala Minerals & Metals Limited	1419	0.99

Source: Ibid

During the year under review, the SLPEs have together contributed an amount of Rs. 8610.05 crores (increase of 8.86%) to the State Exchequer by way of taxes/duties as compared to Rs. 7908.96 crores during 2014-15. The top ten enterprises contributing to State Exchequer by way of taxes/duties are given in Table 4.6. It is found that the top ten enterprises together contributed 99.47% of the total contribution from SLPEs to State Exchequer. The majority of the contribution by way of taxes and duties to the State Exchequer during 2014-15 had come from Kerala State Beverages (M&M) Corporation Limited with Rs.8283.22 crores (96.20% of total) followed by The Kerala State Financial Enterprises Limited with Rs. 121.84 crores (1.42% of total) and The Kerala State Civil Supplies Corporation Limited with Rs. 68.90 crores (0.80 % of total).

Table 4.6

Top Ten Enterprises in terms of Contribution to State Exchequer

Sl. No.	Name of Enterprises	Contribution to State Exchequer	% of total Contribution to State Exchequer
1	Kerala State Beverages (M&M) Corporation Limited	8283.22	96.2
2	The Kerala State Financial Enterprises Limited	121.84	1.42
3	The Kerala State Civil Supplies Corporation Limited	68.9	0.8
4	Malabar Cements Limited	46.11	0.54
5	Kerala Financial Corporation	10.29	0.12
6	Kerala State Construction Corporation Limited	9.04	0.1
7	The Kerala Minerals & Metals Limited	7.67	0.09
8	Kerala Tourism Development Corporation Limited	7.38	0.09

Sl. No.	Name of Enterprises	Contribution to State Exchequer	% of total Contribution to State Exchequer
9	Kerala State Electronics Development Corporation Limited	5.33	0.06
10	Kerala Small Industries Development Corporation Limited	4.73	0.05

Source: Ibid

The contribution of the SLPEs to the Central revenue by way of taxes/duties during 2014-15 has been Rs. 621.12 crores (decrease of 15.71%) as compared to Rs.736.89 crores during the previous year. The top ten enterprises contributing to Central exchequer by way of taxes/duties is given in Table 4.7. It is found that the top ten enterprises together contributed 81.43% of the total contribution from SLPEs to the Central Exchequer during 2014-15. The Kerala State Beverages (M&M) Corporation Limited tops the list with Rs.153.35 crores (24.69% of total) followed by The Kerala State Financial Enterprises Limited with Rs. 130.69 crores (21.04 % of total) and The Kerala Minerals & Metals Limited with Rs. 77.84 crores (12.53 % of total).

Table 4.7

Top Ten Enterprises in terms of Contribution to Central Exchequer

Sl. No.	Name of Enterprises	Contribution to Central Exchequer	% of total Contribution to Central Exchequer
1	Kerala State Beverages (M&M) Corporation Limited	153.35	24.69
2	The Kerala State Financial Enterprises Limited	130.69	21.04
3	The Kerala Minerals & Metals Limited	77.84	12.53
4	Malabar Cements Limited	51.26	8.25
5	The Travancore-Cochin Chemicals Limited	23.47	3.78
6	Kerala State Electronics Development Corporation Limited	16.39	2.64
7	Kerala Financial Corporation	15.55	2.5
8	Traco Cable Company Limited	15.09	2.43
9	Kerala State Industrial Development Corporation Limited	11.74	1.89
10	Transformers and Electricals Kerala Limited	10.44	1.68

Source: Ibid

Forty four enterprises have earned profits during 2014-15 as compared to 45 enterprises during the previous year. Seven enterprises which had incurred losses during the previous year have reported profits during 2014-15, while another seven enterprises which had earned profits during 2013-14 has incurred losses.

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enterprises which had earned profits during 2013-14 has incurred losses during the year.

Profile of Selected Public Sector Enterprises in Kerala

For the purpose of evaluation of financial performance, 18 PSUs are selected from various sector categories of industries in Kerala. They are:

1. Kerala Financial Corporation
2. Kerala Tourism Development Corporation
3. The Kerala Ceramics Limited
4. The Kerala Minerals and Metals Limited
5. Travancore Titanium Products Limited
6. Transformers and Electrical Kerala Limited
7. Kerala State Electronics Development Corporation Limited
8. Kerala Agro Machinery Corporation Limited
9. Kerala Automobiles Limited
10. Kerala Agro Industries Corporation Limited
11. Travancore Sugars and Chemicals Limited
12. Sitaram Textiles Limited
13. Handicrafts Development Corporation Limited
14. Kerala State Bamboo Corporation Limited
15. Kerala State Civil Supplies Corporation Limited
16. Kerala State Artisans Development Corporation Limited
17. Kerala State Palmyrah Development and Worker's Welfare Corporation Limited and
18. Kerala Shipping Inland Navigation Corporation Limited.

1. KERALA FINANCIAL CORPORATION

Kerala Financial Corporation (KFC) was incorporated in 1953 under the State Financial Corporations Act , 1951. The forerunner of this corporation was the Travancore - Cochin Financial Corporation established in 1953 under the SFC Act, 1951. This was later renamed as Kerala Financial Corporation consequent to the reorganisation of states in 1956. KFC has its headquarters at Trivandrum with regional offices at Trivandrum, Kottayam, Palakkad and Kozhikode and district offices in all the 14 district headquarters of the Kerala state. The KFC is the pioneer in industrial financing in the Kerala state. Since its inception in 1953, as a development banker, the contribution of the corporation in the industrialisation of the state has been significant. Kerala Financial Corporation (KFC) incorporated under the State Financial Corporations Act of 1951, is a trend setter and path breaker in the field of long term finance, playing a major role in the development and industrialisation of Kerala. It was established as the Travancore Cochin Financial Corporation on 01.12.1953. Consequent to the reorganization of states on linguistic basis in November 1956, Kerala State was formed and the Travancore Cochin Financial Corporation was renamed as Kerala Financial Corporation.

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Now KFC has 16 Branch Offices with its Head Quarters at Thiruvananthapuram and Zonal Offices at Kozhikode, Ernakulam and Thiruvananthapuram

The provisions of SFCs Act 1951 as amended in 2000 control and guide the functions of Corporation. The main objective of KFC is the rapid industrialization of the state by extending financial assistance to Micro, Small and Medium Enterprises in manufacturing and service sector. SFCs Act empowers KFC to formulate suitable loan schemes for achieving the above said objectives. Corporation can give financial assistance for setting up of new units and for the expansion / modernization / diversification of existing units in both manufacturing and service sectors. Since inception KFC has disbursed over Rs. 3000 Crores to more than 40,000 projects, spread over the length and breadth of the State.

The Corporation is the first PSU in Kerala and first SFC in India to initiate Corporate Social Responsibility activity. As part of its Corporate Social Responsibility, KFC has set up KFC-CARE (Centre for Assistance and Rehabilitation) to rehabilitate and serve the marginalized sections of the community. (Kerala Financial Corporation, 2017)

2. KERALA TOURISM DEVELOPMENT CORPORATION

Kerala Tourism Development Corporation (KTDC) Limited is under the Tourism Department, one of the administrative departments of Government of Kerala which was incorporated on December, 1965. KTDC is a commercial agency which is actively participating in building up basic infrastructure needed for the development of tourism in the State. KTDC is running hotels and wayside amenity centres throughout Kerala. It promotes and conducts tours all over the State and maintains a high-tech reservation system. (KTDC, Kerala, 2011)

3. THE KERALA CERAMICS LIMITED

Kerala Ceramics Limited (KCL) was promoted jointly by Government of Kerala and Kerala State Electronics Development Corporation (KSEDC) with the name "Dielectro Magnetics Ltd." The history of The Kerala Ceramics dates back to 1937 when the Maharaja of the then Princely State of Travancore set up one unit for Mining and Refining of China Clay and another unit for manufacture of Porcelain wares. The Kerala Ceramics Ltd. was set up in 1963 as a fully owned Government of Kerala Undertaking (under Companies Act) with its registered Office at Kundara, Kollam by amalgamating these two units. In 1974 for manufacture of 25 million pieces of Ceramic Capacitors per annum. Technical knowhow used by the company was developed by National Physical Laboratories. The company became a subsidiary of Kerala State Electronics Development Corporation Ltd (KELTRON) in the year 1977 and was rechristened as "Keltron Electro Ceramics Ltd.", in January 1985. The capacity was enhanced to 90 million ceramic capacitors per annum. (Kerala Ceramics Ltd., 2017)

4. THE KERALA MINERALS AND METALS LIMITED

The history of the beaches of Sankarmangalam and nearby areas is inextricably intertwined with the history of the precious beaches and KMML. Precious, as was discovered in 1909 by the German scientist Dr. Schomberg who found traces of monazite in the sand flakes on the imported coir from Sankaramangalam. The beaches with a wealth of rare earth minerals became the centre of scientific attraction.

By 1932, a visionary private entrepreneur established the F. X. Perira and Sons (Travancore) Pvt. Ltd, the forerunner to KMML. During the course of time, KMML changed hands three times over. In 1956 it was taken over by the state government and was placed under the control of the industries department. The unit

was subsequently converted as a limited company in 1972 by the name of 'The Kerala Minerals and Metals Ltd.' with the following broad objectives.

1. Optimum utilisation of mineral wealth found along the sea coast of Kollam-Alappuzha Districts.
2. Large scale generation of employment in the state in general.
3. Overall growth and development of the local area in particular and the state in general.

The construction of Titanium Dioxide Pigment using chloride technology started in 1979. The same was commissioned in 1984 as the first and only integrated Titanium Dioxide Plant in the world. Today, with over 2000 employees and a range of products, KMML has become part and parcel of local and international life.

On 27th December 2006 Hon. Ex-Chief Minister of Kerala Shri V.S. Achuthanandan laid the foundation stone of the Titanium Sponge Plant in the presence of the Hon. Minister for Industries, Shri. Elamarom Kareem and other eminent dignitaries. On 27th February 2011 Honorable Minister of Defence Shri. A K Antony Inaugurated country's first Titanium Sponge Plant (TSP) at KMML.

With the inauguration of TSP, India became the 7th country in the world having the technology for producing titanium sponge, which is the raw material for titanium metal. Thus KMML has become a strategic Supplier of country's present requirements of Titanium for its prestigious space missions. On 6th September 2011 KMML TSP manufactured the 1st Batch of Titanium sponge & now the production is in full swing. (KMML, 2017)

5. TRAVANCORE TITANIUM PRODUCTS LIMITED

In 1946 Sree Chithira Thirunal Balaramavarma, the Maharaja of the erstwhile princely State of Travancore initiated an enterprise that would eventually

become the pride of his country. The royal vision was a project to convert the rich sands of the country into wealth that would be utilized for the common good of the people.

TTPL was incorporated to manufacture Titanium Dioxide pigment from ilmenite, a mineral abundantly available in the beach of the South Kerala, in collaboration with British Titan Products Limited (now known as Huntsman Tioxide).

The Company which started production at a modest rate of 5 tonnes per day, increased its capacity in stages to the present level of 40-45 tonnes per day. Till recently, Travancore Titanium Products Ltd., was the only unit producing Anatase grade Titanium Dioxide pigment, in India. Travancore Titanium Products, became a State Public sector unit in 1960,with the Government of Kerala owning 97.55% of the shares.

Production of titanium dioxide commenced in the year 1951, and the capacity was raised to 10 tonnes per day in 1960, the year in which the management of the Company was taken over by the Govt. of Kerala. The Company also installed its own sulphuric acid plant to produce acid for captive consumption. In 1963 the capacity of Titanium Dioxide produced was further increased to 18 tonnes per day with a commensurate addition to the sulphuric acid production also. Subsequently, a modern sulphuric acid plant was commissioned in 1996, which utilizes the tail gas recycling DCDA (Double Catalysis Double Absorption) technology. The alkali scrubbing system incorporated therein helps to keep sulphur dioxide emissions well within permissible limits and helps in maintaining a clean environment. (Travancore Titanium Products Ltd., 2018)

6. TRANSFORMERS AND ELECTRICAL KERALA LIMITED

The year was 1963. The Government of Kerala entered into a technical and

financial collaboration agreement with M/s. Hitachi Limited, Japan to set up a fully fledged unit for designing and manufacturing Extra High Voltage Electrical equipments in India. Christened Transformers and Electricals Kerala Limited (TELK), the venture was to revolutionize the electric power equipment field. Located at Angamally, the southern most penisula in the State of Kerala in India, the first product rolled out from TELK in 1966. Starting off with power transformers, it later extended its product range to Instrument Transformers, SF6 Gas Circuit Breakers, Shunt and Series Reactors, Isolated Phase Bus Ducts, Tap Changers etc. TELK gave India, its first 400kV Class Transformer, First 315MVA Auto Transformer and Generator Transformer for India's first 500MW Thermal Unit.

TELK, an ISO 9001 certified company since 1995, has been a pride of the State of Kerala. The fruitful collaboration with global power giant Hitachi Ltd., Japan has enabled TELK to carve out a preeminent niche in the manufacture of EHV equipments and establish itself as a quality supplier in the transformer industry. TELK carries the quality image and ethos of Hitachi, Japan. This could help the Company to establish a brand image of its own. TELK is a synonym for quality in the EHV power field in India and at TELK, quality is a way of life. TELK is an approved high quality supplier to all power utilities in India and many prestigious utilities abroad.

At TELK, quality checks are mandatory at each phase of production. TELK’s testing department is equipped with a multitude of sophisticated testing equipments apart from NABL accreditation for our Transformer Testing Lab w.e.f. 06.06.2011. Every product of TELK goes through stringent quality tests before reaching the customer. Being one of the first Indo-Japanese ventures in the Country, TELK has imbibed ‘Total Quality’ concepts.

TELK realises that customers are their strength and thus service to customers is of highest priority to TELK. Recognizing the importance of customer service,

TELK has set up an exclusive division catering to the timely repair, maintenance, monitoring and servicing of transformers and other vital installations.

TELK first exported its products to Tanzania in 1972 by supplying two 50 MVA, 132 kV Transformers. In the 1990s TELK revamped its export activities and exported transformers to the Sultanate of Oman and 330 kV Gas Circuit Breakers to Nigeria in 1994. This was followed by a number of export contracts executed to various countries such as Indonesia, Malaysia, Nigeria, Mauritius, Singapore, Nepal, and Bangladesh etc. A milestone in TELK's export operations was an order from M/s DUKE FLOUR DANIEL, USA, in 1997, for the supply of 11 power transformers of capacity ranging from 50 MVA to 100 MVA..
A new era in TELK's history has been ushered in the year 2007, when TELK entered into a Business Collaboration & Shareholders Agreement with M/s. NTPC Limited, the largest Power Utility in India. This has paved the way for TELK to augment its efforts for higher orbit of success and growth. By joining hands with NTPC, a Maharatna Company, TELK will be able to attain the path of high growth and will be able to beat competition in the Industry in the highly challenging industrial scenario. By joining a Central PSU which is the principal Power Generation Company in the Country, the demand in the power sector can be tapped to the maximum. TELK is aiming for a prosperous future in the wake of the Joint Venture between Government of Kerala and NTPC Limited and soon will have access to 765kV Class technology and thus will have the right environment to achieve higher turnover and profits. With the reforms in the power sector imminent, TELK is gearing up to face the challenges and opportunities that the market will throw up. (TELK, 2018)

7. KERALA STATE ELECTRONICS DEVELOPMENT CORPORATION LIMITED

Kerala State Electronics Development Corporation Limited was incorporated in 1972 under the Department of Industries, Government of Kerala. The main activities include designing, manufacturing and marketing of various IT / Electronic products / systems.

KELTRON's history is a saga of innovation in electronics. From being a pioneer in 1973, to the role of a trend-setter today, Keltron has been the catalysis for the development of electronics industry in Kerala.

In five years since inception, Keltron had set up several production centres and engaged more than 5,000 people directly or indirectly for the manufacture of electronic goods.

A quarter century later, Keltron set about transforming Trivandrum, the capital city of Kerala, into one of the major electronics hubs of the country.

Today, the city is home to Technopark, the internationally known technology park where thousands of talented young men and women participate in the development of a burgeoning information technology industry.

Thus, Keltron has in effect triggered a revolution that still keeps churning out its benefits to individuals and institutions in different parts of the world, continuing in its quest to innovate products and processes that would add further value to life and to the industry. (KSEDC, 2019)

8. KERALA AGRO MACHINERY CORPORATION LIMITED

Kerala Agro Machinery Corporation Ltd. (KAMCO) was established in the year 1973 as a wholly owned subsidiary of Kerala Agro Industries Corporation Ltd.

(KAIC), Trivandrum, for manufacture of agricultural machinery specifically Power Tillers and Diesel Engines. Subsequently KAMCO became a separate Govt. of Kerala undertaking in 1986. Paid up capital is Rs. 161 lakh Present Net Worth of the Company is Rs. 6014.14 lakh. Total work force at present is 567 Certified for ISO 9001 - 2000 version from September 2002.

At present, KAMCO has five units located at Athani and Kalamassery in Ernakulam District, at Kanjikode in Palakkad District, at Mala in Trichur dist. and at Valiyavelicham in Kannur District. With the present work force KAMCO can produce 8400 Power Tillers & 1200 Power Reapers per annum.

The objectives of the Company are to manufacture in India, either in collaboration with or otherwise or import & trade agricultural machinery like Tractors, Power Tillers, Power Reapers, Combine harvester, Transplanter, Diesel Engines, Pump sets, Implements, accessories and spares thereto. The objectives also include establishment of engineering workshops/repair shops to undertake repairs and servicing of agricultural machinery or other machinery, equipment, implements and tools.

Assembly Unit was established in 1970 at Athani by M/s. Kerala Agro Industries Corporation for the assembly of Kubota Power Tillers in technical collaboration with M/s.Kubota Ltd., Japan, the world's leading manufacturer of Power Tillers and other agricultural machinery. On expiry of the collaboration, KAMCO manufactures power tillers with their own facilities.

KAMCO Power Tillers have become the most sought after Power Tillers in India because of their quality and reliability.

KAMCO's manufacturing facilities include Special Purpose Machines, Specially built General Purpose Machines, and Imported machines. The inspection

facilities include modern inspection & testing equipment .KAMCO have their own Metrology, Calibration & Engine Test Lab.

The following are the main Activities of the Company.

a) Manufacturing and marketing of Agriculture machines like Power Tillers, Tractors, Power Reaper, Diesel Engines etc.

b) Power Tiller produced at Athani & Palakkad units. Major components for Power Tiller are manufactured at Athani and all other components bought out from dedicated Venders in India. There are around 250 vendors now.

c) Kalamassery unit produce Engine for Power Tiller

d) Power Reaper produced at Mala

e) Trading/manufacturing of other farm machines.

(KAMCO, 2018)

9. KERALA AUTOMOBILES LIMITED

Kerala Automobiles Limited (*KAL*) - Incorporated in 1978 as a Government of Kerala undertaking, is set up in the picturesque back drop, 16 kilometers south of Thiruvananthapuram in a tiny village called Aralumoodu, in Neyyattinkara taluk. The Company manufactures Three Wheelers (Diesel, Petrol, LPG & CNG) suitable for passenger and goods traffic in the brand name of KERALA which are considered as the most Eco-friendly vehicles. The present product range comprises of Autorickshaw (Driveaway Chassis & Fully Built), Pickup/ Delivery Van, Pollution free CNG/LPG fitted Auto and Load carriers etc. The strong, highly motivated work force in the Technical and Management cadres are working hand in hand for the progress of the Company. The ancillary units developed by the Company around the factory complex provide livelihood for hundreds of families.

Since commencement of production in 1984, the Company has manufactured and marketed more than 1,00,000 Three Wheelers. KAL has distinguished itself as a force worth reckoning in the Automobile industry in India. The Company has also exported a number of Three Wheelers to Bangladesh, Sri Lanka, Nepal, Sudan, Botswana, Nigeria, South Africa, Madagasker; and Guatemala (Central America). the Company could turn the corner for the first time in 1993-94 and continued to keep the same trend at a higher level. The acceptability of KAL Three Wheelers in the Third World countries speaks for its utility and quality. KAL is also manufacturing sophisticated components to be used in various space programs of ISRO (VSSC, LPSC, IISU).

The Company is getting all kind of support from the Government of Kerala, without which it would not have been possible to achieve the present level of promising state of affairs. KAL was awarded with ISO Certification in 1998 itself and keep hold of the same ever since by updating the quality management system appropriately to conform with the amendments in the ISO Standards. Currently KAL is certified as ISO 9001 : 2008 compliant in recognition to it's strong customer focus, the motivation and implication of top management, the process approach and continual improvement. It is the unflinching faith of our customers, which has powered KAL into the path of progress and looking forward for continued patronage at a higher rank. (Kerala Automobiles Ltd., 2018)

10. KERALA AGRO INDUSTRIES CORPORATION LIMITED

The Kerala Agro Industries Corporation Limited was incorporated in 1968 under the Agriculture Department, one of the Administrative Departments of the Government of Kerala, involved in the process of trading of agricultural machineries and implements, fabrication of farm equipment, implementation of Government sponsored schemes and projects. The Kerala Agro Industries Corporation Ltd.

(KAIC) is a joint venture of Government of India and Government of Kerala. A premier institution in the state promoting mechanization and modern technology in agriculture, setting up of agro based industries, production of value added products, civil construction, infrastructure development, waste management solutions etc. KAIC acts as an implementing agency for various schemes under state and central Governments. (KAIC, 2016)

11. TRAVANCORE SUGARS AND CHEMICALS LIMITED

The Travancore Sugars & Chemicals Ltd. (TSCL), a Kerala Government Company incorporated in 1937 with Registered Office and Factory at Valanjavattom about 7 Kms from Thiruvalla in Pathanamthitta District, Kerala commenced commercial production on 12.11.1948. The Company which had three divisions viz Sugar division, Distillery division and Blending & Bottling division was originally owned by M/s Parry & Co. Government of Kerala (GOK) took over the company in 1974. Due to non-availability of the raw material i.e. sugarcane, the sugar division was closed in the year 1998. The distillery division was manufacturing and supplying arrack to Abkari Contractors and until 1992, the company was enjoying a more or less monopoly status in this activity. The competition arising due to liberalization of arrack purchase after 1992 and the subsequent ban by GOK on production and consumption of arrack Distillery division was also closed. The Company is at present engaged in the manufacture of Indian Made Foreign Liquor(IMFL) only and the products are sold through Kerala State Beverages Corporation Ltd. KSBC a Company wholly owned by Government of Kerala, which is a monopoly procurement Agency of IMFL.

At present major activities of the company is blending and Bottling and sale of Indian Made Foreign Liquor. Apart from this Company is engaged in the manufacture and sale of Denatured spirit, Rectified spirit and Methylated spirit

which are sold to Hospitals and Government/Private Institutions/Research Institutions, Colleges etc.

The major departments are Production department, Finance, Accounts Department, Secretarial, Personnel & Administration Department, Purchase & Stores Department etc. Our product "Jawan Deluxe XXX Rum" is a very popular brand in Kerala with superior quality and competitive price. (TSCL, 2017)

12. SITARAM TEXTILES LIMITED

The Company was started in the year 1903 by the late Shri Balarama Iyer in the name of Sitaram Spinning & Weaving Mill. Initially started with weaving and gradually developed spinning and processing. Initial stages unit was functioning in a better way and gradually Labor and financial problems arises and the unit was closed on various occasion.

In the year 1972, Government of Kerala by Public auction took over the unit. After took over the unit, the name of the unit was changed in the style of Sitaram Textiles Limited and the date of incorporation is 14-02-1975. There after the unit was functioning as fully owned Government of Kerala Undertaking under the administrative control of Industries Department.

The presently unit is functioning Spinning Section only. Licensed Capacity of the unit is 25000 spindles. Installed capacity is 14800 spindles. Total number of employees in the company is 260. (SITARAM TEXTILES LTD., 2018)

13. HANDICRAFTS DEVELOPMENT CORPORATION LIMITED

Handicrafts Development Corporation of Kerala Ltd, a Government of Kerala undertaking, functioning under Department of Industries and Commerce, Government of Kerala, was incorporated in 1968 for undertaking Developmental, Marketing and Welfare activities in the handicrafts sector of Kerala.

The prime focus of corporation is providing a marketing platform for traditional artisans of Kerala and there by uplift their living standard. Corporation through its 19 showrooms under the brand name "Kairali", spread at strategic places all over India, is marketing handicrafts procured directly from the Artisans. SMSM Institute, at Trivandrum is the flagship showroom of the corporation. KAIRALI AND SMSM Institute has a surprising collection of Souvenirs, Mementos and hand crafted Gift articles.

The Corporation has been running a Common Facility Service Centre (CFSC) at Thiruvananthapuram for the benefit of wood based artisans to improve their crafts and also to eliminate drudgery. Many other marketing program such as exhibitions, Craft bazaars and Craft awareness programs are also being pursued by the Corporation to enhance penetration of handicrafts to various strata of society. Moreover, to meet the capital requirements at grass-root levels, the financing schemes for the benefit of the needy craftsmen are being implemented by the Corporation.

The continuing training and developmental activities are being implemented through the assistance from the various Governmental Organizations. (Handicrafts Development Corporation of Kerala Ltd, 2018)

14. KERALA STATE BAMBOO CORPORATION LIMITED

Kerala State Bamboo Corporation Ltd., established in 1971, is fully owned by Government of Kerala. Its main objectives are, to develop & promote industries based on bamboo, reed, cane and rattan, to undertake manufacture and trading of bamboo, reed, cane and rattan products, provide financial, technical, marketing or any other assistance and guidance etc. It is an ISO 9001-2000 certified Company now.

Bamboo/Reeds industry is one of the age-old traditional industries of our

state. Since inception KSBC is endeavoring for the upliftment of the socially and economically backward classes of the society by generating employment and reasonable income for them.

Ochalandra Travancorica reedi or simply reeds is a rare species of bamboo found abundantly in the forests of Kerala. Bamboo mats woven from reeds is very popular in the state and so is bambooply, the resin bonded bamboo mats, which are a good substitute for wood/plywood based applications. Since the plant propagates rapidly and the collection method is by select felling, the ecological balance is not disturbed even if reeds are cut in large numbers. For centuries man has been using bamboo for various purposes. As a natural, renewable resource, bamboo is regaining its popularity in the modern world. (Kerala Bamboo Corporation Ltd., 2017)

15. KERALA STATE CIVIL SUPPLIES CORPORATION LIMITED

The Kerala State Civil Supplies Corporation better Known as SUPPLYCO is the gateway for the 30 million people of the State of Kerala, assuring the much needed food security in a substantive style by supplying life's essentials and reaching out to the rural-poor and the urban-rich alike.

Kerala State Civil Supplies Corpn Ltd is a Private incorporated on 25 June 1974. It is classified as State Govt company and is registered at Registrar of Companies, Ernakulam. Its authorized share capital is Rs. 1,430,000,000 and its paid up capital is Rs. 1,415,600,000. It is involved in Retail sale of food, beverages and tobacco in specialized stores. (The Kerala State Civil Supplies Corporation, 2016)

16. KERALA STATE ARTISANS DEVELOPMENT CORPORATION LIMITED

KERALA ARTISANS' DEVELOPMENT CORPORATION (KADCO), was formed in 1981 with the aim of providing a pivotal role in the socio-economic

betterment of artisans in the State. KADCO provides assistance to the indigent artisans of Kerala, engaged in their various trades by protecting their rightful interests and benefits through numerous well conceived and though tout schemes. It is a Kerala Government undertaking under the aegis of Industries Department, and plays a pivotal role as an enabler in the artisans sector by supporting them in building an ecosystem around artisans who are working in the field of Carpentry, Blacksmithy, Goldsmithy, Coppersmithy, Bell Metal, Pottery, leather products and other artistic works. KADCO has its registered office at Trivandrum, with various regional offices located at Kollam, Ernakulam and Kozhikode. (KADCO, 2018)

17. KERALA STATE PALMYRAH DEVELOPMENT AND WORKER'S WELFARE CORPORATION LIMITED

This is the Corporation was established consequent on the recommendation of the Empowered committee Which examined the report of late Sri.J.S Jesudasan, then Special Secretary (Election & Chief Electron Officer) appointed as Special Officer to examine the feasibility of establishing a palmgur Corporation. The main objects to be pursued by the Company are:

1) To execute scheme for the economic well being of Palmyrah Workers.
2) To establish production centeres, Industrial and marketing units of palmyrah products
3) Palmyrah palm cultivation

The Corporation was registered as a fully Government-owned company on 13th November 1985 under the Companies Act 1956, Shri M. Bhagyanathan Nadar IPS Special officer for the formation of the Company was appointed as the Managing Director –in- Charge on 20.03.1986. Its first Chairman was Shri.P.G Muralidharan, IAS, Commissioner & Secretary (Industries)

Over these years, the company had set up two-facility centre, one at Kottammam in Trivandrum and the others at Kalleppully in Palakkad District.

In 1991, the Corporation started manufacturing soft drink from it Kottamam Facility Centre. Its products are named as palm Lahar, Palm Syrup and Palm Squash. Kottamum centre had also initiated training to Palmyrah workers for manufacturing palm leaf and Palm fiber products.

The Kalleppully centre was set up for processing palm fibre made out of fronds, which are available in plenty in the Palakkad District.

It initiated registration of Palmyrah workers for introducing Insurance Scheme Concessional loans and others Welfare Programme. The Corporation is under the administrative control of the Industries Department. Kelpalm is joining hands with Palmyrah Co-operative Societies and the Department of Agriculture, Social Forestry, Labour Social Welfare etc in the State. (KELPALM, 2018)

18. KERALA SHIPPING INLAND NAVIGATION CORPORATION LIMITED

KSINC (Kerala Shipping & Inland Navigation Corporation Ltd) is the pioneer of inland navigation in the Kerala waterways. It is a Government of Kerala undertaking, created by the union of the Kerala Inland Navigation Corporation (KINCO) established in 1975, and the Kerala Shipping Corporation (KSC) established in 1974. Barge operations are the forte of KSINC. It also owns two yards for the construction and maintenance of small vessels. KSINC's impeccable history stands testament to its high standards of excellence in every aspect of building, maintaining and operating vessels catering to a wide range of customer requirements. And now KSINC own cruise vessels the premier Sagararani (1 & 2) and the exclusive luxury cruise, Nefertiti take centre stage.

KSINC aims to be a truly unique organization in pursuit of the highest standards of excellence. KSINC maintains exemplary ethical and professional standards with due regard for environmental safeguards while keeping clients satisfied. KSINC aims to be a truly unique organization in pursuit of the highest standards of excellence. KSINC maintains exemplary ethical and professional standards with due regard for environmental safeguards while keeping clients satisfied. (KSINC, 2019)

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CHAPTER V

PERFORMANCE ANALYSIS OF PUBLIC SECTOR ENTERPRISES IN KERALA - A POST 1991 ANALYSIS

5.1 Introduction

Performance analysis of firms or public sector enterprises for that matter has been one of the most researched topics. There is no denying about the need for efficient performance of the public sector enterprises for social welfare. There has been many studies to undertake the performance analysis of public sector enterprises in Kerala as explored in chapter two. From the extensive literature review, however, it is observed that there have been very few studies concentrating on the performance of wholly state owned enterprises. The existing studies were also conducted prior to 1990s. Most of the studies also lack formal econometrics techniques to understand the performance of the individual firms over the time. Against such a backdrop, the present study seeks to evaluate the performance of 18 selected wholly state owned PSEs in Kerala for the period 1990-2014. The study conducts trend analysis and descriptive statistics to understand the nature of the data. The correlations among the selected variables are also calculated using Pearson's correlation coefficient along with significance. The study also includes kernel density (K-density) estimation to understand the concentration of the enterprises in different levels of profit and return on investment over the years to identify the changing dynamics of the above mentioned variables. Finally, the study uses panel data regression models to estimate the firm specific and time specific factors affecting the performance analysis of the selected firms. The empirical analyses are performed using popular statistical packages like R, STATA and MS-Excel.

5.2 Trend Analysis

This section is an attempt for the trend analysis to recognize how the variables have performed throughout the study period. Hence, it is desirable to check the trend before entering into any analysis. It gives an opportunity to understand the movement and direction of variable along with time. The following figures will depict the trends of all variables for all the public sector enterprises included for estimation.

(i) Kerala Financial Corporation

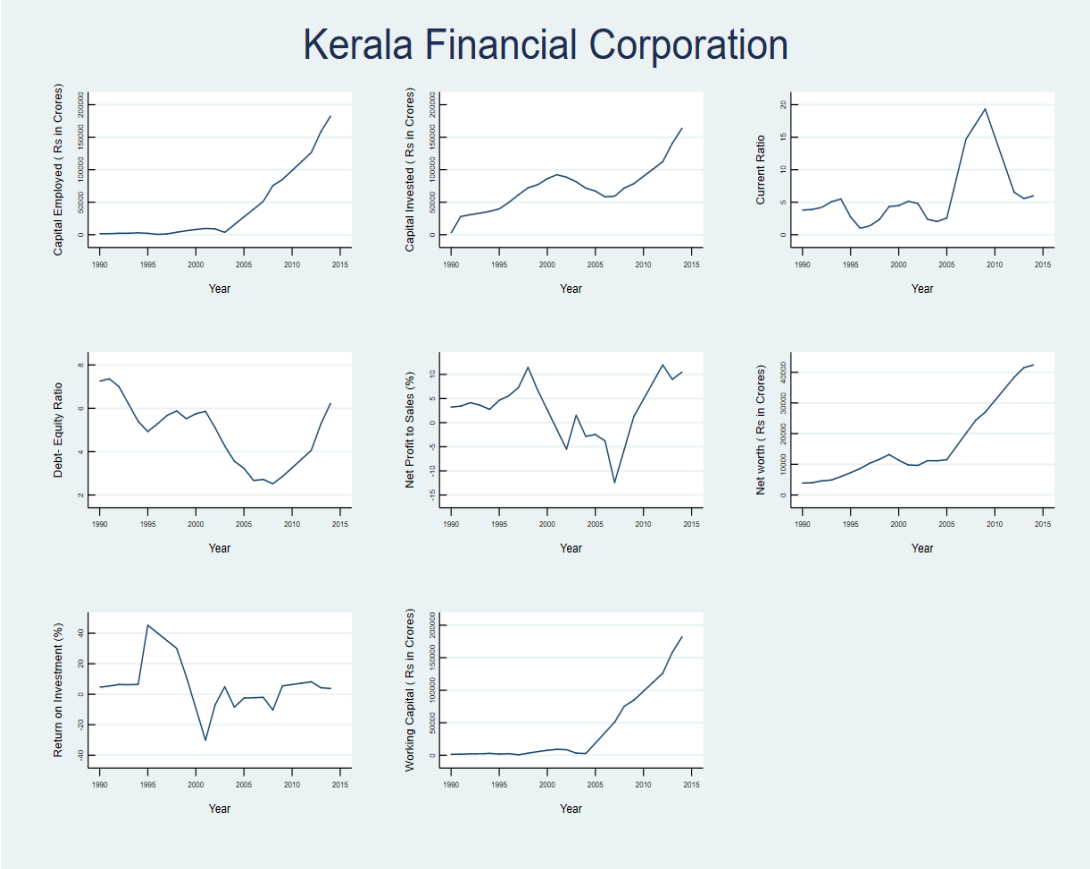

Figure 5.1

From the figures, it can be observed that most of the financial indicators have been rising over time. Most of the indicators also registered a dip in early 2000's

after which they have started rebounding. Current ratio has fallen off late though it is still good might be due to diverse investment opportunities KFC has ventured to in the recent years. The net profit also has been doing well recently. Return on investment which dipped to negative figures have also improved and is positive. There is a steady increase in the rise of capital employed and capital invested both pointing that the company is performing satisfactorily.

(ii) Kerala Tourism Development Corporation

Figure 5.2.

The trend analysis of KTDC presents a different picture. Though capital employed, capital invested and net worth presents a steady increase after 1990's, the financial and operational performance variables have been less constant. DE ratio can be seen to fall over the years and is less than the ideal range. Current ratio which

measures the short term financial position of the firm also fell from a peak in the early 2000's to a less than ideal level. The preliminary trend analysis presents a less than satisfactory performance of the enterprise.

(iii) Kerala Ceramics Limited

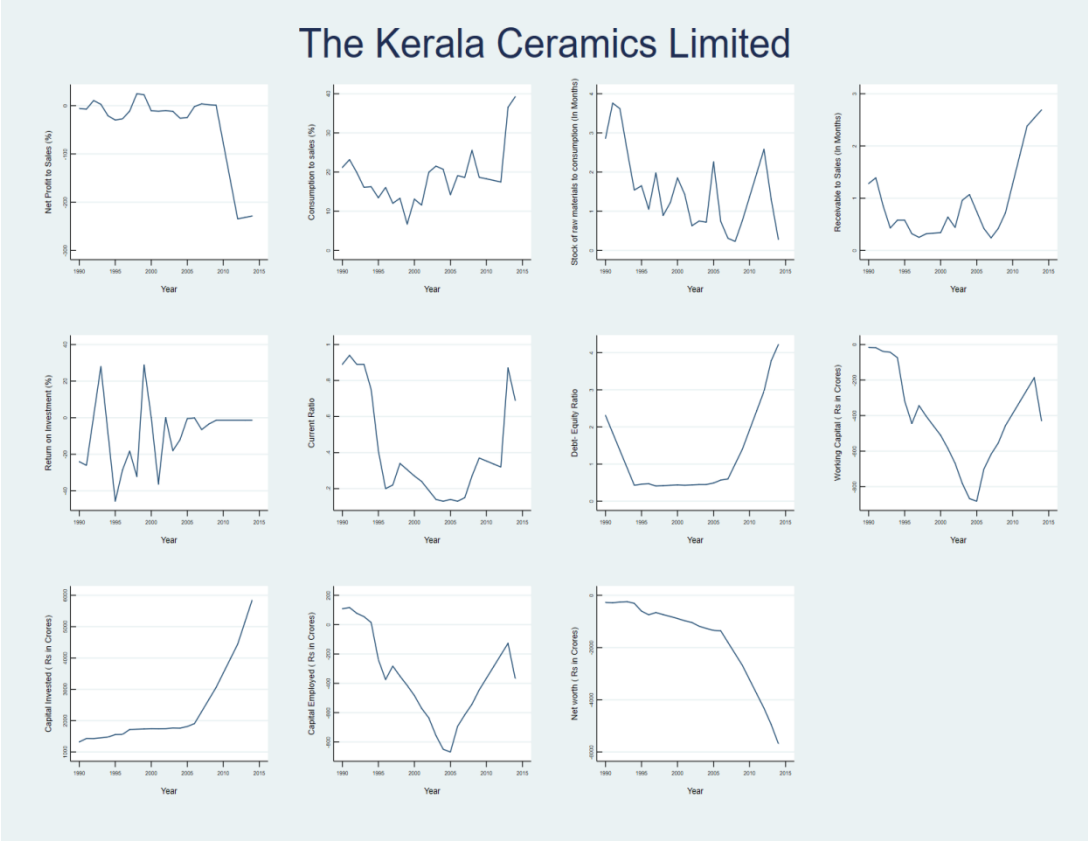

Figure 5.3

The trend analysis of Kerala Ceramics limited also reveals some interesting observations. Though the capital employed and capital invested are rising over the years, the Net profits registers continuous fall over the years especially. It is also interesting here to note that however DE ratio has risen steeply over the years. This means that the KCL is increasingly being financed by debt and not owners funds. The less contribution of owner's capital might be one reason for the inefficiency of the enterprise. The higher than optimal current ratio implied the company has

resources to pay off its short term obligations but the excess fund is not properly utilised.

(iv) The Kerala Minerals and Metals Limited

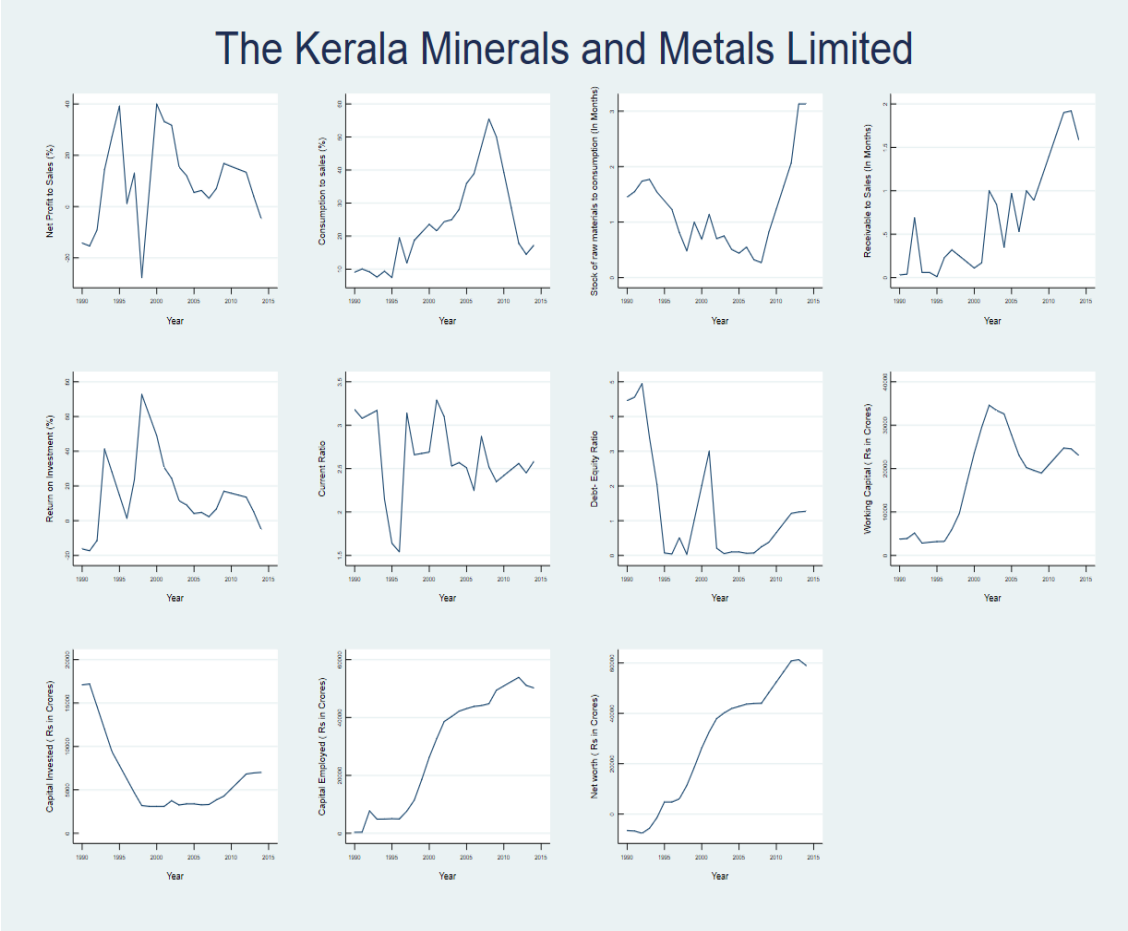

Figure 5.4

Coming to the case of KMML, it is promising to see the capital employed continuously rising. However, the rise of capital invested has not caught up with the capital employed implying that the enterprise off late is financed by debts than equity. Net worth is increasing and current ratio is stable and close to the ideal levels. Net profit to sales and ROI however are on the negative territory which is a concern. The interesting thing here is the fall of consumption to sales and the

increase of stock of raw materials to consumption essentially pointing to low sales which could be the reason for the low net profits and return on investment.

(v) Travancore Titanium Products Limited

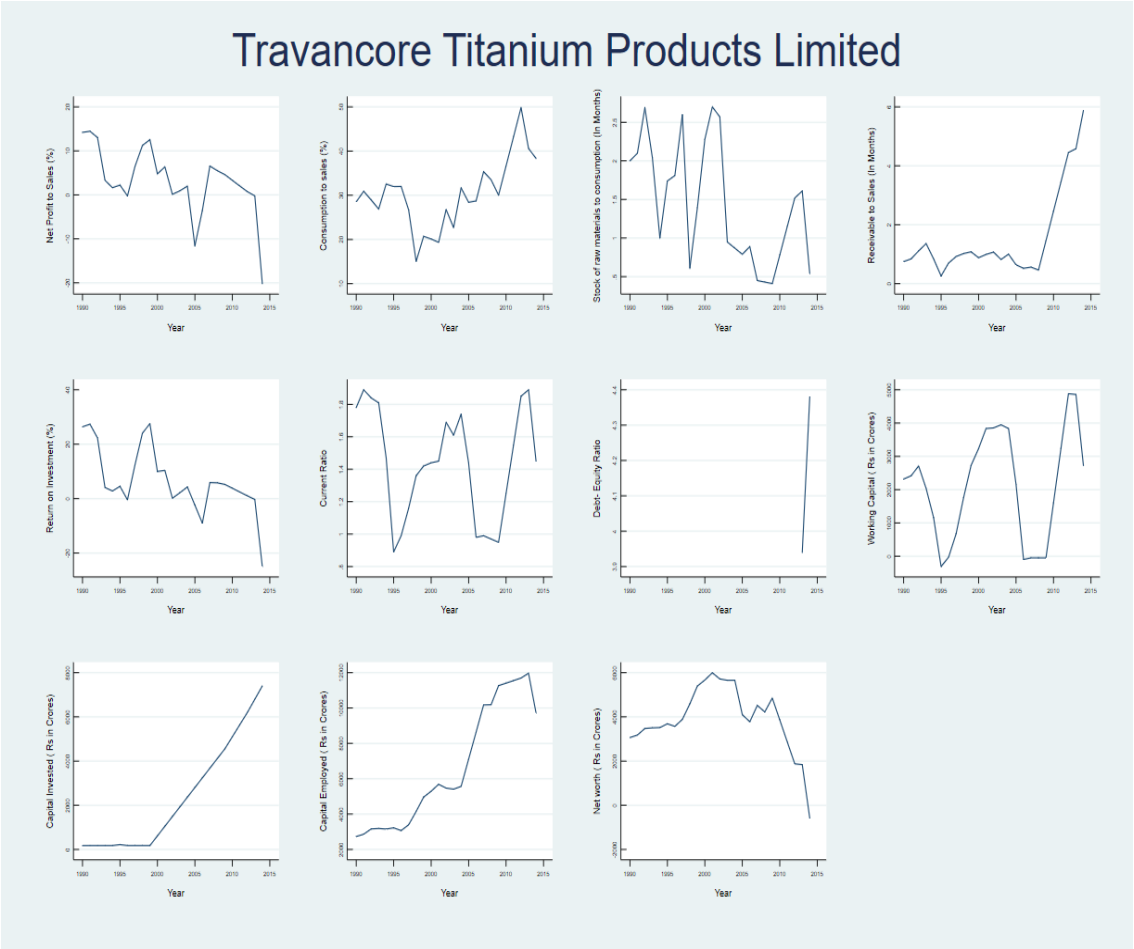

Figure 5.5

The net profit to sales figure of TTPL presents a dismal picture as the figure continues to plummet especially after 2010. On the contrary, capital employed keeps rising along with capital invested though the later has not caught up with the former. The data of DE ratio albeit only for later years also shows a rising trend signifying the rise in debts compared to equity. The return on investment is also in the negative territory which is a cause of worry.

(vi) Transformers and Electrical Kerala Limited

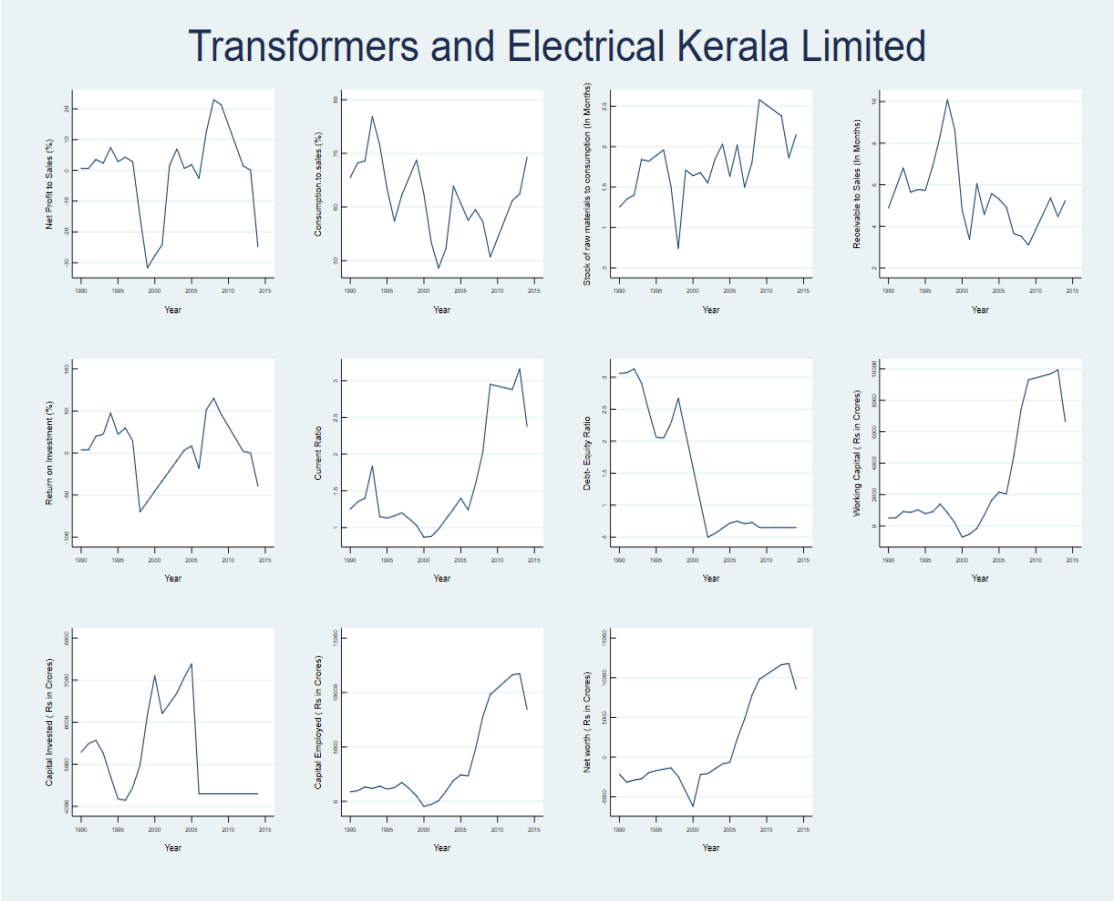

Figure 5.6

Like other public sector enterprises, TEKL also has net profit in the negative territory. However, DE ratio is also falling and is below the optimum ratio. This when read along with the fact that the capital invested keeps falling conveys the investors are not optimistic or happy with the performance. Coupled with this, stock of raw materials has a rising trend while receivables turnover ratio has fallen pointing to low operational efficiency in collection of accounts receivables or credit sales. The above mentioned factors might be the reason for the deteriorating net profit and return on investment of the company.

(vii) Kerala State Electronics Development Corporation

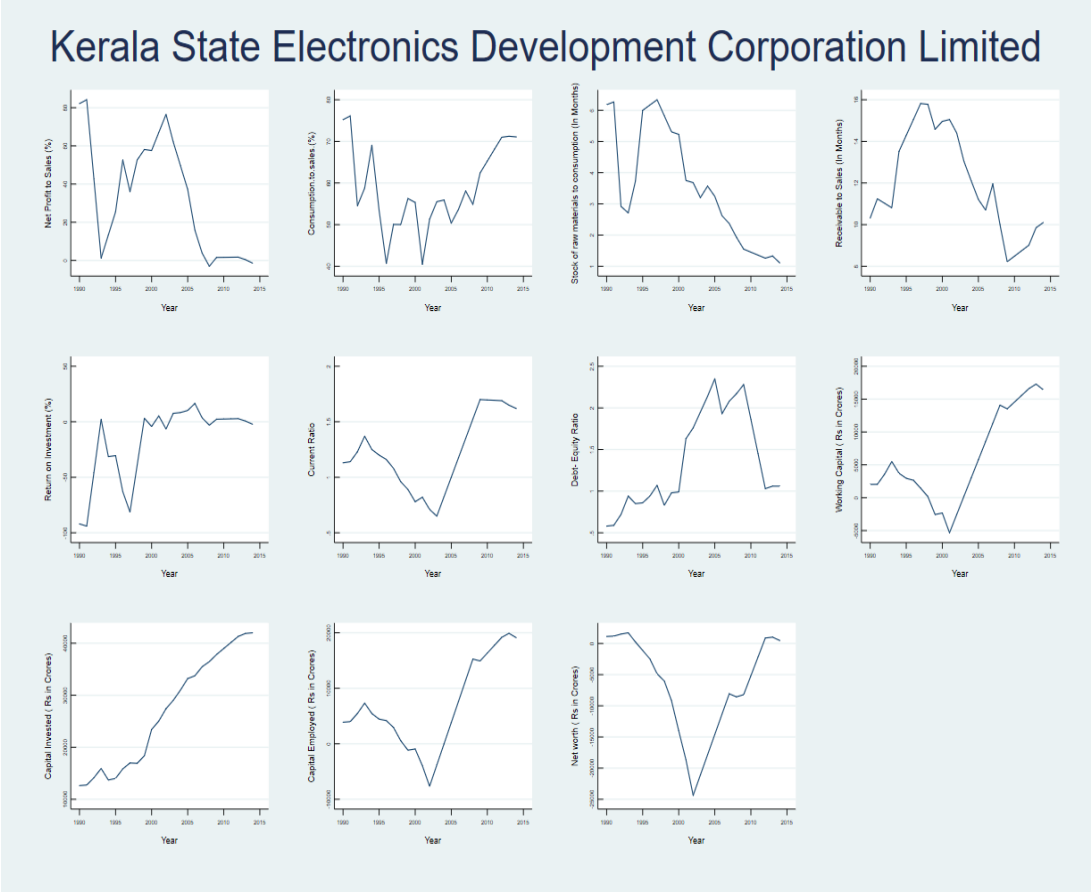

Figure 5.7

Trend analysis of KEDCL shows a similar picture as above. Net profit is down to negative levels while return on investment just lingers about zero. Current ratio and DE ratio are near the acceptable levels while company has good working capital suggesting it short term operational and financial efficiency. The concern here however is the falling stock of raw materials to consumption ratio and receivables turnover ratio which are on a declining trend. Capital employed and capital invested shows a rising trend which is rather promising.

(viii) Kerala Agro Machinery Corporation Limited

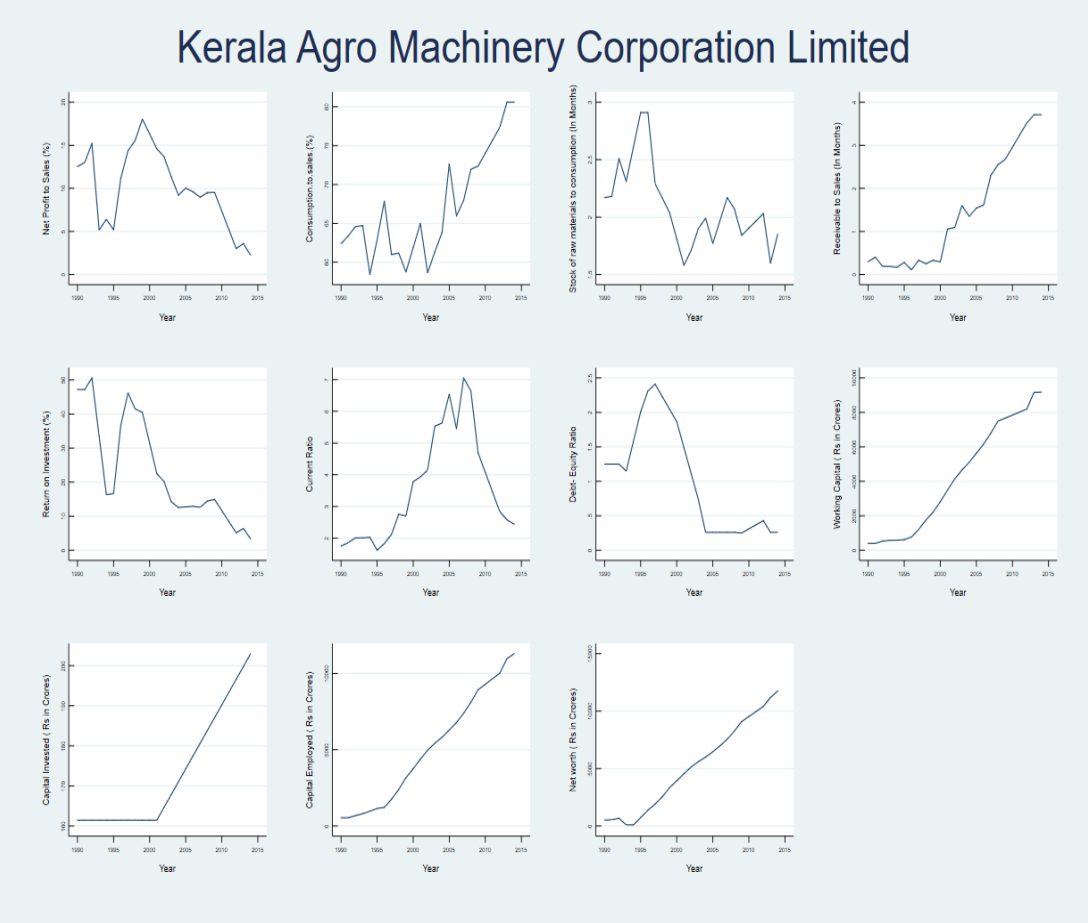

Figure 5.8

The trend analysis of KAMCL presents a different picture. Though not very impressive, the net profit and return on investment are both positive in spite of negative trend off late. Current ratio has also declined over the years and is within the vicinity of acceptable levels. DE ratio has declined and is less than the acceptable level of one. The capital employed and capital invested rises over time and is a positive sign. Working capital also is seem to rise over time. Overall, KAMCL seems to do well in most of the indicators of financial and operational performance.

(ix) Kerala Automobiles Limited

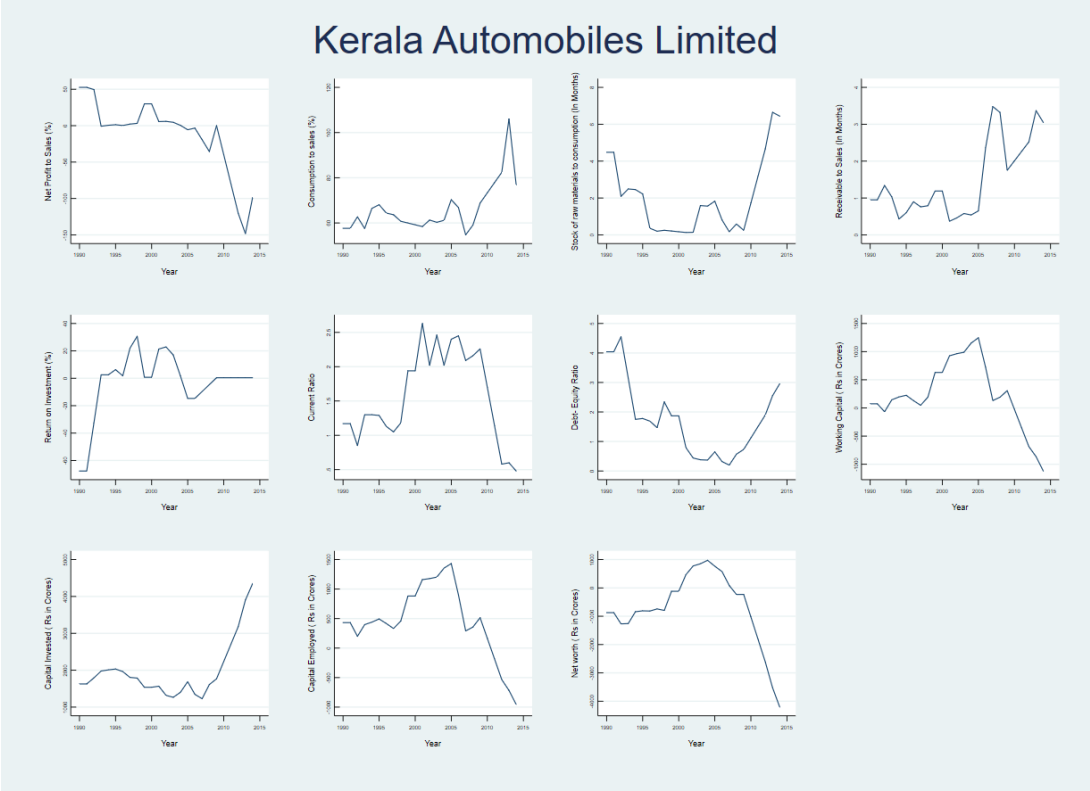

Figure 5.9

Kerala Automobiles Limited'snet profit has declined drastically to the negative levels though it shows signs of reversing the trend. The return on investment has picked up from the negative levels to stay around the zero levels. Add to this, the net worth has also plummeted and remains negative implying more liabilities than assets. Working capital is also negative which again paints a dismal short run liquidity position. The current ratio is also far from satisfactory levels and has a declining trend. The only positive is the better receivables turnover ratio.

(x) Kerala Agro Industries Corporation Limited

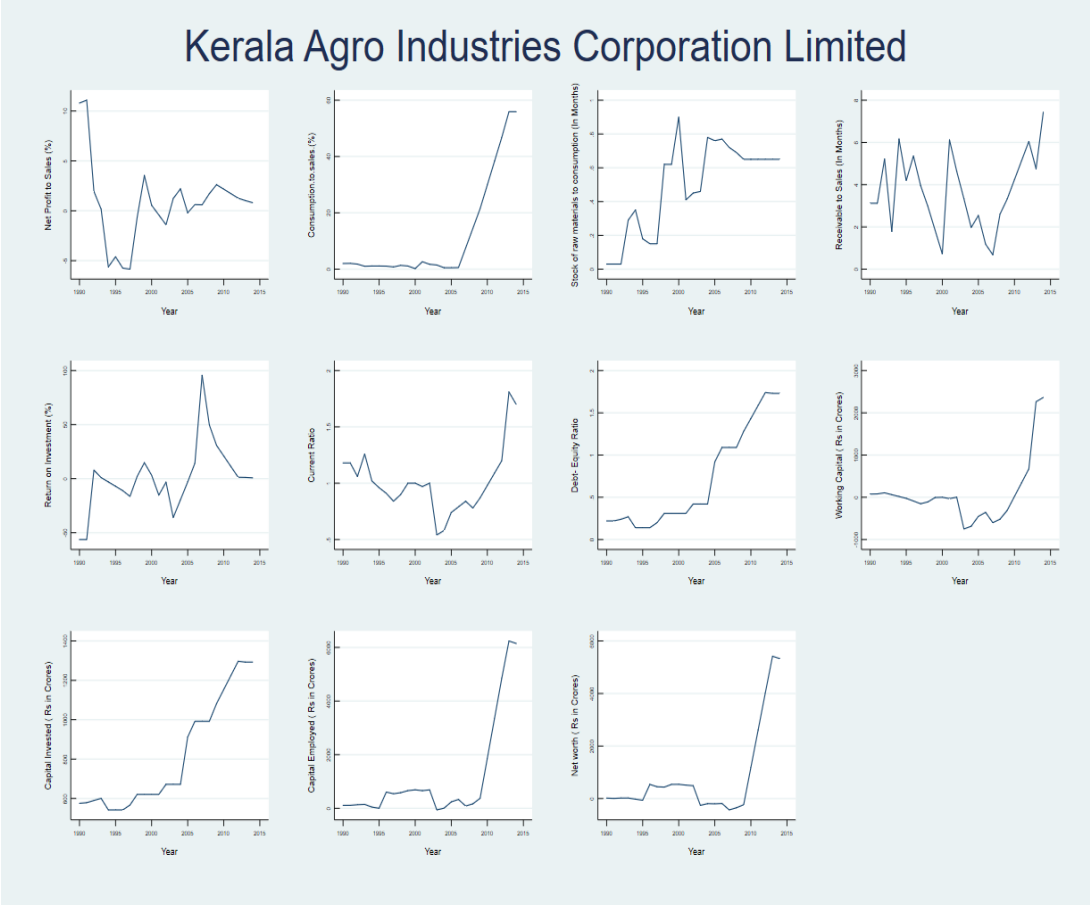

Figure 5.10

From the figure it can be seen that consumption to sales ratio and receivables turnover ratio are on a positive trend. The good current asset ratio and DE ratio also signify the short term liquidity position and leverage of the firm. On the other hand, capital employed and capital invested also keep rising which mean much of the capital is sourced from debtors. The net profit after a decline has picked up and is now positive which signs a revival. The return on investment has declined and is around zero which is a concern.

(xi) Travancore Sugar and Chemicals Limited

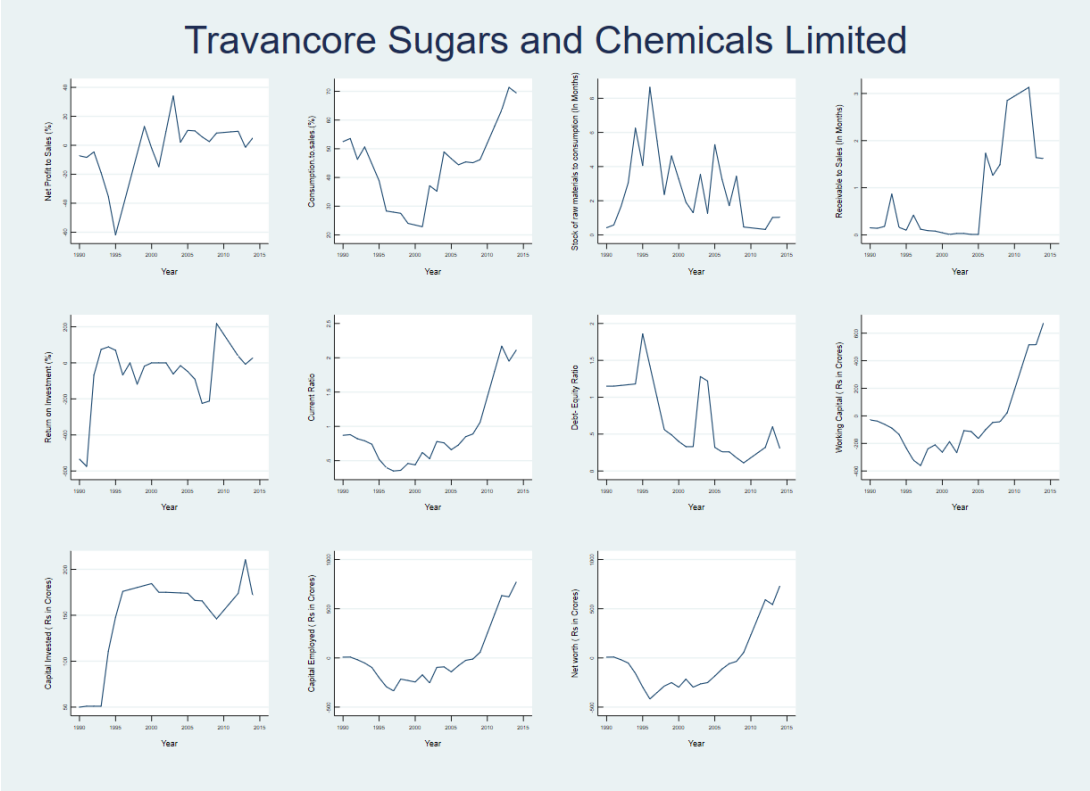

Figure 5.11

The trend analysis of TSCL shows that the profits and return on investment had picked up from negative levels and has lingered around zero. Receivables turnover ratio has been impressive though has declined in the recent past. DE ratio has fallen from the acceptable levels to less than acceptable levels. The bright spot however has been the rise in capital employed and capital invested. The net worth also has been on a rising trend which is a positive thing. Overall, the company seems to be on a revival path.

(xii) Sitaram Textiles Limited

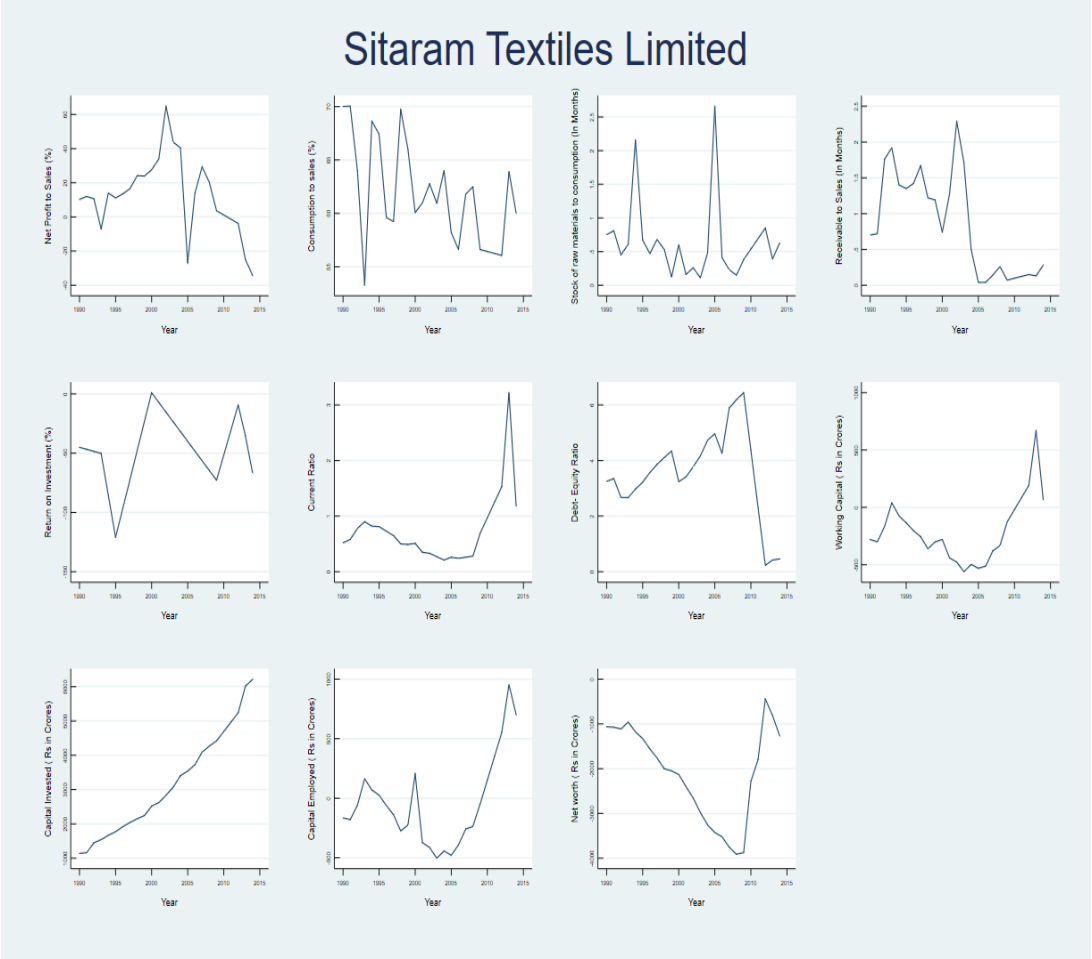

Figure 5.12

From the above figures of STL, it could be observed that both DE ratio ad current ratio has fallen below the accepted levels. Net worth though has picked up since the 2007-08 crisis has again started to decline. The worrying thing however, as is the case with the most public sector enterprises, is the negative net profit to sales and the return on investment. The only positive here is the positive working capital which indicate the short term financial position albeit a declining trend. All most all of the indicators are on a declining trend causing worry.

(xiii) Handicrafts Development Corporation Limited

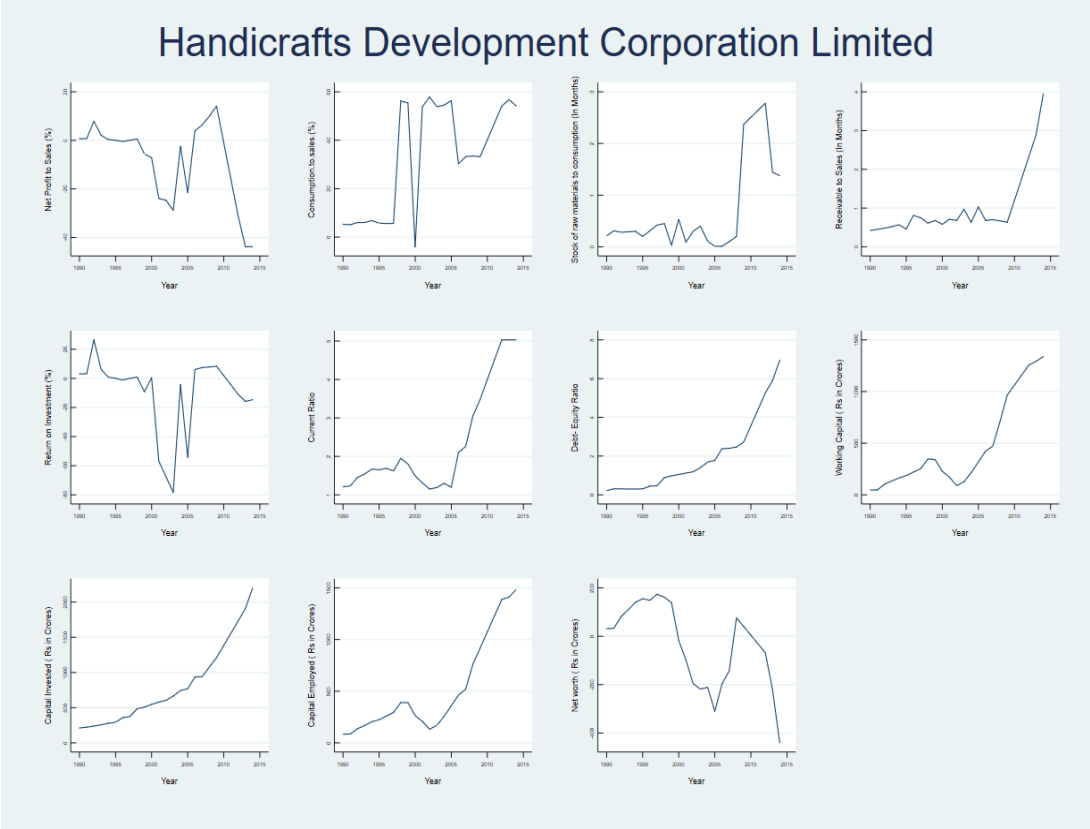

Figure 5.13

The trend analysis of HDCL presents no different picture as compared to other PSEs. Both net profit and return to investment are negative though return on investment has shown signs of improvement in the past few years. Though working capital growth has been impressive, the corresponding rise in DE ratio is not a good sign as it shows rise in debt over owner's contribution. This along with a rise in capital invested can be interpreted as a rise in debt as primary source of fund for the enterprise which may affect its long term solvency position. The receivables turnover ratio however is high indicating operational efficiency in terms of collection of accounts receivables.

(xiv) Kerala State Bamboo Corporation Limited

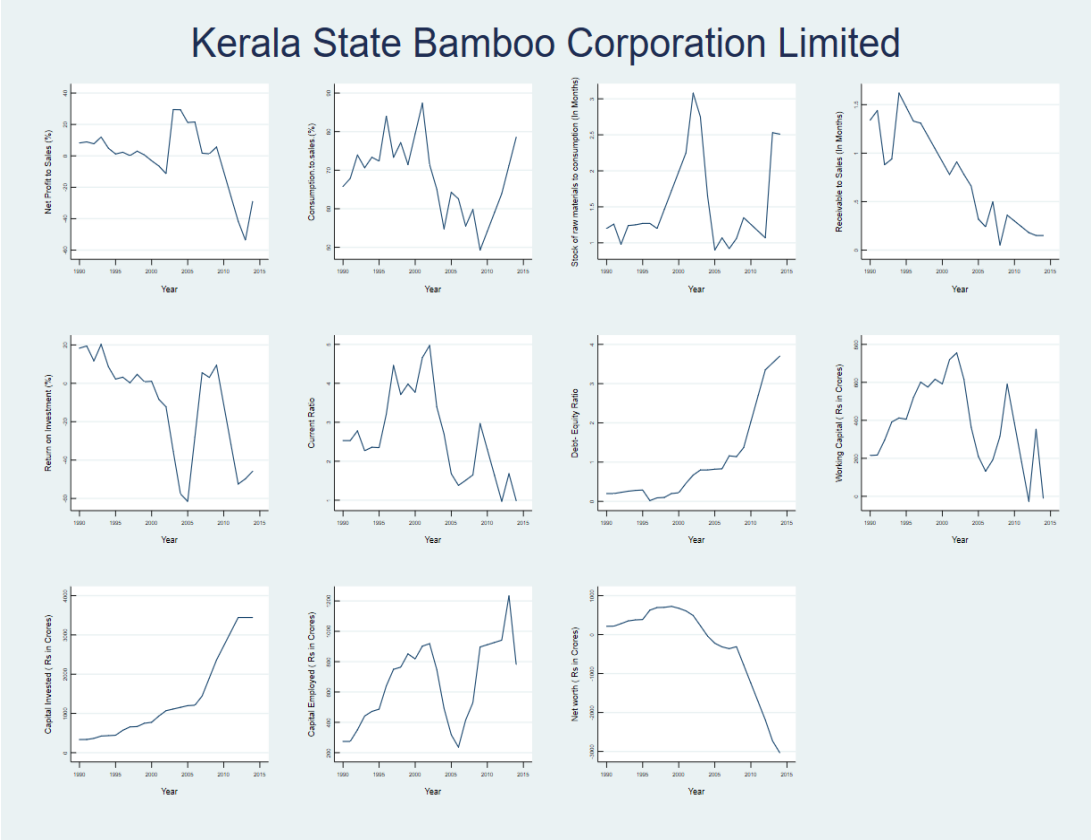

Figure 5.14

The figures from trend analysis of KSBCL again shows that both the net profit and return on investment are negative. This connotes into a declining net worth of the enterprise as well. The DE ratio keeps on rising and is well above idea levels implying more of debt financing of the enterprise. However, current ratio which indicates short term liquidity position of the enterprise is very low and is a cause for concern. This is true with working capital also which indicates the short term financial health of the enterprise. Along with the dismal performance in the financial indicators, the receivables turnover ratio which indicates the efficiency in collection of accounts payable is also very less indicating an operational inefficiency as well.

(xv) Kerala State Civil Supplies Corporation Limited

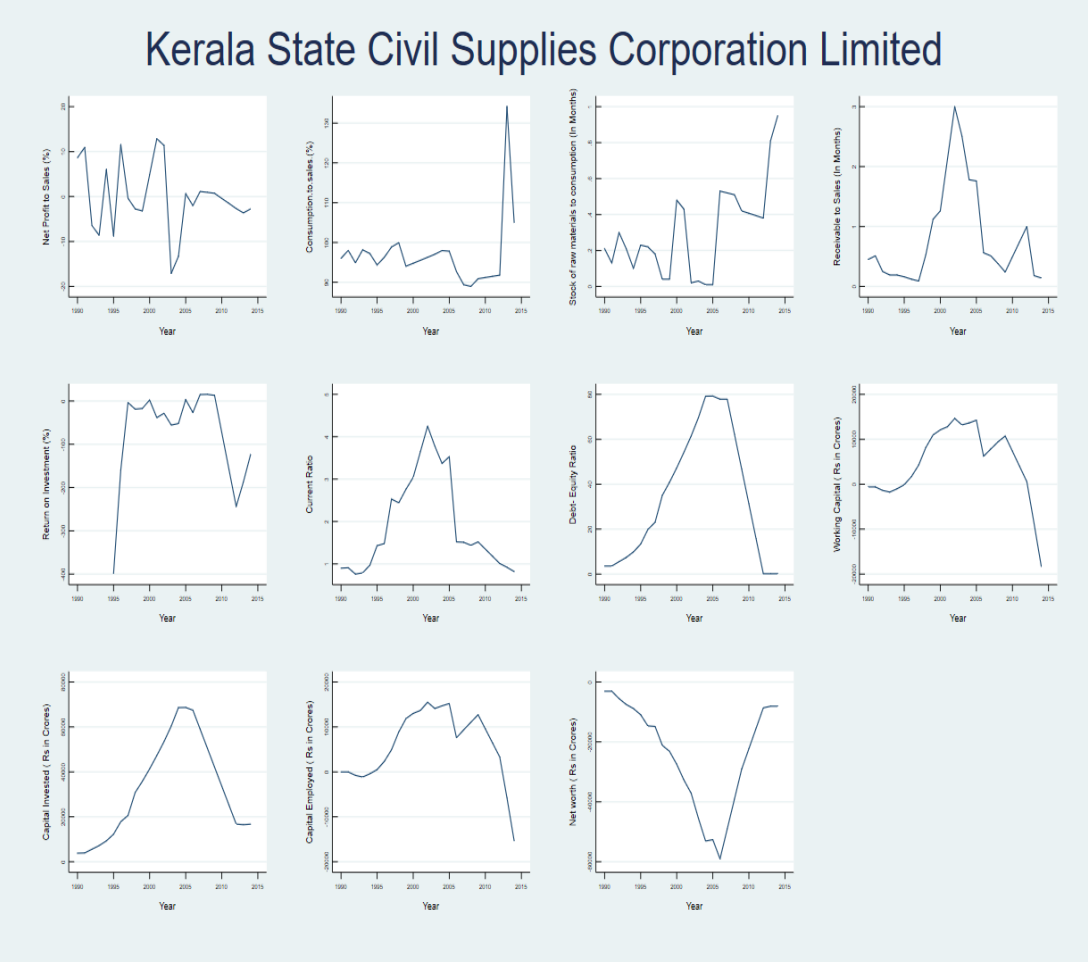

Figure 5.15

Trend analysis of KSCSCL is also on the similar lines of the other public sector enterprises included in the study. As is the case with the most PSEs, both the return on investment and net profit are negative. Current ratio and DE ratio are also on the lowest levels and much below the accepted levels. The positive sign however has been the rise in net worth after a decline in the early 2000's.

(xvi) Kerala State Artisans Development Corporation Limited

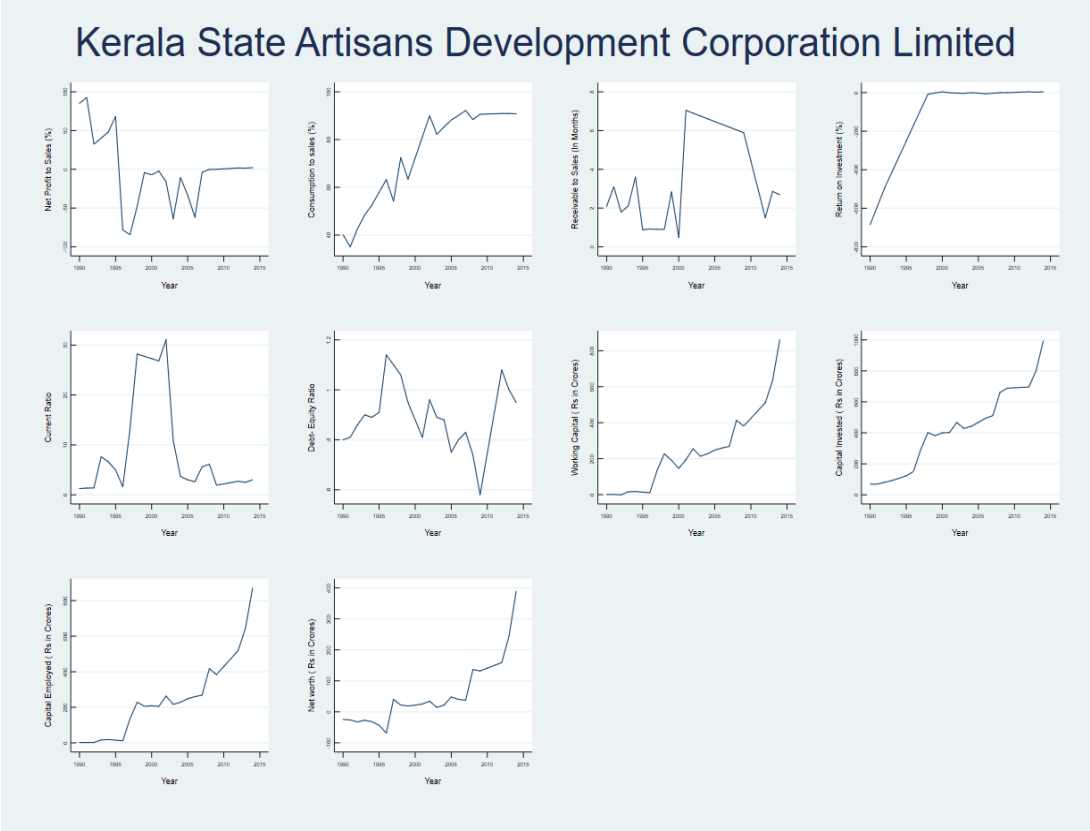

Figure 5.16

Trend analysis of KSADCL reveals that it is one of the very few companies included in the analysis which shows positive trend in most of the indicators. The capital employed and capital invested rise over time along with the working capital and net worth indicating a strong short term and long term financial position of the company. The flip side however is the negative return on investment and net profit which has been the case with most of the enterprises included in the studies baring a few. Receivables collection period however has decreased considerably indicating an improvement in one of the indicators of operational efficiency.

(xvii) Kerala State Palmyrah Development and Worker's Welfare Corporation Limited

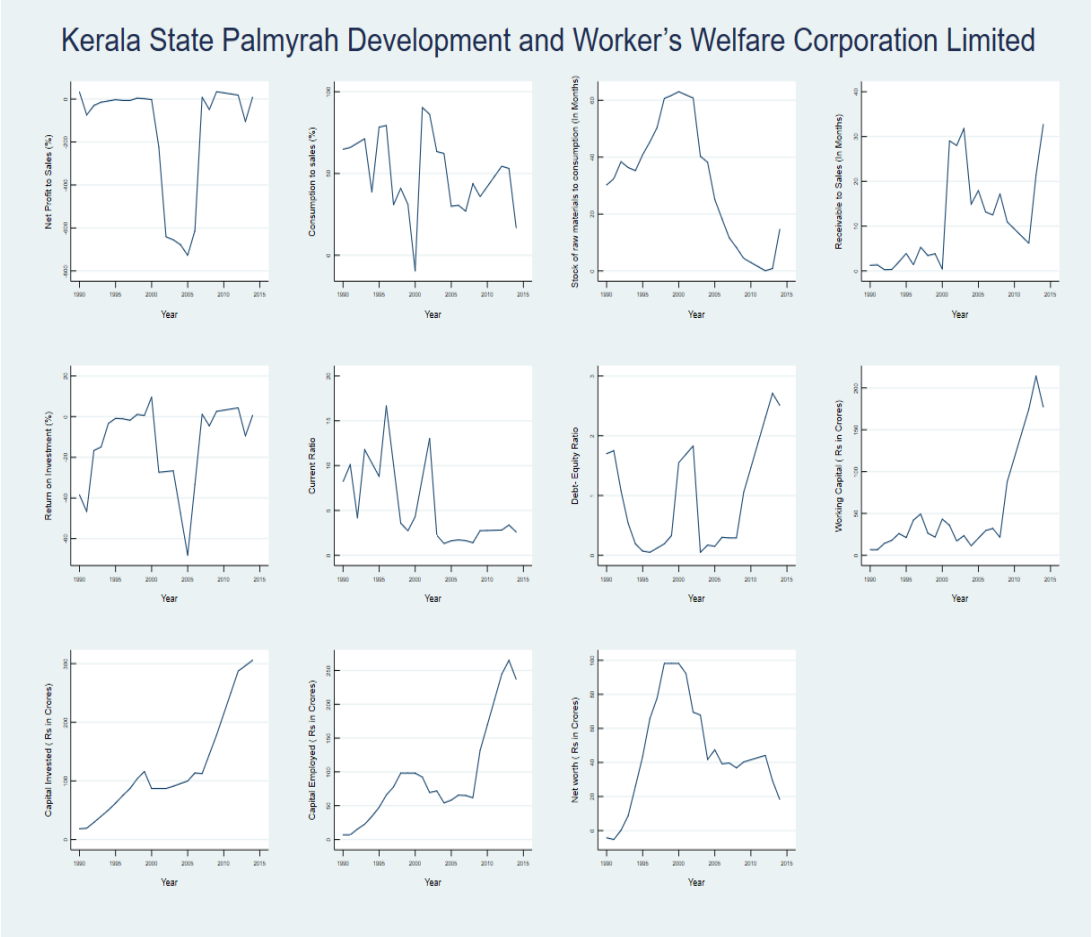

Figure 5.17

The trend analysis of KSPDWWCL also revels the lingering of net profit and return on investment around zero which is not at all impressive. However, the fact that the net profit has risen from extreme low levels is encouraging. Current ratio is less than accepted levels and indicate about a short term liquidity crunch while the DE ratio is rising off late which indicates that the firm is more dependent on debt financing for its investment decisions. The falling net profit in the last few years is another concern for the enterprise along with falling sales.

(xviii) Kerala State Inland Navigation Corporation Limited

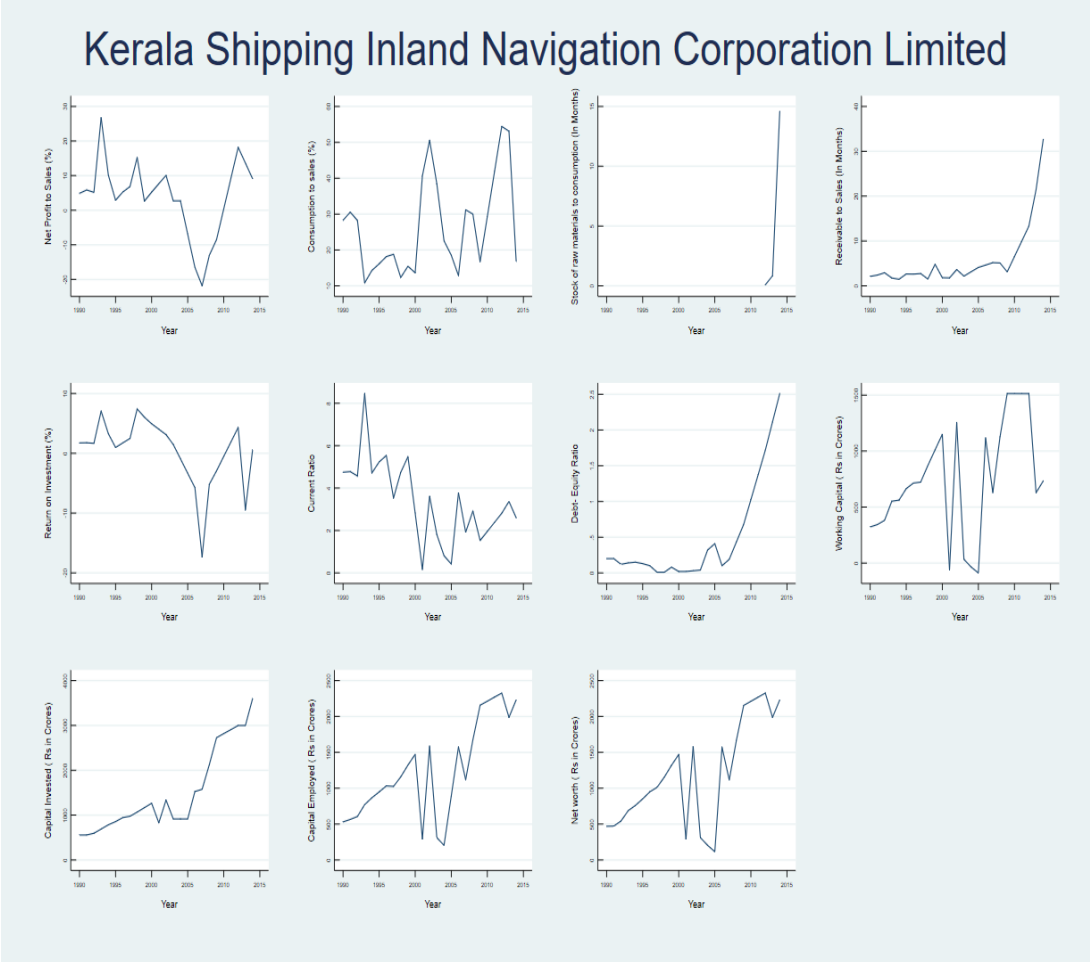

Figure 5.18

The trend analysis of KSINCL is rather puzzling. The increase in net worth with a fall in net profit, return on investment and DE ratio is contradictory as the increase in DE ratio means an increased liabilities over assets while falling net profit and return on investment tends to erode the resources of the enterprise. It can also be inferred that the company is more debt financed as the DE ratio rises along with the capital invested. This shows the confidence of the investors but might cause a problem for their long term solvency position. The operating inefficiency can also be spotted as the collection period for receivables has risen in the past few years along with stock of finished goods.

5.3 Descriptive Statistics

This section deals with the descriptive statistics including mean, maximum and minimum values, Variance, Skewness and Kurtosis for all variables incorporated in the empirical analysis. Using 25 number of observations spanning from 1990 to 2014, the study compares these test statistic among the underlying variables.

Table 5.1

Descriptive Statistics of the Variables

Variable	*Observations*	*Mean*	*S.D*	*Median*	*Minimum*	*Maximum*	*Skewness*	*Kurtosis*
NW	450	-1.83	92.6	0.26	-590.26	423.92	-1.73	14.53
CE	450	42.8	160.65	5.43	-153.58	1824.02	7.67	66.68
CI	450	88.56	203.18	15.97	0.18	1637.1	3.68	16.05
WC	450	34.27	159.43	2.23	-182.79	1820.62	7.92	69.85
DER	426	3.41	10.5	0.96	0.01	79.24	5.68	33.3
CR	449	2.69	4.17	1.52	0.01	31.05	4.41	22.13
ROI	432	-23.9	95.35	0.18	-685.05	218.35	-3.95	18.25
NPS	449	-11.77	84.27	1.88	-727.06	89.02	-6.33	44.58
RS	422	1.47	4.26	0.85	-31.7	22.98	-2.37	23.95
SFGS	402	3.63	9.92	1.24	0.01	62.99	4.63	21.51
SRMC	399	38.53	35.17	40.65	-9.63	227.76	0.55	0.51
CS	401	17.38	24.06	6.73	-84.4	92.6	-0.04	1.87

The above table presents the descriptive statistics of all the variables included in the study. The above summary statistics are calculated for the pooled data of all the companies. The descriptive statistics for the individual companies are given in the appendix. From the table it could be observed that three important financial indicators viz. Net Worth, Return on Investment and Net Profit to Sales are

all negative. This indicates poor performance of all the selected enterprises in the study. Apart from lower negative average, they also have large standard deviation indicating larger dispersion among the PSEs for the above mentioned variables. Most of the variables except SRMS and CS are platykurtic i.e. are having slimmer tails. As expected, NW, NPS and ROI which has negative average mean are also negatively skewed indicating a larger proportion of enterprises in the negative territory for these variables.

5.4 Correlation Analysis

This section covers the correlation matrix of the variables under consideration for empirical analysis, which is evidently reported in the Table 5.2. We use Pearson's method of correlation to find the coefficient of correlation among all macroeconomic and financial development variables. The positive and negative coefficients indicate a positive and negative association among variables respectively. The diagonal elements indicate the correlation of variables with itself and the off diagonal elements depict the relationship with other variables. The correlation analysis is taken as a preliminary step for the selection of variables for further extension of the econometric estimations.

From the table 5.2 it can be understood that Net worth is positively and significantly correlated with capital employed (CE), working capital (WC), current ratio (CR), return on investment (ROI) and consumption to sales (CS). It is also negatively related with debt-equity ratio (DER) and stock of raw materials to consumption (SRMC). Capital employed and capital invested are positively and highly correlated as one would expect. Working capital is also positively correlated with net worth (NW), capital invested (CI) and capital employed (CE). DER is positively correlated with CE and CI as expected. As it goes, current ratio and debt-equity ratio are negatively correlated though not significant. Current ratio is

however positively correlated with NW, CE, CI and WC. Return on investment (ROI) however if fount to have significant correlation only with net worth which is puzzling. The most puzzling observation however, is the absence of correlation of net profit to sales (NPS) with any other variables. Similarly receivables turnover ratio is also found to have no significant correlation with any other variables. This is not surprising. Stock of finished goods to sales (SFGS) is having significant positive correlation with CR and negative correlation with CI and NPS. Stock of raw materials is positively associated with CE, CI, WC, DER, CR, ROI and SFGS and negatively correlated with NW. Consumption to Sales (CS) on the other hand is correlated with SFGS and NW positively and negatively with DER, NPS and SRMC.

The table is calculated for the pooled data and corresponding correlation matrix figure is also presented below. Correlation table and matrix for individual enterprises are included in the appendix.

Table 5.2: Correlation Matrix of Variables

Variables	*NW*	*CE*	*CI*	*WC*	*DER*	*CR*	*ROI*	*NPS*	*RS*	*SFGS*	*SRMC*	*CS*
NW	1											
CE	0.45***	1										
CI	0.07	0.75***	1									
WC	0.44***	0.99***	0.74***	1								
DER	-0.73***	0.12*	0.43***	0.11*	1							
CR	0.18***	0.23***	0.14**	0.24***	-0.01	1						
ROI	0.12*	0.08	0.05	0.07	-0.02	0.06	1					
NPS	0.01	0.05	0.08	0.04	0.03	-0.03	0.03	1				
RS	0.06	-0.03	-0.09	-0.02	-0.02	0.09	0.08	0	1			
SFGS	0.01	-0.07	-0.1*	-0.06	-0.08	0.47***	0.01	-0.37***	0.06	1		
SRMC	-0.32***	0.14**	0.33***	0.2***	0.32***	0.27***	-0.19***	0.01	0.03	0.11*	1	
CS	0.23***	0.08	0.06	0.06	-0.12*	-0.03	-0.05	-0.14**	-0.09	0.27***	-0.48***	1

Note: '*', '**' and '***' indicates significance at 10%, 5% and 1% respectively.

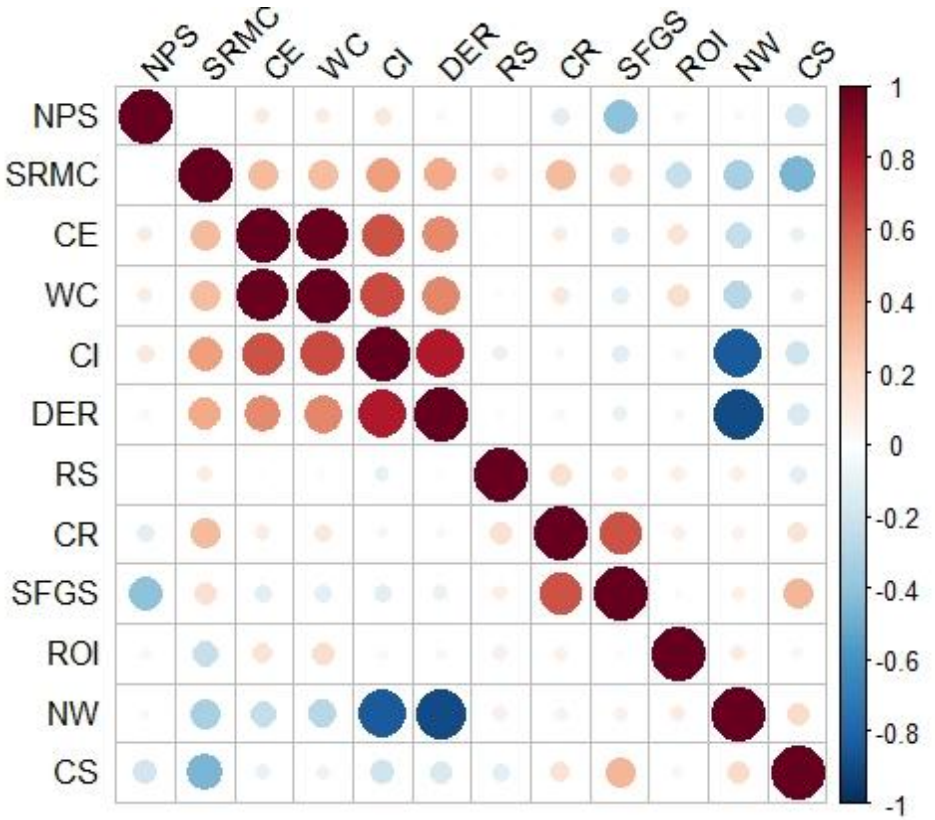

Figure 5.19: Correlation Matrix of the Variables

5.5 Kernel-Density Analysis

This section presents the Kernel-Density (KD) analysis of two main variables of interest, viz. net profit to sales (NPS) and return on investment (ROI). The estimation technique help to identify the concentration (%) of particular values in the total distribution. We use KD estimation for the above mentioned variables over the years of the study at a five year gap to track changes in the dynamics of the variable. It will help us to understand the extent of negative profits and the impact of one or two companies on the overall figures. KD estimation being a non-parametric estimation technique need not assume fixed structure and parameters and is estimated using all the data points of the variable of interest.

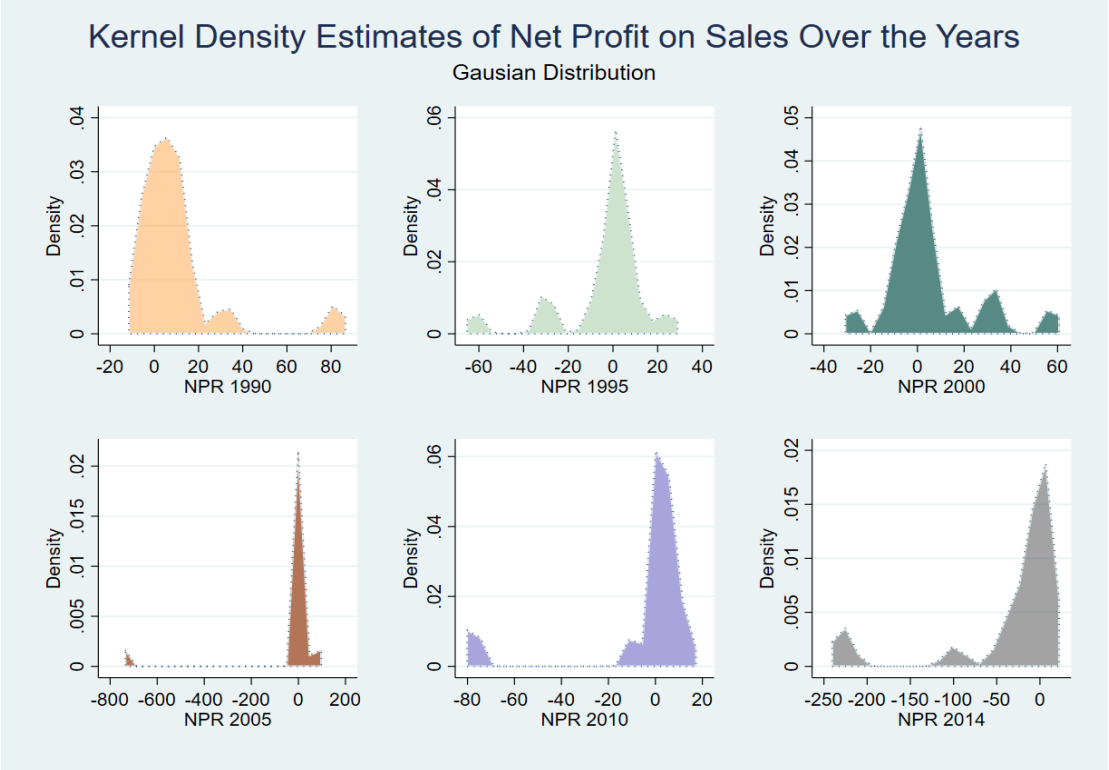

Figure 5.20: KD estimation of Net Profit to Sales for 1990-2014

The above figures more or less confirms the results from trend analysis. It could be observed that in 1990 the range of net profits are only from negative 20 to positive 80. The area between -20 to 20 is the highest meaning most of the companies in 1990 are having profits in the range of -20 to 20. It could be understood that how that changes over time up to 2005 where the negative profits keeps on increasing. It is also clear that the area under positive profits has declined from 1990 to 2014. The negative profits however slightly increased from 1995 to 2000 and also from 2005 to 2010 only to fall again in 2014. This implies that the performance of the PSEs as far as net profit is considered has not been satisfactory. The KD analysis helps us to confirm the results of the trend analysis and even find that companies are more concentrated around the negative profits and if at all the overall net profit seems to be positive in some years, that is only because of one or two companies (KFC for example) dragging the overall profits to the positive territory.

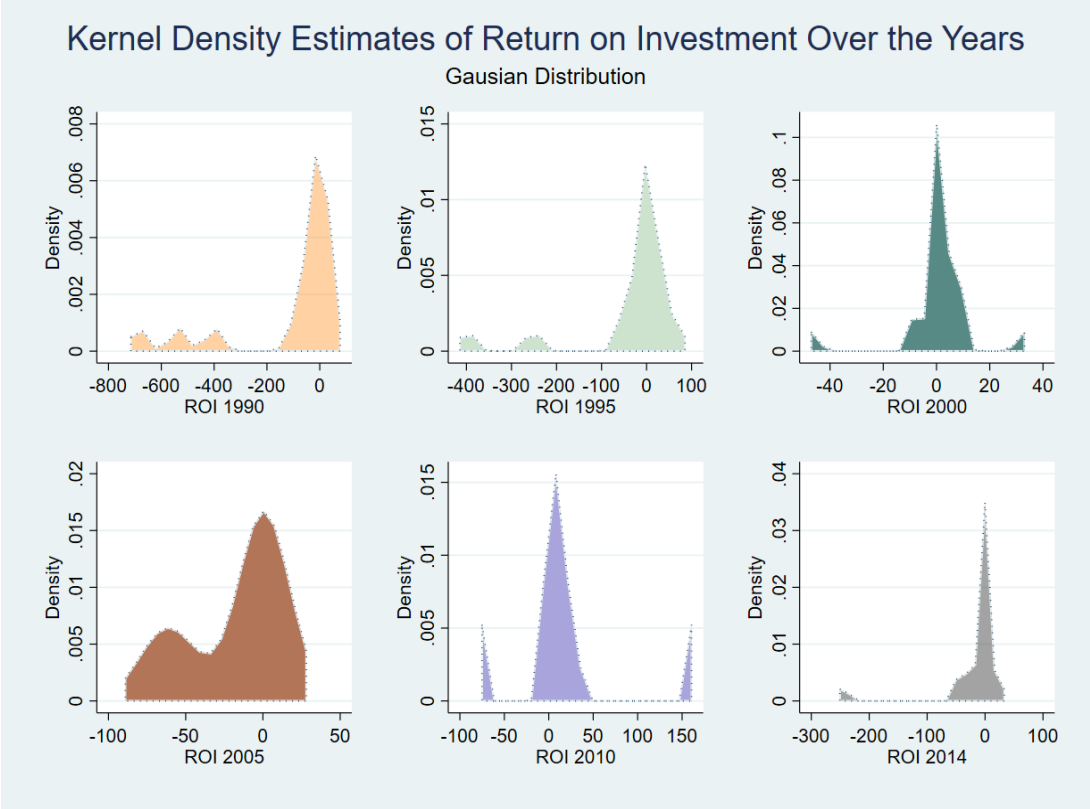

Figure 5.21: KD estimation of Net Profit to Sales for 1990-2014

Figure (insert number) presents the result of the KD estimation of return on investment. On a similar lines to that of net profit, we can see that return on investment is also more clustered around negative values. However, the range of negative value decreases while there is increase in area under positive values from 1990 to 2000 indicating an improvement in performance of the companies as far as return on investment in concerned. However, the negative return on investment starts increasing again after 2000s and in 2014 most of the companies ends up in the zero or just below zero return on investment which is not at all satisfactory. However, considering the performance of the companies in 1990 as compared 2014, we can infer that there has been an improvement in their performance as far as return on investment is concerned. We can also conclude that the PSEs are on a path of revival of their fortunes.

5.6 Panel Data Regression

This section presents the results of the panel data regression models applied to estimate the impact of variables on financial performance indicators viz. Net profit to sales and Return on investment. Since, each firm is assumed to be heterogeneous and having both a time and cross sectional dimension to our data, we go for panel data estimations. A general panel data model takes the following form as mentioned in chapter 4.

$$y_{it} = \alpha_i + X_{it}^{'}\beta + \mu_{it} \qquad i = 1 \ldots . N; t = 1 \ldots . . T$$

5.6.1 Model Specification

Panel data regression is estimated for 17 companies for the time span of 25 years stretching from 1990 to 2014. Company STL was omitted from the data due to missing values to make data a balanced panel.

The basic model we estimate is as follows:

$$\begin{aligned} Return\ on\ investment_{it} &= \beta_0 + \beta_1 Net\ worth_{it} + \beta_2 Capital\ employed_{it} \\ &+ \beta_3 Capital\ invested_{it} + \beta_4 Working\ capital_{it} + \beta_5 Current\ ratio_{it} \\ &+ \varepsilon_{it} \end{aligned}$$

We first estimate the above model using Pooled Ordinary Least Squares (POLS) technique. This is a simple Ordinary Least Squares (OLS) applied to the pooled data of all the companies. This is assuming that there is no heterogeneity among the companies. The results of the POLS are given in column 1 and 2 of the table (insert number). We find that R^2 of the POLS is very low with insignificant overall fitness (F = 1.45 with a p value .2065) indicating that model is not sufficient. We also notice that none of the explanatory variables other than the constant is significant at 5 % level while net worth is significant at 10% and positively affects

return on investment. We try to improve the model by accounting for time trend and the results are given in column 2. The time trend is positive and significant at 1% level and thus it can be inferred that return on investment increases over time as was confirmed from trend analysis and KD estimation. The overall model also becomes better even though R^2 is still very low. We suspect this may be due to omitted variable bias, i.e. some relevant variables which are correlated with error term has been excluded from the analysis. We can overcome this problem by utilising panel structure of the data. So, we carried out a Breusch Pagan Lagrangian Multiplier (BPLM) test for testing the existence of panel effect and rejected the null hypothesis of non-existence at 99% level (χ^2 = 127.57 with p = .000). This test suggest that the modelling with panel data will give a better estimation.

As explained in chapter 4, now we have to examine whether the company specific error term is distributed randomly or it follows any pattern for each company. If it is a random distribution ($cov\,(\varepsilon_i|x_i) = 0.$), Random Effect (RE) model will be consistent and efficient estimator. In this case, the company specific heterogeneity doesn't play any role in the return on investment of public funded companies. Otherwise, Fixed Effect (FE) model will be consistent and efficient estimator and company specific factors has a role in return on investment. We have carried out Hausman specification test to differentiate between fixed effect and random effect and found that the Fixed Effect model gives consistent and efficient estimator (rejected the null hypothesis of no systematic difference between coefficients of fixed effect and random effect models with $\chi^2 = 80.83$ and p = .000).

So a panel data model controlling for company specific heterogeneity, which was omitted in POLS, will give a better fit estimation. We estimate following equation for this purpose.

$$Return\ on\ investment_{it} = \beta_1 Net\ worth_{it} + \beta_2 Capital\ employed_{it} + \beta_3 Capital\ invested_{it} + \beta_4 Working\ capital_{it} + \beta_5 Current\ ratio_{it} + \varepsilon_i + \mu_{it}$$

Where $\varepsilon_i = \beta_0 + \delta_i$and δ_i is company specific error term and β_0 is the constant. The R^2also improved from .02 in POLS to .35 in fixed effect model.Result of the regression with POLS (Column 1), Random Effect (Column 3) and Fixed Effect (Column 5) model along with statistic and p value of BPLM and Hausman test, is given in Table (insert number).

The results of the Fixed Effects (FE) model are given in the column 5. The results indicate that companies with higher net worth has lesser return on investment as is indicated by the negative coefficient of the net worth which is significant at 1% level. The results also shows that current ratio and capital invested positively affect return on investment which is as expected. A higher current ratio and capital invested makes the company more attractive to investors and thus increases its return on investment. Capital employed and working capital are found to have no effect on the level of return on investment though the later result is rather surprising.

Table 5.3

Panel regression with Return on investment

	Pooled OLS		Random Effect		Fixed Effect (Company)		Fixed Effect (Company and Year)
	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
Net worth	.1098* (1.84)	.1291** (2.21)	-.151** (-2.06)	-.16838** (-2.32)	-0.449*** (-4.850)	-.478*** (-5.34)	-.506*** (-5.58)
Capital employed	0.141 (0.58)	-.1519 (-0.61)	0.137 (0.52)	-.3035 (-1.10)	0.1489 (0.54)	-.354 (-1.25)	-.284 (-0.99)
Capital invested	0.0203 (0.56)	.028 (0.79)	0.057 (1.26)	.0501 (1.11)	0.1099* (1.7)	.0452 (0.71)	.0207 (0.32)
Working capital	-0.152 (-0.64)	.1016 (0.42)	-0.126 (-0.49)	.283 (1.07)	-0.1114 (-0.42)	.3854 (1.42	.342 (1.26)
Current ratio	0.686 (0.63)	.915 (0.85)	2.970*** (2.66)	3.502*** (3.22)	4.2063*** (3.840)	4.577*** (4.31)	3.889*** (3.55)
Time		2.749*** (4.18)		2.956*** (4.90)		3.1031*** (5.38)	
Constant	-26.715*** (-4.33)	-59.601 (-6.01)	-37.399*** (-4.320)	-71.44*** (-6.41)	-47.084*** (-7.040)	-77.579*** (-9.02)	-100.499*** (-4.28)
Number of observation	421		421		421		421
R^2	0 .02	0.057			.35	.39	.43
Breusch Pagan LM	127.57 (0.000)	148.72 (0.0000)					
Hausman			80.83 (0.000)	105.48 (0.000)			

*** is for significant at 99 percent, ** for significant at 95 percent and * for significant at 90 percent. T or z value is given parenthesis. P value is reported in the parenthesis of Breusch Pagan LM test and Hausman test.

The coefficients in the Column 5 were estimated after controlling for unobservable company specific heterogeneity by using the properties of fixed effect model. Our result might still be biased due to unobservable time specific factors. We will use two methods to identify this issue and to decide whether a model, by controlling for both company as well as the year specific unobservable, as is required. First, we will include a time trend random effect and fixed effect

regressions on a similar lines of the POLS reported in column 2 of the table (insert table number). If the time variable is significant, time factors also play a role and leads to biased coefficients. Second, we will include year dummies to fixed effect model and test (F test) the null hypothesis that the coefficients for all the years are jointly equal to zero. If we are unable to reject the null, unobservable time specific factors doesn't cause any biasedness in the estimates. In the case of a rejection of null hypothesis, we have to estimate a model which I will control for unobservable time factors as well. The results of these regressions are reported in column 4 and 6 of the table.

We have carried out all required tests as in previous regression to confirm the need of fixed effect model, which is controlling company specific unobservable factors. Time variable is positive and significant at 99 percent in all specification. R^2 of the fixed effect model also improved when the time variable introduced. So the return on investment was increasing over the study period.

The results of the F-test (to check the effect of time dummies) was significant at 5% (p-value= 0.0003). Thus we reject the null hypothesis of absence of time specific effects and conclude that the model has time specific unobservable also apart from the firm specific heterogeneities. Thus we arrive at the final model as below:

$$Return\ on\ investment_{it} = \beta_1 Net\ worth_{it} + \beta_2 Capital\ employed_{it} + \beta_3 Capital\ invested_{it} + \beta_4 Working\ capital_{it} + \beta_5 Current\ ratio_{it} + \varepsilon_i + \nu_t + \mu_{it}$$

The results of the above regression are reported in the column 7 of the table. We observe that the overall model has improved with R^2 of 0.43 as compared to 0.39. We also observe that the t-ratios of the coefficients has also become better

indicating a lesser probability of type 1 error. The conclusions for the model 5 and 7 remains same though model 7 is the more consistent one.

We also estimate the regression for our second variable of interest namely net profit to sales. Panel data regression was estimated for net profit to sale for 17 companies for the time span of 25 years stretching from 1990 to 2014. Company named KSINCL was omitted in this section due to unavailability of data. Initially we estimated following regression equation with a Pooled Ordinary Least Square (POLS) technique as we have done in the earlier section.

$$Net\ profit\ to\ sale_{it} = \beta_0 + \beta_1 Current\ ratio_{it} + \beta_2 Stock\ of\ finished\ goods\ to\ sale_{it} + \varepsilon_{it}$$

The result of the POLS, RE and FE is reported in Column 1, 3 and 5 of the Table 2. Even though the goodness of fit of the POLS is very minimum (.14), overall model is significant at 99 percent (F = 32.63 with p = .000) as opposed to the POLS with return on investment. Here also we are going for the panel data estimation due to higher χ^2 (9.03 with p = .000) value of Breusch Pagan Langrangian Multiplier test. Moreover, χ^2 = 27.89 in Hausman test suggest the existence of fixed effect. So the omitted company specific factors has significant role in net profit to sale along with current ratio and stock of finished goods to sale. So the final fixed effect model we have estimated is,

$$Net\ profit\ to\ sale_{it} = \beta_1 Current\ ratio + \beta_2 Stock\ of\ finished\ goods\ to\ sale + \varepsilon_i + \mu_{it}$$

Where $\varepsilon_i = \beta_0 + \delta_i$. Here,$\delta_i$ is company specific error term and β_0 is the constant. Level of significance of the current ratio variable increased in the fixed effect model.

However, significance of the coefficient of stock of finished goods to sale decreased. R^2 also improved in fixed effect model relative to POLS.

Table 5.4

Panel regression with net profit to sale

	Pooled OLS		Random Effect		Fixed Effect (Company)		Fixed Effect (Company and Year
	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
Current ratio	2.64* (1.91)	3.13** (2.31)	2.73* (1.94)	3.32** (2.38)	3.94** (2.51)	4.43*** (2.87)	4.356*** (2.73)
Stock of finished goods to sale	-3.46*** (-7.83)	-3.72*** (-8.56)	-3.29*** (-7.20)	-3.45*** (-7.50)	-1.46** (-2.5)	-1.90*** (-3.28)	-2.096*** (-3.44)
Time		-2.41*** (-4.56)		-2.37*** (-4.54)		-2.15*** (-4.17)	
Constant	-5.59 (-1.18)	25.79*** (3.11)	-6.43 (-1.260)	23.96*** (2.78)	-15.83*** (-3.09)	12.87 (1.51)	8.576 (0.36)
Number of observation	400		400		400		
R^2	.14	.18			.24	.28	.315
Breusch Pagan LM	9.03 (0.001)	8.49 (0.0018)					
Hausman			27.89 (0.000)	21.66 (0.0001)			

*** is for significant at 1%, ** for significant at 5% and * for significant at 1%. t or z value is given in parenthesis. P value is reported in parenthesis for Breusch Pagan LM and Hausman test.

From the results of the FE model estimated in column 5 of the table, we can infer that a higher current ratio or a better short term financial position leads to higher net profit to sale. It is also observed that the stock of finished goods has a negative coefficient indicating that an increase in stock of finished goods can result in a decline in net profits. This is perfectly logical as stocking of more than required finished goods cause in opportunity costs, storage cost and other costs.

We check whether year specific omitted variable is giving biased β coefficients. To this end, we carry another three sets of regression like the case with return on investment by incorporating a time trend. We also control for the company specific and year specific effect by adding a time dummy for all the years. The following regression equations were estimated.

Pooled OLS

$$Net\ profit\ to\ sale_{it} = \beta_0 + \beta_1 Current\ ratio_{it} + \beta_2 Stock\ of\ finished\ goods\ to\ sale_{it} + \beta_3 Time_{it} + \varepsilon_{it}$$

Fixed Effect Model

$$Net\ profit\ to\ sale_{it} = \beta_1 Current\ ratio_{it} + \beta_2 Stock\ of\ finished\ goods\ to\ sale_{it} + \beta_3 Time_{it} + \varepsilon_i + \mu_{it}$$

We check for the best fit among the competing models. To determine the best fit model among POLS and RE model, we employ the popular Breusch-Pagan LM test with the null hypothesis of no panel effects. It is observed from the column 1 and 2 of the table that, we reject the null of no panel effect in the model and thus conclude that the RE model is the appropriate one. Additionally, we also conduct Hausman test for choosing among RE and FE models and finds that the FE model is the most appropriate one. This can be seen from the column 3 and 4 of the table where the Hausman test rejects the null of RE model.

Once, the FE model was zeroed upon, the attempt was to make the estimators less biased. To this end, we first add a time trend to account for time specific effects and find that the coefficient is negative and significant at 1% level. This is the case with all the models including a time trend and thus confirms our results from trend

analysis and KD estimation that the net profits of the PSEs under study fall over the study period. The coefficients of the current ratio and stock of finished goods to sales is still significant and of same sign (with respect to model 1) while the overall model fit and R^2 has improved.

Since we find that time specific factors affect the regression results, we suspect the issue of unobserved time specific effects in model that can result in biased estimates. To account for this, we additionally include a time dummy for all the years under study. We then test the null hypothesis of all the coefficients of time dummies are jointly equal to zero using a F-test. The results of the F-test shows that the null hypothesis can be rejected at 5% level (p-value of 0.0469). So the βs of the initial fixed effect model was biased due to year specific omitted variables. So we have to estimate a fixed effect model controlling for both year and company specific omitted variables. The result of this regression is given in the column 7 of the Table 2. The estimated model is,

$$Net\ profit\ to\ sale_{it} = \beta_1 Current\ ratio_{it} + \beta_2 Stock\ of\ finished\ goods\ to\ sale_{it} + \nu_t + \varepsilon_i + \mu_{it}$$

Coefficients of both current ratio and stock of finished goods to sale becomes significant at 99 percent in the final model instead of 95 percent in company fixed effect model.

Thus the overall model predicts that,

- A higher current ratio leads to more net profit to sale
- A higher stock of finished goods to sale leads to decline in net profit to sale.

- Net profit to sale has decreased significantly during the period 1990 to 2014. Hence the profitability of the public sector firms were decreasing over the time period.

Conclusion

This chapter undertook empirical examination of the performance analysis of the state owned public sector enterprises in the state of Kerala. To this end, study used different techniques to accomplish the objective. The trend analysis of the companies showed that the performance of most of the PSEs were not satisfactory especially with key variables of interest like net profit to sale and return on investment. Kernel Density estimation was also carried out to understand the concentration and distribution of net profit to sales and return on investment. It was found that most of the enterprises were distributed around negative profits in the case of both net profits to sale and return on investment. But both net profits to sale and return on investment showed an improvement till 2000 and then fell again. We could also understand the concentration of profit making firms are very less. Finally the study used panel data regression models to estimate the impact of different variables on net profit to sales and return on investment. The analysis of the panel regression models shows that company specific and time specific factors play a large role in net profit to sales and return on investment.

CHAPTER VI
FINDINGS AND CONCLUSION

Findings of the Study

Most of the financial indicators of Kerala Financial Corporation have been rising over time. Current ratio has fallen off late though it is still good might be due to diverse investment opportunities KFC has ventured to in the recent years. The net profit also has been doing well recently. Return on investment which dipped to negative figures have also improved and is positive. There is a steady increase in the rise of capital employed and capital invested both pointing that the company is performing satisfactorily.

The trend analysis of Kerala Tourism Development Corporation (KTDC) presents a different picture. Though capital employed, capital invested and net worth presents a steady increase after 1990's, the financial and operational performance variables have been less consistent. The preliminary trend analysis presents a less than satisfactory performance of the enterprise.

The trend analysis of Kerala Ceramics Limited also reveals some interesting observations. Though the capital employed and capital invested are rising over the years, the Net profits registers continuous fall over the years especially. It is also interesting here to note that however DE ratio has risen steeply over the years. This means that the KCL is increasingly being financed by debt and not owners funds. The less contribution of owner's capital might be one reason for the inefficiency of the enterprise. The higher than optimal current ratio implied the company has resources to pay off its short term obligations but the excess fund is not properly utilised.

Coming to the case of Kerala Minerals and Metals Limited (KMML), it is promising to see the capital employed continuously rising. However, the rise of capital invested has not caught up with the capital employed implying that the enterprise off late is financed by debts than equity. Net worth is increasing and current ratio is stable and close to the ideal levels. Net profit to sales and ROI however are on the negative territory which is a concern. The interesting thing here is the fall of capital consumption to sales and the increase of stock of raw materials to consumption essentially pointing to low sales which could be the reason for the low net profits and return on investment.

The net profit to sales figure of Travancore Titanium Products Limited (TTPL) presents a dismal picture as the figure continues to plummet especially after 2010. On the contrary, capital employed keeps rising along with capital invested though the later has not caught up with the former. The data of DE ratio albeit only for later years also shows a rising trend signifying the rise in debts compared to equity. The return on investment is also in the negative territory which is a cause of worry.

Like other public sector enterprises, Transformers and Electrical Kerala Limited (TEKL) also has net profit in the negative territory. However, DE ratio is also falling and is below the optimum ratio. This when read along with the fact that the capital invested keeps falling conveys the investors are not optimistic or happy with the performance. Coupled with this, stock of raw materials has a rising trend while receivables turnover ratio has fallen pointing to low operational efficiency in collection of accounts receivables or credit sales. The above mentioned factors might be the reason for the deteriorating net profit and return on investment of the company.

Trend analysis of Kerala State Electronics Development Corporation (KEDCL) shows that net profit is down to negative levels while return on

investment just lingers about zero. Current ratio and DE ratio are near the acceptable levels while company has good working capital suggesting its short term operational and financial efficiency. The concern here however is the falling stock of raw materials to consumption ratio and receivables turnover ratio which are on a declining trend. Capital employed and capital invested shows a rising trend which is rather promising.

The trend analysis of Kerala Agro Machinery Corporation Limited (KAMCL) presents a different picture. Though not very impressive, the net profit and return on investment are both positive in spite of negative trend off late. Current ratio has also declined over the years and is within the vicinity of acceptable levels. DE ratio has declined and is less than the acceptable level of one. The capital employed and capital invested rises over time and is a positive sign. Working capital also seems to be risen over time. Overall, KAMCL seems to do well in most of the indicators of financial and operational performance.

Kerala Automobiles Limited's net profit has declined drastically to the negative levels though it shows signs of reversing the trend. The return on investment has picked up from the negative levels to stay around the zero levels. Add to this, the net worth has also plummeted and remains negative implying more liabilities than assets. Working capital is also negative which again paints a dismal short run liquidity position. The current ratio is also far from satisfactory levels and has a declining trend. The only positive is the better receivables turnover ratio.

Kerala Agro Industries Corporation Limited's consumption to sales ratio and receivables turnover ratio are on a positive trend. The good current asset ratio and DE ratio also signify the short term liquidity position and leverage of the firm. On the other hand, capital employed and capital invested also keep rising which mean much of the capital is sourced from debtors. The net profit after a decline has picked

up and is now positive which signs a revival. The return on investment has declined and is around zero which is a concern.

The trend analysis of Travancore Sugar and Chemicals Limited (TSCL) shows that the profits and return on investment had picked up from negative levels and has lingered around zero. Receivables turnover ratio has been impressive though has declined in the recent past. DE ratio has fallen from the acceptable levels to less than acceptable levels. The bright spot however has been the rise in capital employed and capital invested. The net worth also has been on a rising trend which is a positive thing. Overall, the company seems to be on a revival path.

Sitaram Textiles Limited's DE ratio ad current ratio has fallen below the accepted levels. Net worth though has picked up since the 2007-08 crisis, has again started to decline. The worrying thing however, as is the case with the most public sector enterprises, is the negative net profit to sales and the return on investment. The only positive here is the positive working capital which indicates the short term financial position albeit a declining trend. Almost all of the indicators are on a declining trend causing worry.

The trend analysis of Handicrafts Development Corporation Limited presents no different picture as compared to other PSEs. Both net profit and return to investment are negative though return on investment has shown signs of improvement in the past few years. Though working capital growth has been impressive, the corresponding rise in DE ratio is not a good sign as it shows rise in debt over owner's contribution. This along with a rise in capital invested can be interpreted as a rise in debt as primary source of fund for the enterprise which may affect its long term solvency position. The receivables turnover ratio however is high indicating operational efficiency in terms of collection of accounts receivables.

The trend analysis of Kerala State Bamboo Corporation Limited again shows that both the net profit and return on investment are negative. This connotes into a declining net worth of the enterprise as well. The DE ratio keeps on rising and is well above ideal levels implying more debt financing of the enterprise. However, current ratio which indicates short term liquidity position of the enterprise is very low and is a cause for concern. This is true with working capital also which indicates the short term financial health of the enterprise. Along with the dismal performance in the financial indicators, the receivables turnover ratio which indicates the efficiency in collection of accounts payable is also very less indicating an operational inefficiency as well.

Trend analysis of Kerala State Civil Service Corporation Limited is also on the similar lines of the other public sector enterprises included in the study. As is the case with the most PSEs, both the return on investment and net profit are negative. Current ratio and DE ratio are also on the lowest levels and much below the accepted levels. The positive sign however has been the rise in net worth after a decline in the early 2000's.

Trend analysis of Kerala State Artisans Development Corporation Limited reveals that it is one of the very few companies included in the analysis which shows positive trend in most of the indicators. The capital employed and capital invested rise over time along with the working capital and net worth indicating a strong short term and long term financial position of the company. The flip side however is the negative return on investment and net profit which has been the case with most of the enterprises included in the studies baring a few. Receivables collection period however has decreased considerably indicating an improvement in one of the indicators of operational efficiency.

The trend analysis of Kerala State Palmyrah Development and Worker's Welfare Corporation Limited also revels the lingering of net profit and return on

investment around zero which is not at all impressive. However, the fact that the net profit has risen from extreme low levels is encouraging. Current ratio is less than accepted levels and indicates about a short term liquidity crunch while the DE ratio is rising off late which indicates that the firm is more dependent on debt financing for its investment decisions. The falling net profit in the last few years is another concern for the enterprise along with falling sales.

The trend analysis of Kerala State Inland Navigation Corporation Limited is rather puzzling. The increase in net worth with a fall in net profit, return on investment and DE ratio is contradictory as the increase in DE ratio means an increased liabilities over assets while falling net profit and return on investment tends to erode the resources of the enterprise. It can also be inferred that the company is more debt financed as the DE ratio rises along with the capital invested. This shows the confidence of the investors but might cause a problem for their long term solvency position. The operating inefficiency can also be spotted as the collection period for receivables has risen in the past few years along with stock of finished goods.

From the summary statistics it could be observed that three important financial indicators viz. Net Worth, Return on Investment and Net Profit to Sales are all negative. This indicates poor performance of all the selected enterprises in the study. Apart from lower negative average, they also have large standard deviation indicating larger dispersion among the PSEs for the above mentioned variables. Most of the variables except SRMS and CS are platykurtic i.e. are having slimmer tails. As expected, NW, NPS and ROI which has negative average mean are also negatively skewed indicating a larger proportion of enterprises in the negative territory for these variables.

From the correlation matrix of the variables under consideration for empirical analysis, it can be understood that Net worth is positively and significantly correlated with capital employed (CE), working capital (WC), current ratio (CR), return on investment (ROI) and consumption to sales (CS). It is also negatively related with debt-equity ratio (DER) and stock of raw materials to consumption (SRMC). Capital employed and capital invested are positively and highly correlated as one would expect. Working capital is also positively correlated with net worth (NW), capital invested (CI) and capital employed (CE). DER is positively correlated with CE and CI as expected. As it goes, current ratio and debt-equity ratio are negatively correlated though not significant. Current ratio is however positively correlated with NW, CE, CI and WC. Return on investment (ROI) however if fount to have significant correlation only with net worth which is puzzling. The most puzzling observation however, is the absence of correlation of net profit to sales (NPS) with any other variables. Similarly receivables turnover ratio is also found to have no significant correlation with any other variables. This is not surprising. Stock of finished goods to sales (SFGS) is having significant positive correlation with CR and negative correlation with CI and NPS. Stock of raw materials is positively associated with CE, CI, WC, DER, CR, ROI and SFGS and negatively correlated with NW. Consumption to Sales (CS) on the other hand is correlated with SFGS and NW positively and negatively with DER, NPS and SRMC.

The Kernel-Density (KD) analysis of two main variables of interest, viz. net profit to sales (NPS) and return on investment (ROI) help to identify the concentration (%) of particular values in the total distribution. We used KD estimation for the above mentioned variables over the years of the study at a five year gap to track changes in the dynamics of the variable. It will help us to understand the extent of negative profits and the impact of one or two companies on the overall figures. KD estimation being a non-parametric estimation technique

need not assume fixed structure and parameters and is estimated using all the data points of the variable of interest.

The Kernel-Density (KD) analysis of two main variables of interest, viz. net profit to sales (NPS) and return on investment (ROI) more or less confirms the results from trend analysis. The performance of the PSEs as far as net profit is considered has not been satisfactory. The KD analysis helps us to confirm the results of the trend analysis and even find that companies are more concentrated around the negative profits and if at all the overall net profit seems to be positive in some years, that is only because of one or two companies (KFC for example) dragging the overall profits to the positive territory.

On a similar line to that of net profit, return on investment is also more clustered around negative values. However, the range of negative value decreases while there is increase in area under positive values from 1990 to 2000 indicating an improvement in performance of the companies as far as return on investment in concerned. However, the negative return on investment starts increasing again after 2000s and in 2014 most of the companies ends up in the zero or just below zero return on investment which is not at all satisfactory. However, there has been an improvement in their performance as far as return on investment is concerned. We can also conclude that the PSEs are on a path of revival of their fortunes.

From the results of the panel data regression models applied to estimate the impact of variables on financial performance indicators viz. net profit to sales and return on investment, it can be inferred that return on investment increases over time as was confirmed from trend analysis and KD estimation.

The results of the Fixed Effects (FE) model indicate that companies with higher net worth has lesser return on investment as is indicated by the negative coefficient of the net worth which is significant at 1% level. The results also show

that current ratio and capital invested positively affect return on investment which is as expected. A higher current ratio and capital invested makes the company more attractive to investors and thus increases its return on investment. Capital employed and working capital are found to have no effect on the level of return on investment though the later result is rather surprising.

The results of the F-test (to check the effect of time dummies) was significant at 5% (p-value= 0.0003). Thus we reject the null hypothesis of absence of time specific effects and conclude that the model has time specific unobservable also apart from the firm specific heterogeneities.

We also estimate the regression for our second variable of interest namely net profit to sales. Panel data regression was estimated for net profit to sale for 17 companies for the time span of 25 years stretching from 1990 to 2014. Company named KSINCL was omitted in this section due to unavailability of data. From the results of the FE model estimated, we can infer that a higher current ratio or a better short term financial position leads to higher net profit to sale. It is also observed that the stock of finished goods has a negative coefficient indicating that an increase in stock of finished goods can result in a decline in net profits. This is perfectly logical as stocking of more than required finished goods cause in opportunity costs, storage cost and other costs.

Thus the overall model predicts that,

- A higher current ratio leads to more net profit to sale
- A higher stock of finished goods to sale leads to decline in net profit to sale.
- Net profit to sale has decreased significantly during the period 1990 to 2014. Hence the profitability of the public sector firms was decreasing over the time period.

Suggestions

The following were some of the suggestions emerging from the present study:

Improving the performance on financial front: From the summary statistics it could be observed that three important financial indicators viz. Net Worth, Return on Investment and Net Profit to Sales are all negative. This is the area where a huge amount of corrective measures are to be taken from the part of the management as well as government to ensure that these public sector enterprises will keep on going. Reluctance to do so will most probably result in either the closure of such enterprises or privatization. In both cases, government will lose the grip to control the market of different products. Corrective measures can include upgrading the quality of the products, including more skilled workers, incentive packages for employees, professional marketing team, cost effective tools and techniques, and setting up an efficient research and development wing among others.

Effective controlling of financial activities: Financial corruptions and related acts along with inefficient controls on financial activities are making many public enterprises on the verge of collapse. Though there is proper auditing of all the accounts, it is not working properly as is clear from the history of many of such enterprises. This makes it inevitable a flawless system stressing on smooth and no corruption financial dealings. In modern time it is easy to shift over to an online cashless mode for all financial transactions which can to a large extent contribute to this cause. The management and government should take initiative for making this possible.

Clear cut objectives to be set and securing public support: Many times the objectives of the state owned companies are unclear or conflicting. There is a common practice among these companies to not make objectives transparent, arising out of the confusion that financial and social goals are conflicting with each other. But this is not true. Instead they can state their objectives making it transparent and clarify the trade-offs between their financial and social goals when they negotiate a transparent mandate with the government and other stakeholders. This can be done by explicitly setting financial objectives as the primary goal, by clearly stating their aspiration target and minimum expectations such as covering the cost of capital. At the same time social objectives should be set including employment and service. The management of state enterprises must not only have the freedom to pursue these explicit objectives but also receive support publicly. A well defined plan in this regard has to be prepared by the management and to be presented to government officials for approval.

Focus on high priority areas: By focusing on high priority areas, public sector enterprises can avoid unwanted expenditure in non-core areas and redirecting investment to the areas of highest potential. For this, the management has to first of all identify and examine non-core areas and then terminate all the activities related to it. There are many ways of doing it, and the most prominent way is to go on for disinvestment. But this is a political sensitive issue requiring approval on many levels and most importantly public support. Instead of ownership change, the companies can also opt for an agency with experience in the concerned area which will look after all activities of the company.

Regular reviewing of the performance: Reviewing the performance of public sector enterprises will help to improve their performance substantially. This will put pressure on the management and the employees to perform. Government should take actions against the staff and management which are not very keen to take it seriously. But government should ensure that they have with them all the equipments and machinery, and all other requisites for a good performance before going on for such actions. Actually there is no point in taking actions against non-performance without providing appropriate environment for that.

Conclusion

This study undertook empirical examination of the performance analysis of the state owned public sector enterprises in the state of Kerala. To this end, study used different techniques to accomplish the objective. The trend analysis of the companies showed that the performance of most of the PSEs were not satisfactory especially with key variables of interest like net profit to sale and return on investment. Kernel Density estimation was also carried out to understand the concentration and distribution of net profit to sales and return on investment. It was found that most of the enterprises were distributed around negative profits in the case of both net profits to sale and return on investment. But both net profits to sale and return on investment showed an improvement till 2000 and then fell again. We could also understand the concentration of profit making firms is very less. Finally the study used panel data regression models to estimate the impact of different variables on net profit to sales and return on investment. The analysis of the panel regression models shows that company specific and time specific factors play a large role in net profit to sales and return on investment.

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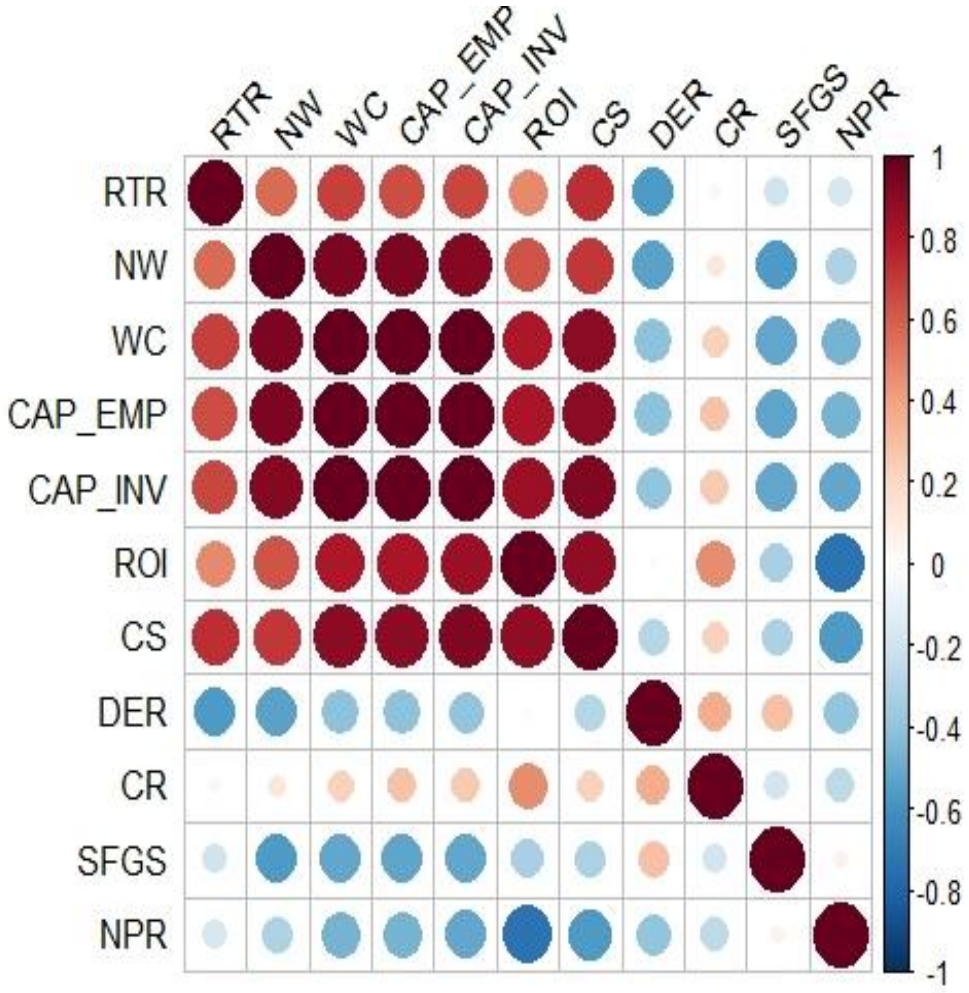
Appendix 1

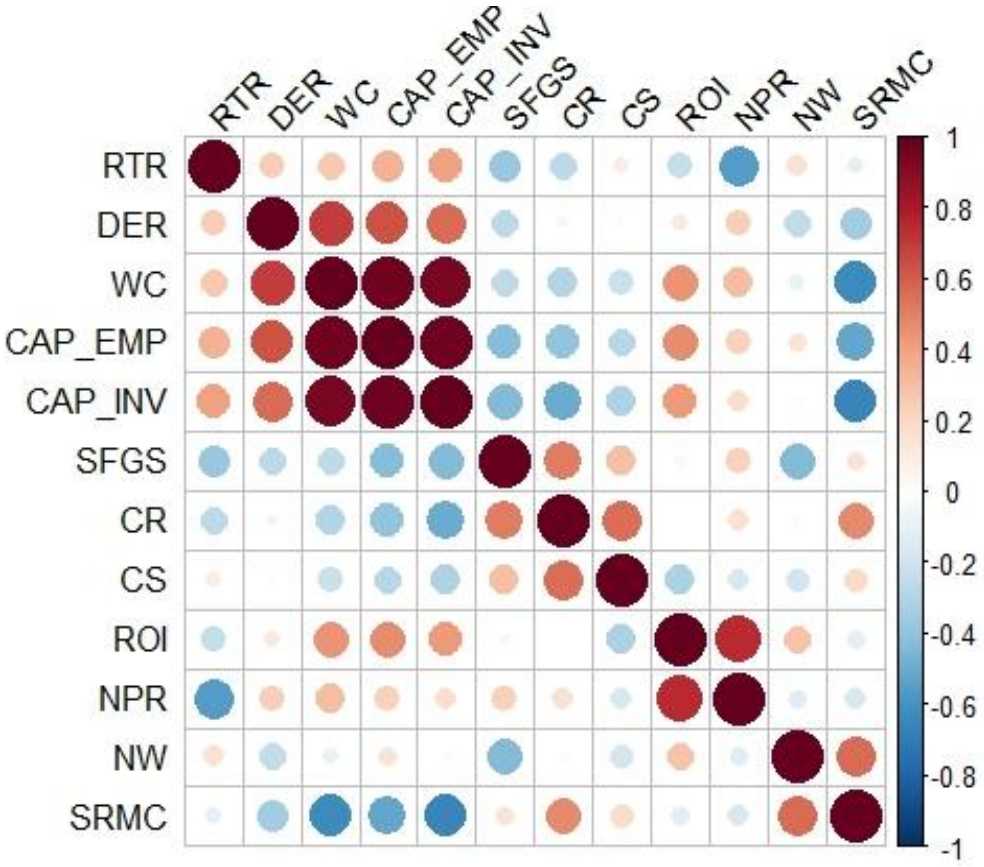
KSADCL

	NW	CE	CI	WC	DER	CR	ROI	RS	SFGS	CS	NPS
NW	1										
CE	0.97***	1									
CI	0.92***	0.97***	1								
WC	0.97***	1***	0.97***	1							
DER	-0.03	0	-0.1	0	1						
CR	-0.2	-0.11	-0.06	-0.14	0.24	1					
ROI	0.5	0.65*	0.77***	0.64*	0.08	0.32	1				
RS	0.09	0.18	0.31	0.19	-0.59	0.01	0.38	1			
SFGS	-0.56	-0.53	-0.52	-0.52	0.29	-0.19	-0.33	-0.2	1		
CS	0.64*	0.78***	0.88***	0.78***	-0.15	0.04	0.89***	0.55	-0.32	1	
NPS	-0.11	-0.22	-0.33	-0.23	-0.35	-0.25	-0.69**	-0.18	0.07	-0.49	1


RTR
NW
WC
CAP_EMP
CAP_INV
ROI
CS
DER
CR
SFGS
NPR
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1

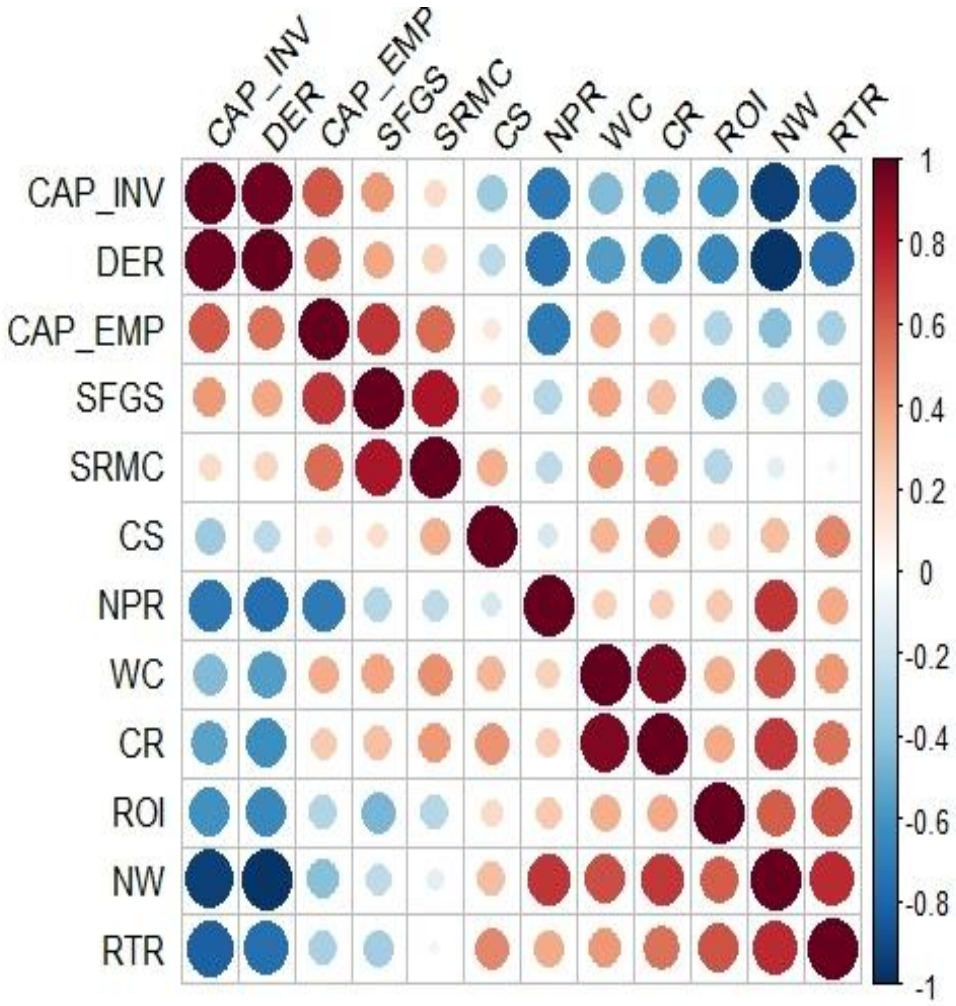
KSPDWWCL

	NW	CE	CI	WC	DER	CR	ROI	RS	SFGS	SRMC	CS	NPS
NW	1											
CE	0.14	1										
CI	0.03	0.97***	1									
WC	-0.09	0.96***	0.94***	1								
DER	-0.25	0.63*	0.57	0.69**	1							
CR	-0.02	-0.4	-0.5	-0.3	-0.06	1						
ROI	0.28	0.46	0.42	0.44	0.11	-0.02	1					
RS	0.16	0.34	0.4	0.26	0.24	-0.27	-0.24	11				
SFGS	-0.44	-0.43	-0.44	-0.26	-0.27	0.51	-0.05	-0.38	1			
SRMC	0.57	-0.52	-0.66*	-0.63*	-0.34	0.47	-0.12	-0.11	0.14	1		
CS	-0.19	-0.28	-0.31	-0.22	0.03	0.55	-0.32	0.09	0.29	0.18	1	
NPS	-0.13	0.22	0.17	0.3	0.24	0.16	0.74**	-0.55	0.22	-0.17	-0.17	1


RTR
DER
WC
CAP_EMP
CAP_INV
SFGS
CR
CS
ROI
NPR
NW
SRMC
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1

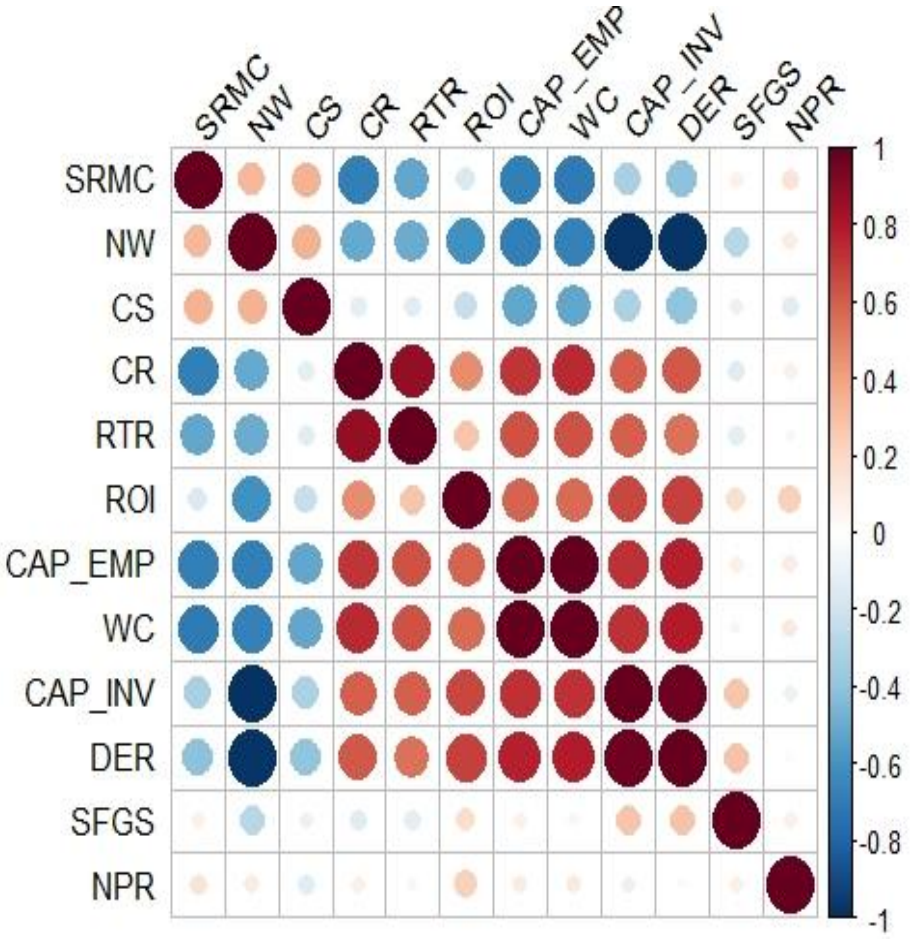
KSBCL

	NW	CE	CI	WC	DER	CR	ROI	RS	SFGS	SRMC	CS	NPS
NW	1											
CE	-0.42	1										
CI	-0.94***	0.61	1									
WC	0.64*	0.36	-0.44	1								
DER	-0.98***	0.54	0.97***	-0.55	1							
CR	0.7**	0.25	-0.54	0.92***	-0.62*	1						
ROI	0.6	-0.3	-0.61	0.35	-0.65*	0.37	1					
RS	0.74**	-0.33	-0.82***	0.43	-0.76***	0.54	0.63*	1				
SFGS	-0.26	0.71**	0.42	0.39	0.38	0.29	-0.46	-0.34	1			
SRMC	-0.12	0.57	0.18	0.45	0.21	0.42	-0.29	-0.06	0.81***	1		
CS	0.3	0.12	-0.36	0.33	-0.27	0.44	0.19	0.48	0.17	0.35	1	
NPS	0.71**	-0.71**	-0.72**	0.23	-0.76***	0.24	0.26	0.37	-0.29	-0.26	-0.17	1


CAP_INV
DER
CAP_EMP
SFGS
SRMC
CS
NPR
WC
CR
ROI
NW
RTR
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1

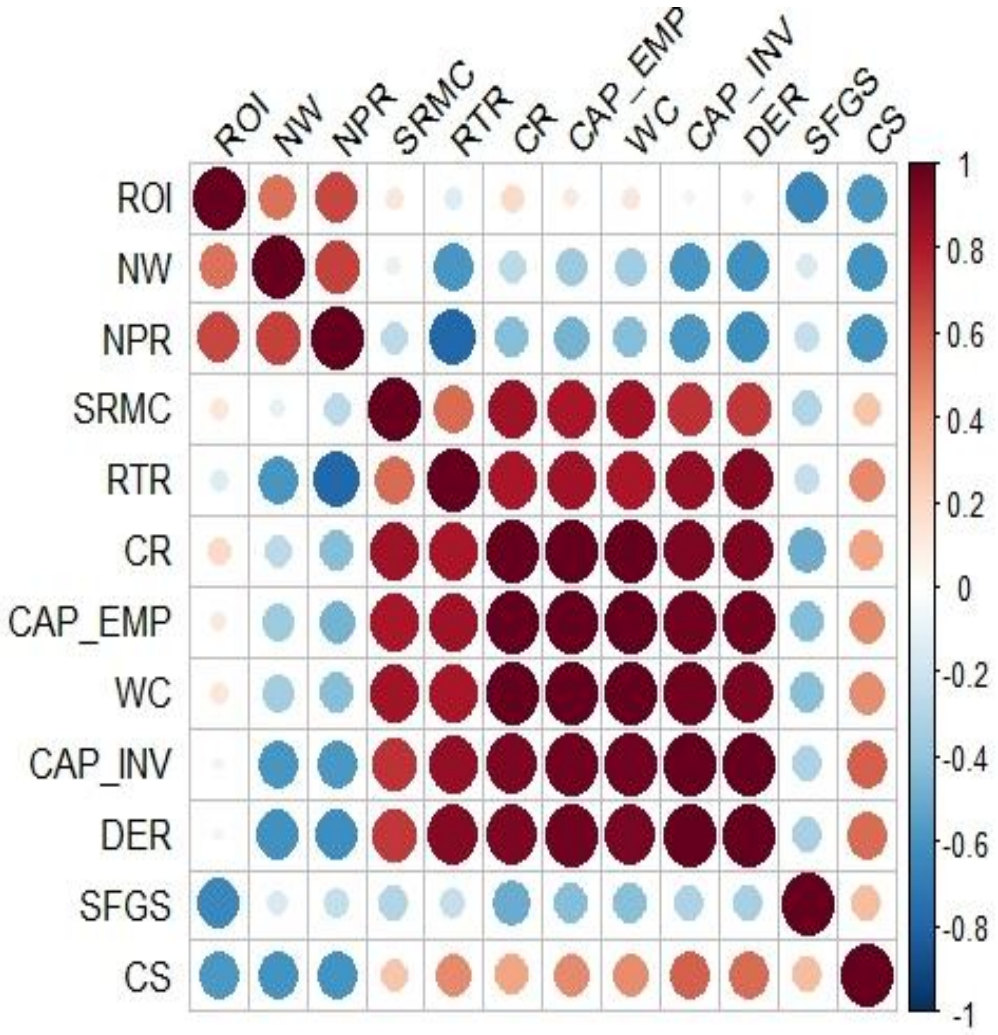
KSCSCL

	NW	CE	CI	WC	DER	CR	ROI	RS	SFGS	SRMC	CS	NPS
NW	1											
CE	-0.74**	1										
CI	-0.98***	0.78***	1									
WC	-0.73**	1***	0.75***	1								
DER	-0.98***	0.82***	0.97***	0.81***	1							
CR	-0.64*	0.77***	0.7**	0.78***	0.71**	1						
ROI	-0.61	0.58	0.66	0.57	0.68*	0.46	1					
RS	-0.56	0.67*	0.63*	0.67*	0.59	0.87***	0.27	1				
SFGS	0.26	-0.23	-0.32	-0.2	-0.23	-0.36	0.17	-0.2	1			
SRMC	0.13	-0.49	-0.11	-0.55	-0.22	-0.48	-0.16	-0.41	-0.12	1		
CS	0.28	-0.47	-0.24	-0.48	-0.34	-0.1	-0.23	-0.12	-0.04	0.32	1	
NPS	0.17	0.03	-0.16	0.04	-0.1	0	0.23	0.02	0.33	0.04	-0.11	1


SRMC
NW
CS
CR
RTR
ROI
CAP_EMP
WC
CAP_INV
DER
SFGS
NPR
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1

HDCL

	NW	CE	CI	WC	DER	CR	ROI	RS	SFGS	SRMC	CS	NPS
NW	1											
CE	-0.36	1										
CI	-0.59	0.96***	1									
WC	-0.34	1***	0.96***	1								
DER	-0.61	0.96***	0.99***	0.94***	1							
CR	-0.27	0.99***	0.93***	0.99***	0.93***	1						
ROI	0.54	0.11	-0.07	0.12	-0.06	0.18	1					
RS	-0.59	0.84***	0.87***	0.81***	0.91***	0.82***	-0.14	1				
SFGS	-0.16	-0.43	-0.31	-0.42	-0.33	-0.5	-0.65*	-0.24	1			
SRMC	-0.09	0.81***	0.72**	0.83***	0.7**	0.84***	0.12	0.56	-0.3	1		
CS	-0.6	0.47	0.59	0.46	0.57	0.39	-0.58	0.47	0.3	0.27	1	
NPS	0.68**	-0.47	-0.58	-0.43	-0.62*	-0.43	0.66*	-0.78***	-0.24	-0.27	-0.6	1


ROI
NW
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CR
CAP_EMP
WC
CAP_INV
DER
SFGS
CS
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0.2
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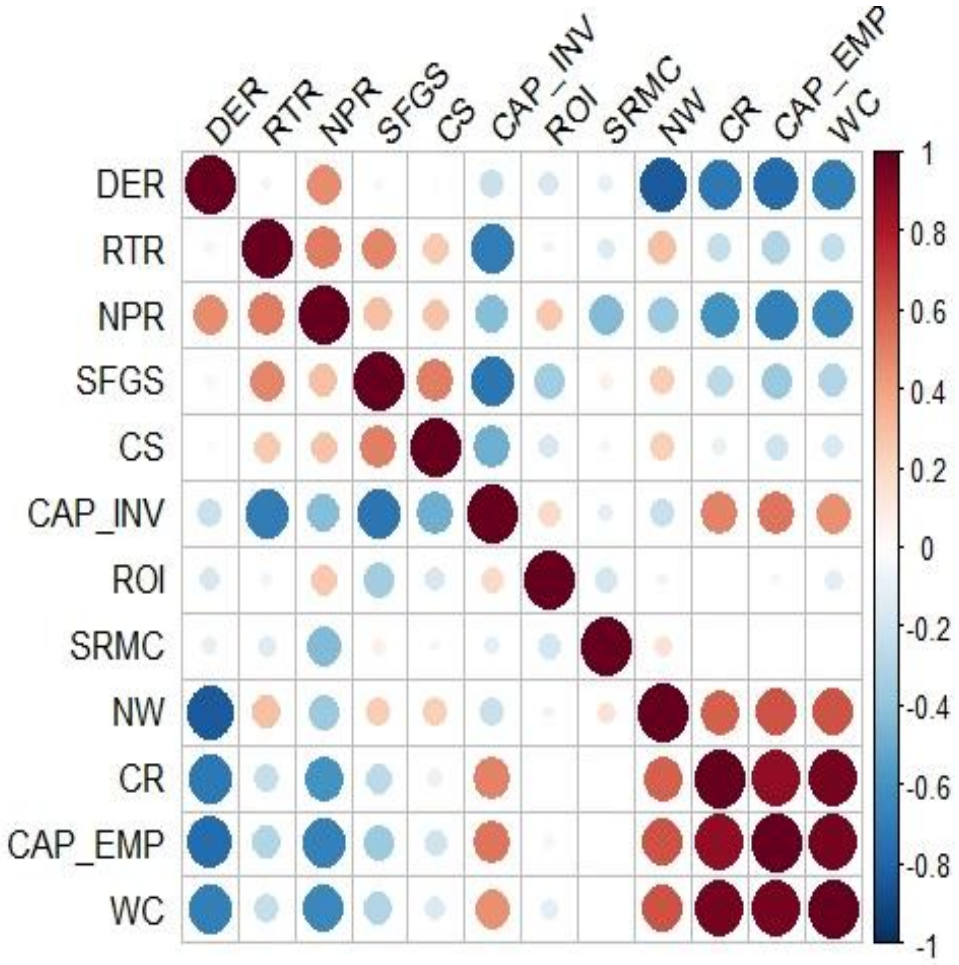
-0.2
-0.4
-0.6
-0.8
-1

STL

	NW	CE	CI	WC	DER	CR	ROI	RS	SFGS	SRMC	CS	NPS
NW	1											
CE	0.63*	1										
CI	-0.22	0.53	1									
WC	0.63*	0.95***	0.45	1								
DER	-0.84***	-0.77***	-0.22	-0.69**	1							
CR	0.59	0.88***	0.49	0.95***	-0.72**	1						
ROI	-0.06	-0.05	0.18	-0.12	-0.17	-0.01	1					
RS	0.29	-0.3	-0.7**	-0.24	-0.06	-0.24	-0.07	1				
SFGS	0.24	-0.37	-0.73**	-0.3	0.05	-0.27	-0.34	0.48	1			
SRMC	0.14	0.02	-0.11	0.02	-0.09	0	-0.18	-0.14	0.07	1		
CS	0.23	-0.2	-0.49	-0.16	0.02	-0.09	-0.17	0.25	0.5	0.05	1	
NPS	-0.37	-0.67*	-0.43	-0.65*	0.46	-0.6	0.26	0.51	0.29	-0.44	0.28	1


DER
RTR
NPR
SFGS
CS
CAP_INV
ROI
SRMC
NW
CR
CAP_EMP
WC
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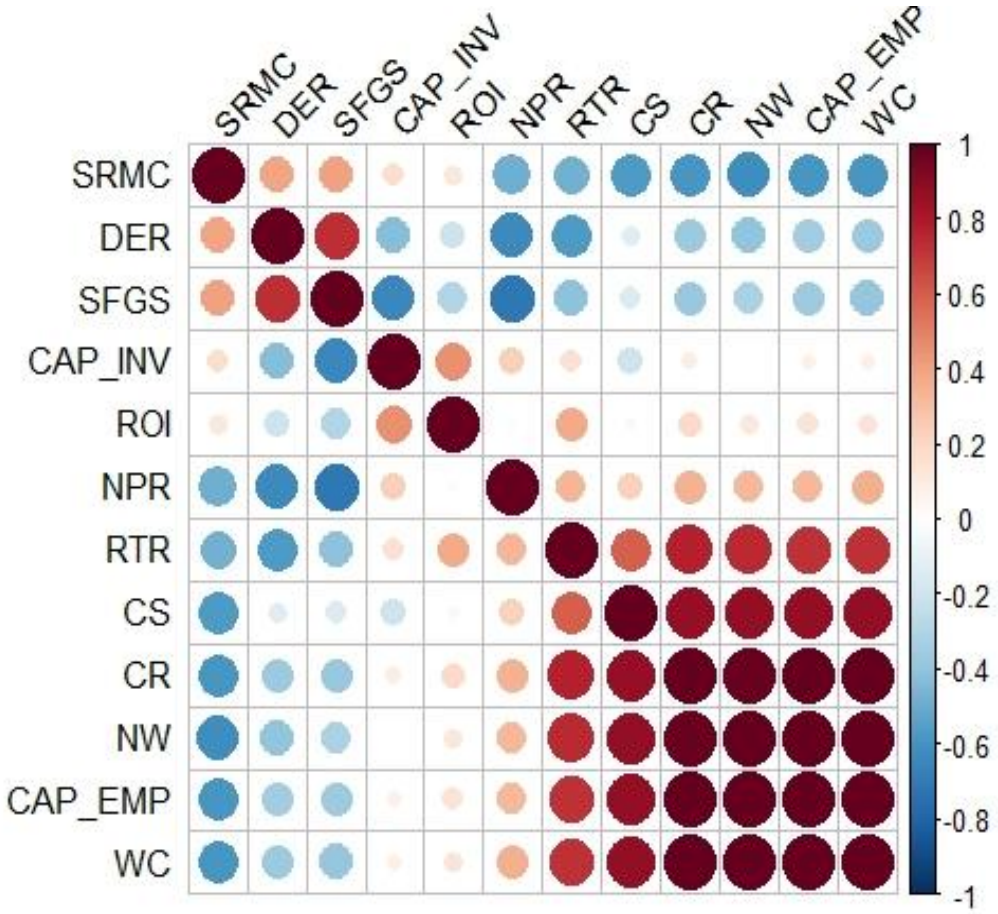
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1

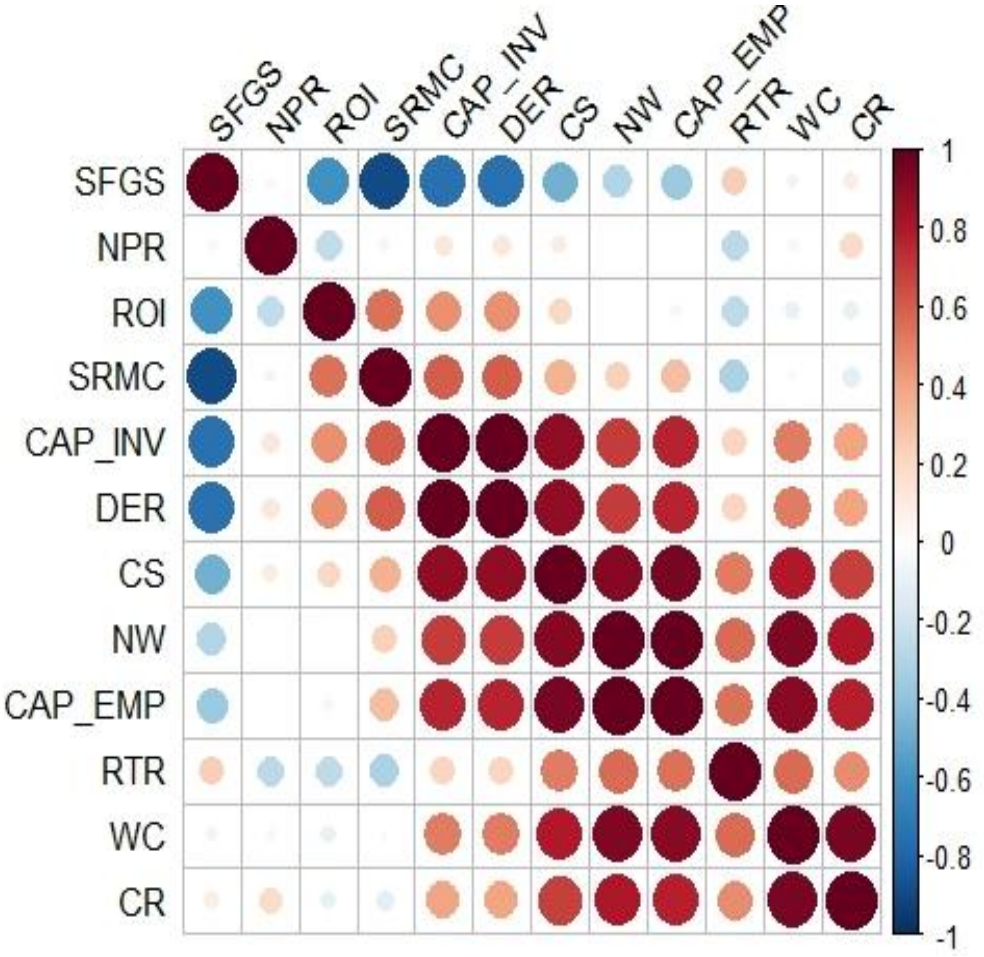
TSCL

	NW	CE	CI	WC	DER	CR	ROI	RS	SFGS	SRMC	CS	NPS
NW	1											
CE	0.99***	1										
CI	0	0.08	1									
WC	0.99***	1***	0.09	1								
DER	-0.4	-0.35	-0.43	-0.37	1							
CR	0.98***	0.99***	0.1	0.99***	-0.37	1						
ROI	0.12	0.15	0.45	0.14	-0.21	0.19	1					
RS	0.74**	0.72**	0.16	0.72**	-0.57	0.77***	0.37	1				
SFGS	-0.32	-0.36	-0.65*	-0.39	0.73**	-0.38	-0.3	-0.41	1			
SRMC	-0.62*	-0.59	0.17	-0.59	0.39	-0.59	0.12	-0.48	0.4	1		
CS	0.87***	0.87***	-0.21	0.87***	-0.14	0.86***	-0.04	0.59	-0.15	-0.56	1	
NPS	0.32	0.32	0.23	0.35	-0.64*	0.34	-0.03	0.33	-0.72**	-0.49	0.22	1


SRMC
DER
SFGS
CAP_INV
ROI
NPR
RTR
CS
CR
NW
CAP_EMP
WC
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1

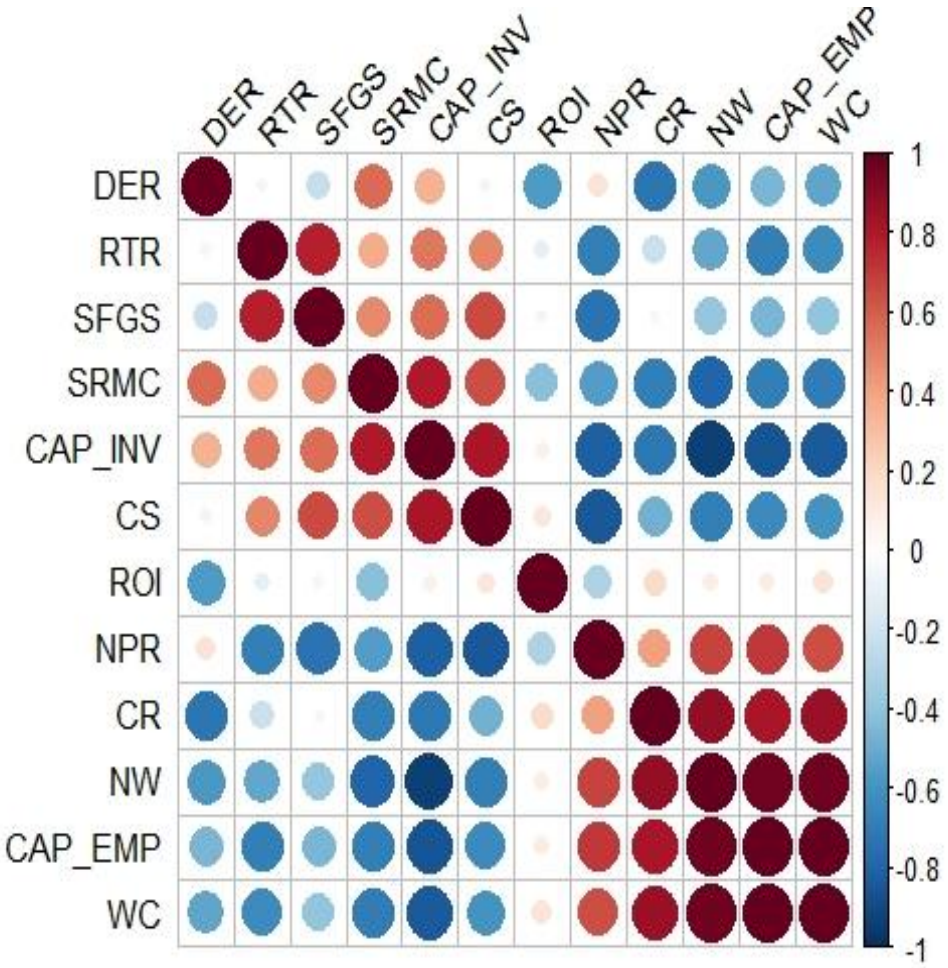
KAICL

	NW	CE	CI	WC	DER	CR	ROI	RS	SFGS	SRMC	CS	NPS
NW	1											
CE	0.99***	1										
CI	0.69**	0.76***	1									
WC	0.92***	0.9***	0.51	1								
DER	0.69**	0.76***	1***	0.51	1							
CR	0.8***	0.77***	0.39	0.94***	0.39	1						
ROI	-0.02	0.05	0.45	-0.1	0.45	-0.1	1					
RS	0.57	0.54	0.21	0.57	0.21	0.46	-0.26	1				
SFGS	-0.3	-0.37	-0.75***	-0.06	-0.75***	0.09	-0.61	0.24	1			
SRMC	0.23	0.3	0.6	0.03	0.6	-0.12	0.54	-0.32	-0.89***	1		
CS	0.91***	0.94***	0.88***	0.79***	0.88***	0.68**	0.2	0.51	-0.48	0.34	1	
NPS	0	0.02	0.13	0.04	0.13	0.18	-0.25	-0.27	0.03	-0.06	0.1	1


SFGS
NPR
ROI
SRMC
CAP_INV
DER
CS
NW
CAP_EMP
RTR
WC
CR
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1

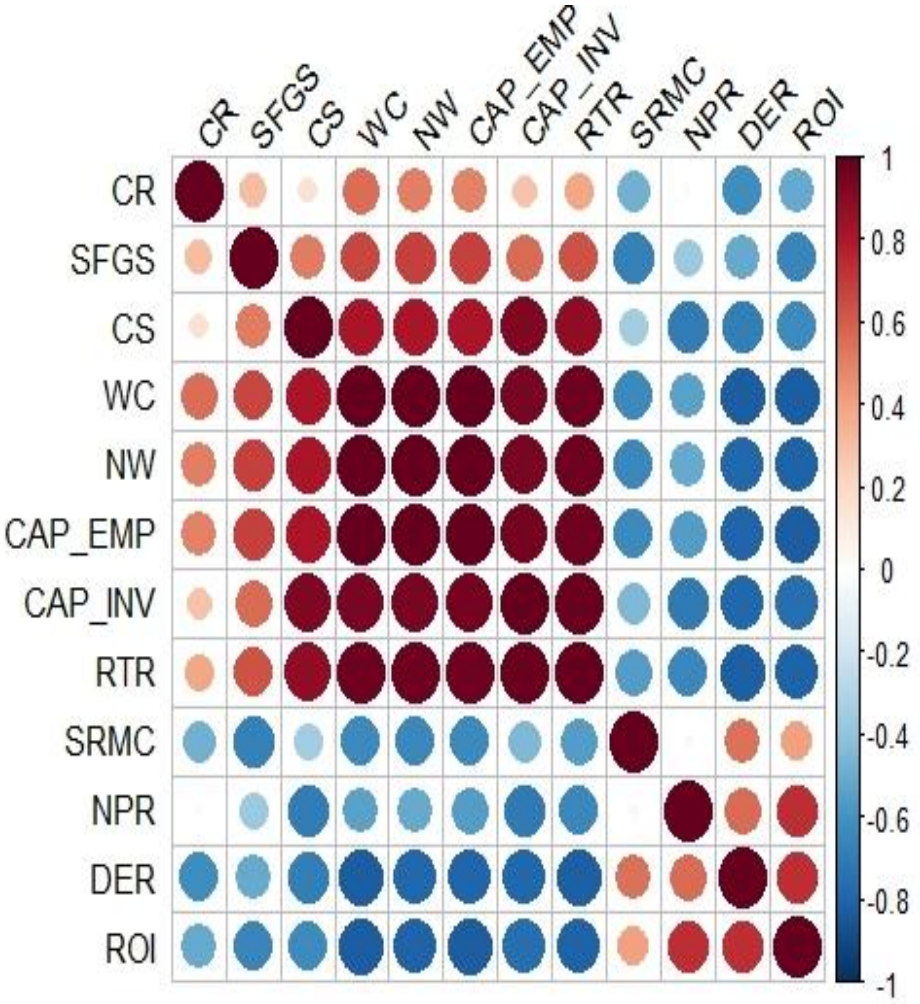
KAL

	NW	CE	CI	WC	DER	CR	ROI	RS	SFGS	SRMC	CS	NPS
NW	1											
CE	0.96***	1										
CI	-0.94***	-0.86***	1									
WC	0.96***	1***	-0.84***	1								
DER	-0.58	-0.46	0.34	-0.53	1							
CR	0.87***	0.82***	-0.72**	0.85***	-0.73**	1						
ROI	0.1	0.1	0.07	0.15	-0.57	0.18	1					
RS	-0.52	-0.68**	0.52	-0.63*	-0.05	-0.22	-0.11	1				
SFGS	-0.39	-0.46	0.55	-0.4	-0.23	-0.05	-0.06	0.77***	1			
SRMC	-0.79***	-0.69**	0.79***	-0.7**	0.57	-0.69**	-0.42	0.36	0.47	1		
CS	-0.68**	-0.64*	0.82***	-0.6	0.07	-0.48	0.12	0.48	0.65*	0.64*	1	
NPS	0.67**	0.7**	-0.82***	0.64*	0.15	0.4	-0.31	-0.68**	-0.74**	-0.55	-0.85***	1


DER
RTR
SFGS
SRMC
CAP_INV
CS
ROI
NPR
CR
NW
CAP_EMP
WC
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1

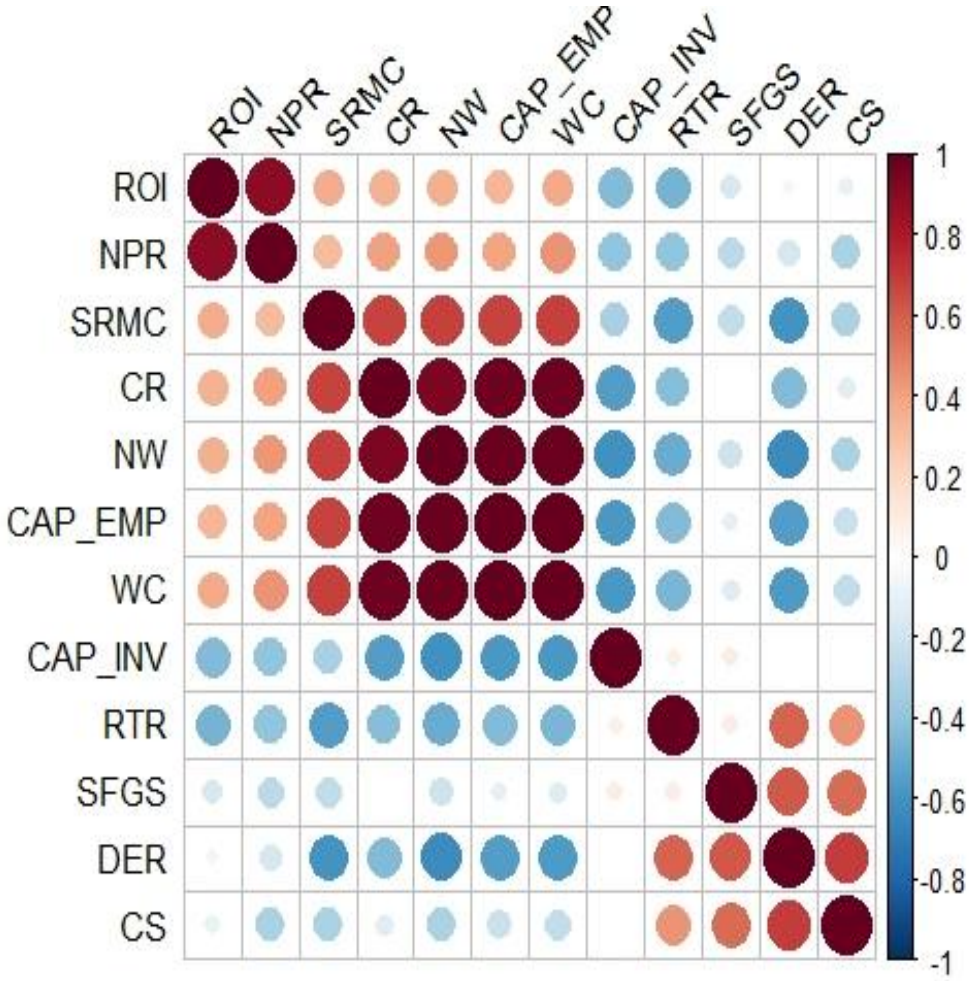
KAMCL

	NW	CE	CI	WC	DER	CR	ROI	RS	SFGS	SRMC	CS	NPS
NW	1											
CE	1***	1										
CI	0.94***	0.95***	1									
WC	0.99***	1***	0.94***	1								
DER	-0.78***	-0.79***	-0.78***	-0.83***	1							
CR	0.5	0.49	0.28	0.55	-0.62*	1						
ROI	-0.8***	-0.83***	-0.76***	-0.83***	0.73**	-0.51	1					
RS	0.97***	0.97***	0.98***	0.97***	-0.81***	0.38	-0.8***	1				
SFGS	0.68**	0.68**	0.56	0.66*	-0.51	0.3	-0.66*	0.63*	1			
SRMC	-0.65*	-0.64*	-0.45	-0.64*	0.54	-0.48	0.4	-0.55	-0.67**	1		
CS	0.82***	0.82***	0.92***	0.81***	-0.68**	0.16	-0.63*	0.88***	0.51	-0.34	1	
NPS	-0.51	-0.55	-0.71**	-0.54	0.57	0.02	0.73**	-0.65*	-0.37	-0.04	-0.7**	1


CR
SFGS
CS
WC
NW
CAP_EMP
CAP_INV
RTR
SRMC
NPR
DER
ROI
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1

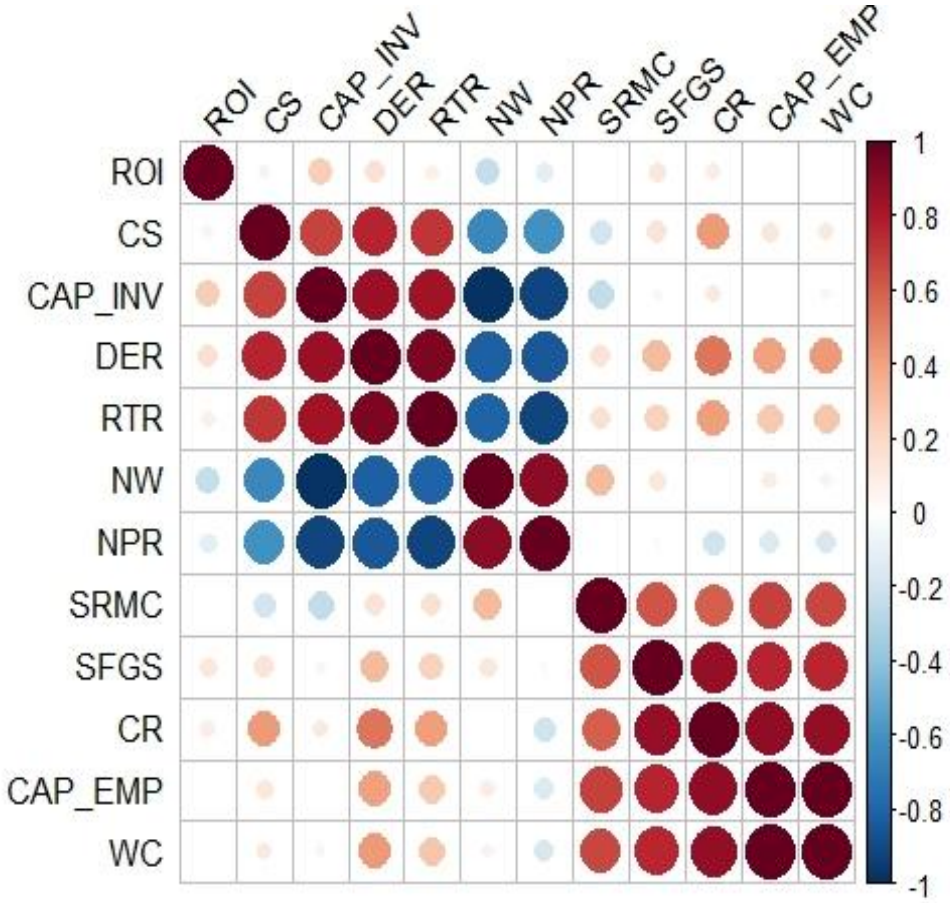
TEKL

	NW	CE	CI	WC	DER	CR	ROI	RS	SFGS	SRMC	CS	NPS
NW	1											
CE	0.98***	1										
CI	-0.61	-0.58	1									
WC	0.98***	1***	-0.58	1								
DER	-0.63*	-0.55	-0.01	-0.56	1							
CR	0.93***	0.97***	-0.55	0.97***	-0.44	1						
ROI	0.35	0.33	-0.44	0.37	-0.06	0.34	1					
RS	-0.5	-0.44	0.09	-0.46	0.58	-0.43	-0.47	1				
SFGS	-0.21	-0.11	0.1	-0.14	0.61	-0.02	-0.17	0.09	1			
SRMC	0.68*	0.67*	-0.33	0.68*	-0.6	0.67*	0.36	-0.55	-0.25	1		
CS	-0.32	-0.22	-0.02	-0.25	0.69**	-0.13	-0.1	0.44	0.56	-0.32	1	
NPS	0.43	0.39	-0.4	0.44	-0.18	0.4	0.89***	-0.4	-0.27	0.31	-0.32	1


ROI
NPR
SRMC
CR
NW
CAP_EMP
WC
CAP_INV
RTR
SFGS
DER
CS
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1

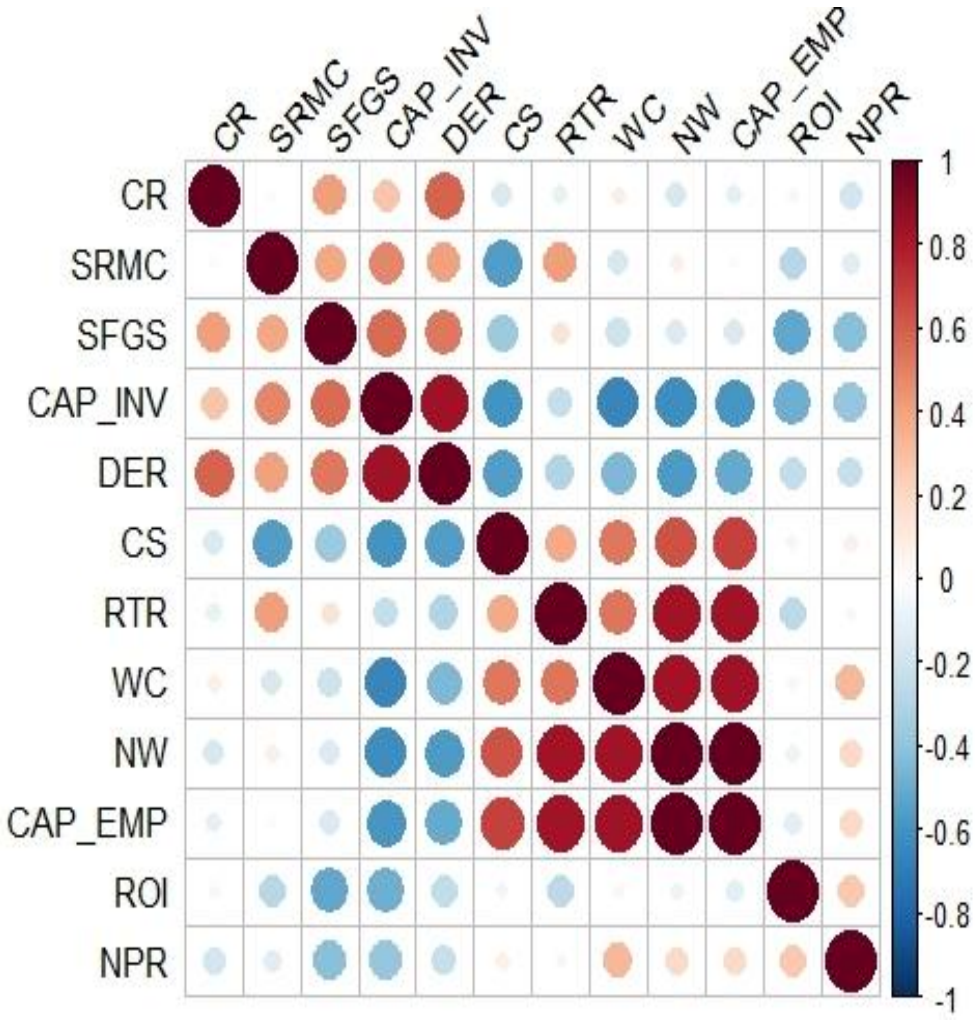
KCL

	NW	CE	CI	WC	DER	CR	ROI	RS	SFGS	SRMC	CS	NPS
NW	1											
CE	0.1	1										
CI	-0.99***	0.02	1									
WC	0.06	1***	0.05	1								
DER	-0.81***	0.4	0.85***	0.42	1							
CR	-0.01	0.88***	0.11	0.87***	0.53	1						
ROI	-0.24	-0.01	0.24	0.01	0.16	0.1	1					
RS	-0.8***	0.26	0.83***	0.27	0.93***	0.41	0.07	1				
SFGS	0.12	0.76***	-0.04	0.75***	0.31	0.86***	0.12	0.22	1			
SRMC	0.31	0.68**	-0.25	0.66*	0.15	0.59	-0.02	0.16	0.62*	1		
CS	-0.65*	0.12	0.67*	0.11	0.76***	0.42	0.06	0.71**	0.15	-0.19	1	
NPS	0.89***	-0.15	-0.91***	-0.17	-0.85***	-0.2	-0.12	-0.91***	-0.03	0.02	-0.61	1


ROI
CS
CAP_INV
DER
RTR
NW
NPR
SRMC
SFGS
CR
CAP_EMP
WC
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1

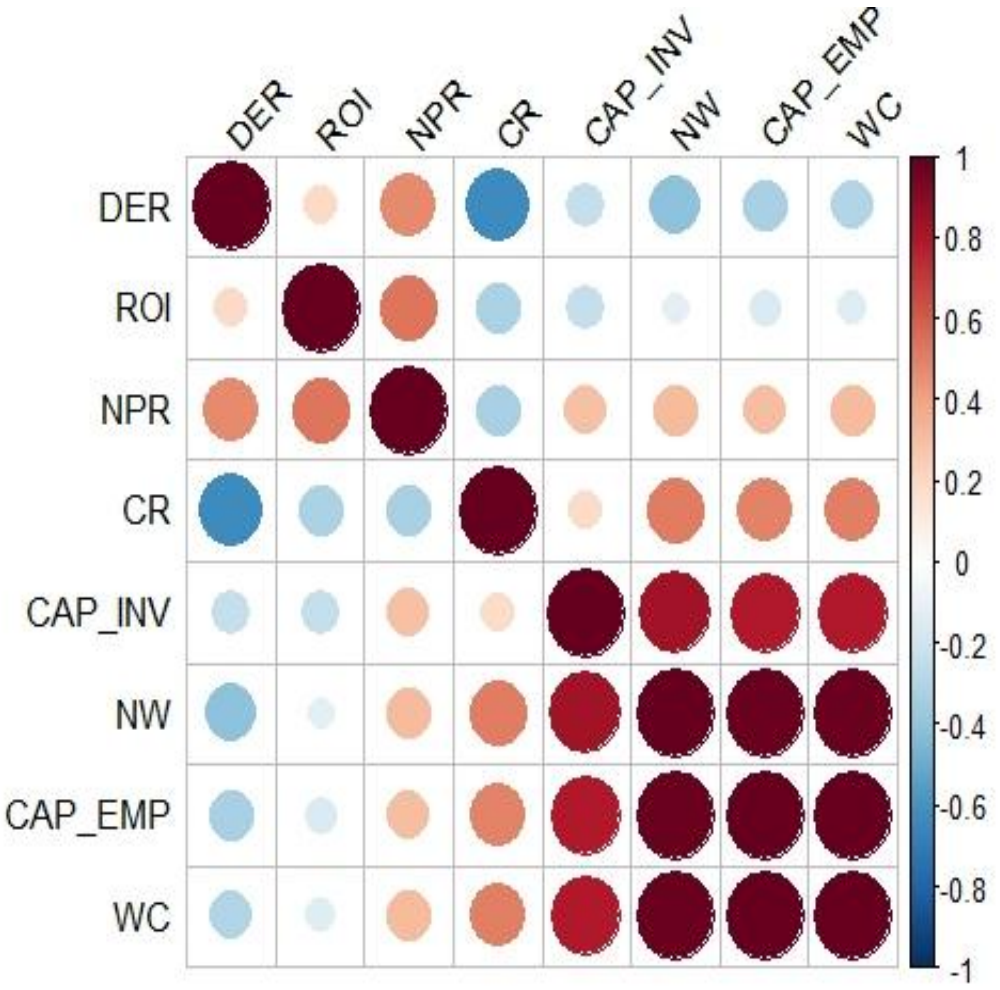
KMML

	NW	CE	CI	WC	DER	CR	ROI	RS	SFGS	SRMC	CS	NPS
NW	1											
CE	0.99***	1										
CI	-0.62	-0.59	1									
WC	0.83***	0.84***	-0.66*	1								
DER	-0.56	-0.51	0.84***	-0.45	1							
CR	-0.17	-0.11	0.27	0.08	0.58	1						
ROI	-0.08	-0.12	-0.49	0.04	-0.25	0.04	1					
RS	0.83***	0.83***	-0.24	0.53	-0.3	-0.1	-0.27	1				
SFGS	-0.15	-0.16	0.56	-0.21	0.52	0.41	-0.52	0.14	1			
SRMC	0.08	0.03	0.48	-0.17	0.4	-0.02	-0.28	0.41	0.38	1		
CS	0.63*	0.68*	-0.6	0.52	-0.55	-0.16	-0.05	0.37	-0.37	-0.55	1	
NPS	0.19	0.19	-0.39	0.32	-0.23	-0.19	0.26	-0.04	-0.42	-0.13	0.08	1


CR
SRMC
SFGS
CAP_INV
DER
CS
RTR
WC
NW
CAP_EMP
ROI
NPR
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1

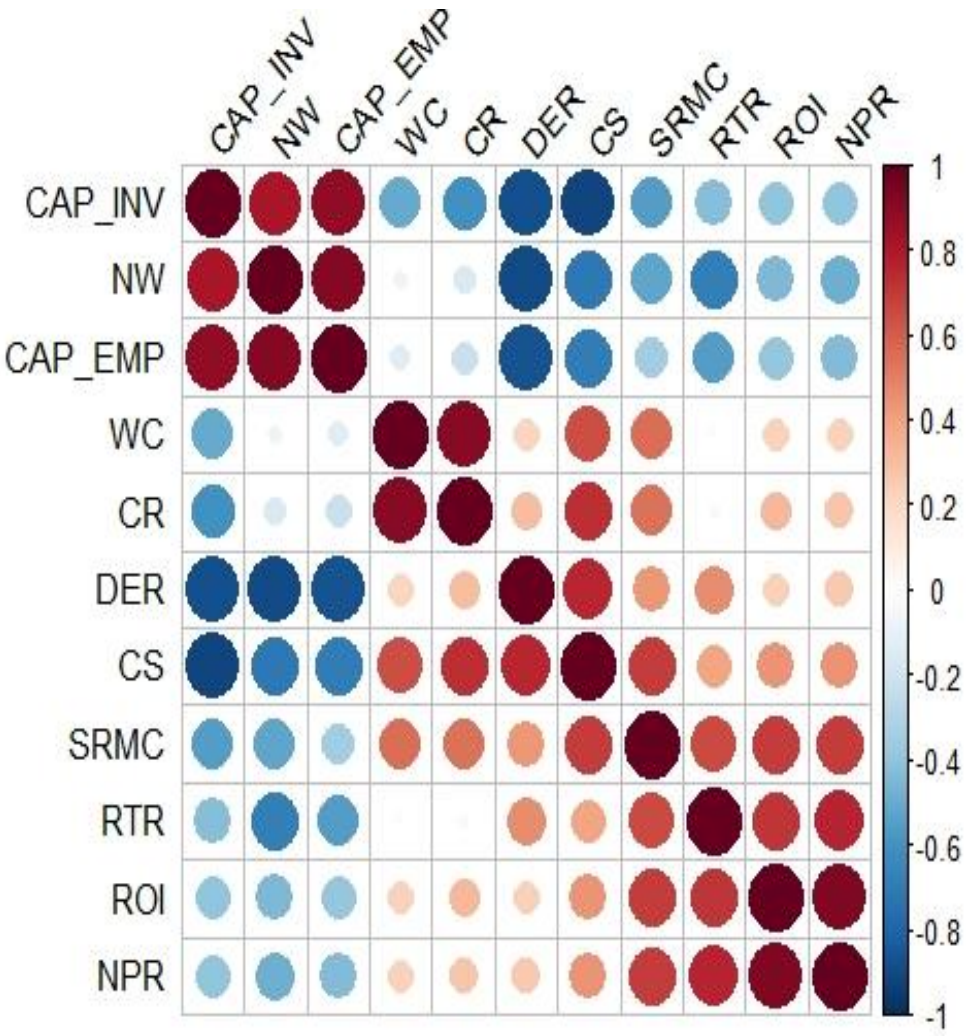
KFC

	NW	CE	CI	WC	DER	CR	ROI	NPS
NW	1							
CE	0.98***	1						
CI	0.83***	0.79***	1					
WC	0.98***	1***	0.79***	1				
DER	-0.41	-0.33	-0.24	-0.3	1			
CR	0.51	0.49	0.18	0.5	-0.63*	1		
ROI	-0.12	-0.16	-0.24	-0.14	0.19	-0.32		
NPS	0.31	0.3	0.29	0.31	0.47	-0.33	0.53	1


DER
ROI
NPR
CR
CAP_INV
NW
CAP_EMP
WC
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1

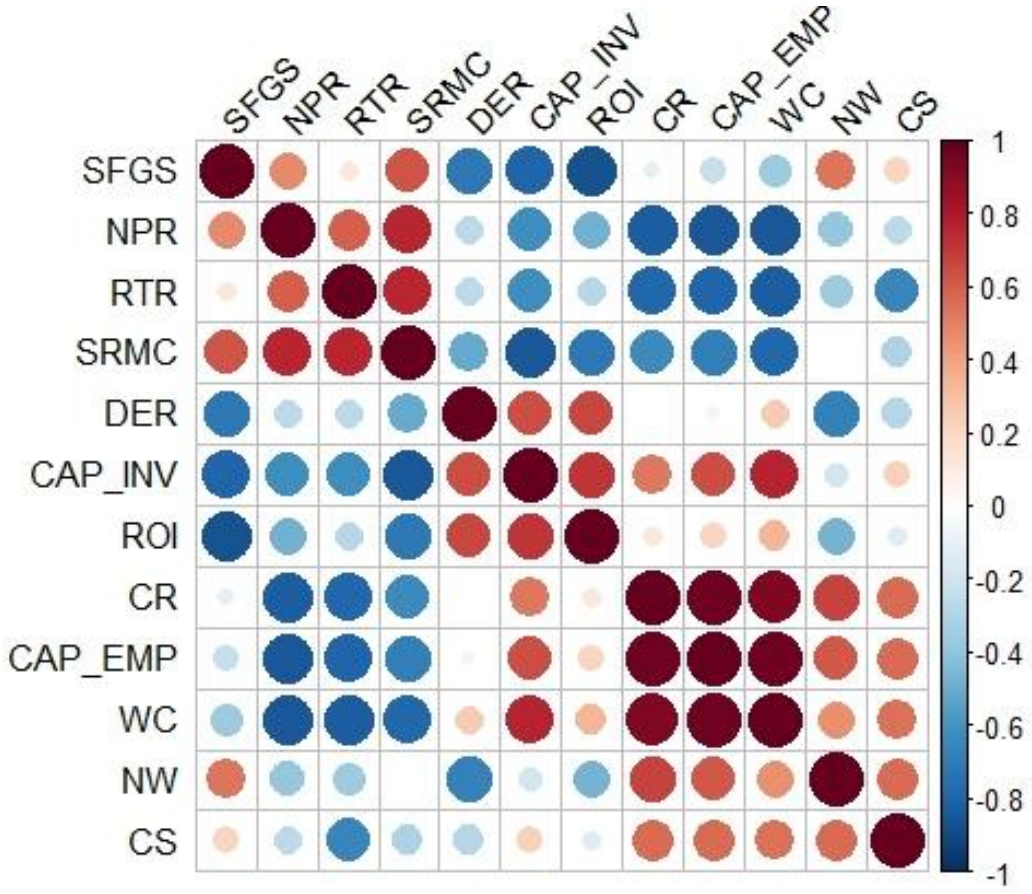
KTDC

	NW	CE	CI	WC	DER	CR	ROI	RS	SRMC	CS	NPS
NW	1										
CE	0.91***	1									
CI	0.82***	0.88***									
WC	-0.07	-0.13	-0.51	1							
DER	-0.89***	-0.87***	-0.88***	0.21	1						
CR	-0.16	-0.22	-0.61*	0.9***	0.3	1					
ROI	-0.45	-0.39	-0.4	0.22	0.23	0.32	1				
RS	-0.69**	-0.55	-0.43	-0.02	0.46	0.04	0.71**	1			
SFGS	-0.53	-0.35	-0.55	0.55	0.43	0.54	0.69**	0.65*	1		
CS	-0.72**	-0.7**	-0.91***	0.64*	0.75***	0.73**	0.44	0.39	0.69**	1	
NPS	-0.49	-0.44	-0.4	0.22	0.26	0.27	0.92***	0.76***	0.69**	0.44	1


CAP_INV
NW
CAP_EMP
WC
CR
DER
CS
SRMC
RTR
ROI
NPR
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1

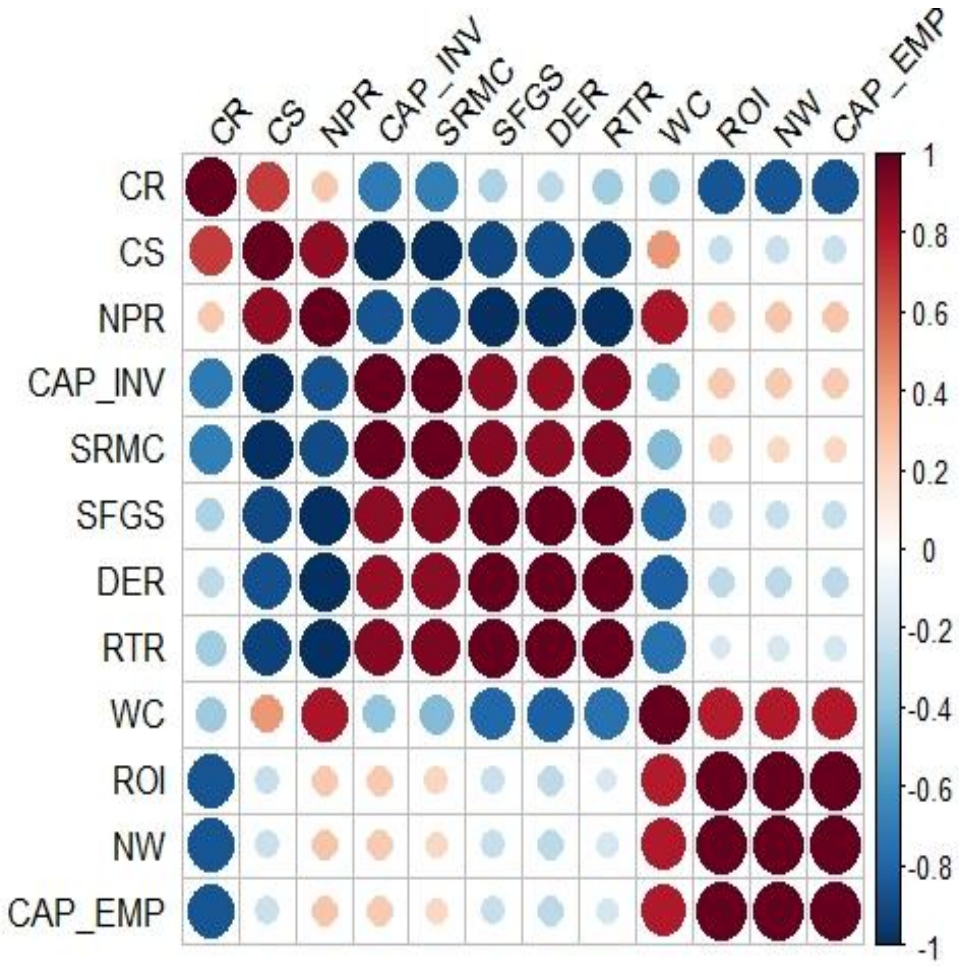
KEDCL

	NW	CE	CI	WC	DER	CR	ROI	RS	SFGS	SRMC	CS	NPS
NW	1											
CE	0.61*	1										
CI	-0.19	0.64*	1									
WC	0.45	0.97***	0.76***	1								
DER	-0.67*	0.06	0.64*	0.25	1							
CR	0.67*	0.97***	0.52	0.92***	0	1						
ROI	-0.47	0.21	0.71**	0.33	0.66*	0.12	1					
RS	-0.36	-0.79***	-0.62*	-0.83***	-0.27	-0.78***	-0.28	1				
SFGS	0.53	-0.23	-0.79***	-0.36	-0.72**	-0.11	-0.87***	0.12	1			
SRMC	-0.01	-0.69**	-0.85***	-0.78***	-0.51	-0.64*	-0.72**	0.75***	0.62*	1		
CS	0.57	0.57	0.23	0.54	-0.29	0.56	-0.14	-0.66*	0.21	-0.31	1	
NPS	-0.39	-0.85***	-0.62*	-0.85***	-0.27	-0.83***	-0.48	0.59	0.47	0.75***	-0.27	1


SFGS
NPR
RTR
SRMC
DER
CAP_INV
ROI
CR
CAP_EMP
WC
NW
CS
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1

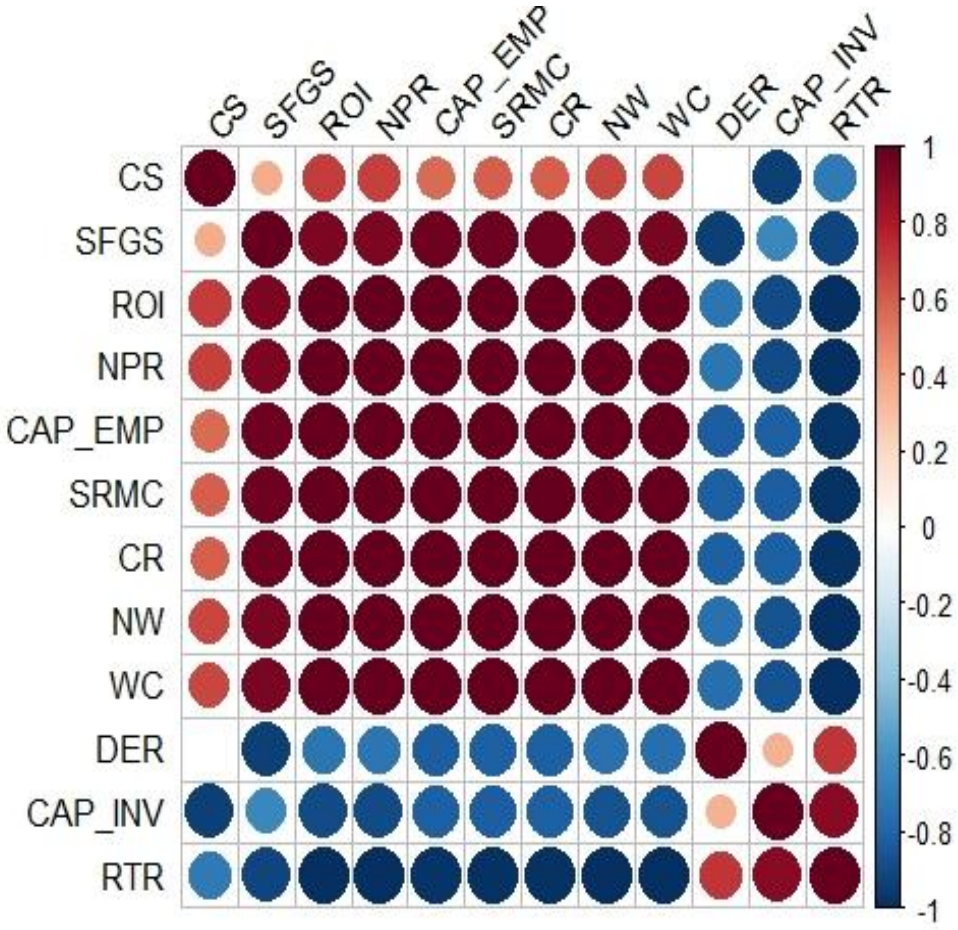
KSINCL

	NW	CE	CI	WC	DER	CR	ROI	RS	SRMC	CS	NPS
NW	1										
CE	0.98***	1									
CI	0.9***	0.91***	1								
WC	0.89***	0.86***	0.64*	1							
DER	0.68**	0.71**	0.88***	0.31	1						
CR	-0.08	-0.12	-0.34	0.1	-0.23	1					
ROI	-0.14	-0.17	-0.3	0.03	-0.21	0.39	1				
RS	0.59	0.6	0.78***	0.19	0.93***	-0.16	-0.23	1			
SRMC	0.2	0.2	1	-0.44	0.89	-0.68	0.21	0.93	1		
CS	0.25	0.22	0.35	0.1	0.39	-0.34	-0.19	0.28	-1	1	
NPS	0	-0.03	-0.03	-0.03	0.22	0.45	0.73**	0.17	-0.89	0.16	1


CR
CS
NPR
CAP_INV
SRMC
SFGS
DER
RTR
WC
ROI
NW
CAP_EMP
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1

TTPL

	NW	CE	CI	WC	CR	ROI	RS	SFGS	SRMC	CS	NPS
NW	1										
CE	-0.29	1									
CI	-0.52	0.94***	1								
WC	-0.04	0.11	0.22	1							
CR	-0.19	-0.16	-0.01	0.84***	1						
ROI	0.4	-0.5	-0.64*	0.03	0.23	1					
RS	-0.75***	0.61	0.79***	0.5	0.35	-0.48	1				
SFGS	-0.07	0.66*	0.67*	0.32	0.02	-0.42	0.5	1			
SRMC	0.14	-0.56	-0.53	0.32	0.41	0.37	-0.16	-0.24	1		
CS	-0.68**	0.63*	0.73**	0.1	0.11	-0.46	0.65*	0.48	-0.25	1	
NPS	0.43	-0.39	-0.57	-0.05	0.14	0.94***	-0.49	-0.28	0.37	-0.36	1


CS
SFGS
ROI
NPR
CAP_EMP
SRMC
CR
NW
WC
DER
CAP_INV
RTR
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1

Appendix 2

Descriptive Statistics of KFC

Company	Mean	S.D	Median	Minimum	Maximum	Skewness	Kurtosis
NW	16560.37	12264.35	11332	3900.14	42392.11	0.91	-0.63
CAP_EMP	41103.74	55153.7	9019	546	182401.9	1.19	0.08
CAP_INV	71716.9	35493.6	71766	2632.57	163709.6	0.53	0.34
WC	39879.59	55504.12	7637	648	182062.4	1.21	0.08
DER	4.86	1.49	5.28	2.52	7.36	-0.08	-1.27
CR	6.37	5.07	4.81	1	19.33	1.25	0.33
ROI	6.39	16.55	5.41	-30.12	45.25	0.62	0.52
NPR	2.76	5.9	3.42	-12.41	11.96	-0.54	-0.16

Descriptive Statistics of KTDC

Company	Mean	S.D	Median	Minimum	Maximum	Skewness	Kurtosis
NW	4576.54	2601.31	5894.84	132.89	7159.61	-0.77	-1.17
CAP_EMP	4227.42	2097.79	5122.17	690.25	7200.2	-0.57	-1.19
CAP_INV	5624.23	3028.88	5580.89	1527.85	10485.25	0.04	-1.41
WC	408.75	1158.73	289.59	-2420.21	2582.46	-0.09	0.15
DER	0.46	0.31	0.39	0.04	0.98	0.62	-1.14
CR	2.03	0.86	2.05	0.53	3.93	0.19	-0.56
ROI	2.84	5.29	1.19	-3.5	15	0.67	-0.78
RTR	0.61	0.21	0.55	0.2	0.96	0.13	-0.75
SRMC	1.13	0.51	0.93	0.46	1.82	0.19	-1.67
CS	35.33	5.63	36.14	28.19	43.4	-0.01	-1.81
NPR	1.5	4.37	0.86	-5.96	9.52	0.13	-0.94

Descriptive Statistics of KCL

Company	Mean	S.D	Median	Minimum	Maximum	Skewness	Kurtosis
NW	-1665.78	1561.57	-1041.39	-5679.05	-241.63	-1.2	0.2
CAP_EMP	-364	293.31	-368.27	-868.48	116.65	0.09	-1.03
CAP_INV	2354.54	1259.06	1746.53	1321.21	5845.94	1.45	0.87
WC	-414.36	259.79	-429.28	-881.69	-15.82	-0.03	-1
DER	1.23	1.13	0.57	0.41	4.22	1.29	0.52
CR	0.42	0.29	0.32	0.13	0.94	0.77	-1.1
ROI	-8.43	17.44	-1.38	-45.65	28.91	0	-0.01
RTR	0.92	0.73	0.64	0.24	2.69	1.19	0.21
SFGS	2.8	1.63	2.46	0.43	6.07	0.61	-0.74
SRMC	1.53	0.98	1.37	0.23	3.76	0.68	-0.45
CS	18.83	7.06	18.27	6.73	39.25	1.29	1.89
NPR	-42.42	79.51	-11.13	-234.68	24.75	-1.63	1.1

Descriptive Statistics of KMML

Company	Mean	S.D	Median	Minimum	Maximum	Skewness	Kurtosis
NW	28387.11	24146.5	37948.76	-7604.13	61326.57	-0.23	-1.55
CAP_EMP	29194.79	19998.36	38613.35	340.3	53904.96	-0.24	-1.74
CAP_INV	6477.39	4350.89	4664.21	3093.27	17196.72	1.36	0.62
WC	17470.56	10861.2	20231.02	2844.94	34600.97	-0.12	-1.48
DER	1.3	1.57	0.66	0.03	4.95	1.14	-0.08
CR	2.62	0.45	2.57	1.54	3.29	-0.58	0.02
ROI	16.05	22.1	13.57	-17.3	72.75	0.81	0.22
RTR	0.69	0.63	0.53	0.01	1.92	0.58	-1.05
SFGS	1.35	0.88	1.13	0.06	3.07	0.4	-1.02
SRMC	1.21	0.77	1.14	0.27	3.13	1.04	0.56
CS	23.66	13.88	21.14	7.45	55.49	0.75	-0.53
NPR	9.97	16.68	12.07	-27.67	40.02	-0.12	-0.36

Descriptive Statistics of KEDCL

Company	Mean	S.D	Median	Minimum	Maximum	Skewness	Kurtosis
NW	-6785.47	7883.59	-5181.61	-24366.8	1714.66	-0.67	-0.81
CAP_EMP	6643.68	8034.63	4450.23	-7648.84	19900.85	0.23	-1.16
CAP_INV	26728.61	10818.65	27425.35	12635.82	42008.8	0.04	-1.69
WC	5928.48	6996.51	3574.33	-5335.21	17293.69	0.31	-1.35
DER	1.36	0.58	1.06	0.58	2.35	0.33	-1.53
CR	1.21	0.34	1.18	0.65	1.7	0.08	-1.3
ROI	-17.01	33.45	0.68	-94	16.5	-1.19	-0.01
RTR	12.01	2.45	11.24	8.22	15.82	0.11	-1.45
SFGS	0.35	0.34	0.2	0.04	1.3	1.33	0.79
SRMC	3.56	1.84	3.24	1.11	6.34	0.24	-1.47
CS	58.75	9.88	55.91	40.49	76.11	0.11	-0.92
NPR	32.84	29.87	36.01	-3.04	84.19	0.22	-1.51

Descriptive Statistics of KAMCL

Company	Mean	S.D	Median	Minimum	Maximum	Skewness	Kurtosis
NW	5133.08	3858.67	5144.19	100	11763.23	0.17	-1.43
CAP_EMP	5053.73	3657.82	4969.19	544.1	11296.49	0.22	-1.46
CAP_INV	173.09	14.4	164.65	161.46	202.99	0.76	-1
WC	4216.2	3190.41	4141.38	401.23	9179.68	0.14	-1.62
DER	1.03	0.78	1.11	0.25	2.41	0.39	-1.43
CR	3.58	1.72	2.84	1.62	7.05	0.62	-1.03
ROI	23.19	15.2	16.35	3.35	50.6	0.52	-1.32
RTR	1.43	1.28	1.09	0.11	3.71	0.54	-1.29
SFGS	0.52	0.44	0.39	0.02	1.6	0.64	-0.59
SRMC	2.09	0.35	2.03	1.58	2.91	0.85	0.1
CS	67	6.8	64.71	58.42	80.6	0.61	-0.92
NPR	10.03	4.46	9.61	2.22	18.04	-0.07	-1.16

Descriptive Statistics of TTPL

Company	Mean	S.D	Median	Minimum	Maximum	Skewness	Kurtosis
NW	3916.95	1479.36	3861.66	-583.28	5996.34	-0.93	1.27
CAP_EMP	6603.08	3399.93	5475.14	2734.26	11966.93	0.38	-1.55
CAP_INV	2352.07	2432.22	1490.18	175.35	7400.59	0.66	-1.05
WC	2135.22	1633.39	2318.82	-310.93	4880.82	-0.06	-1.27
DER	4.18	0.22	4.23	3.94	4.38	-0.2	-2.33
CR	1.43	0.33	1.45	0.89	1.89	-0.21	-1.37
ROI	6.63	11.97	4.29	-24.94	27.57	-0.05	0.41
RTR	1.52	1.47	0.99	0.26	5.88	1.71	1.67
SFGS	1.1	0.63	1.25	0.1	2.49	0.22	-0.95
SRMC	1.44	0.78	1.39	0.41	2.7	0.25	-1.41
CS	30.37	7.81	30.02	15.02	49.85	0.33	0.03
NPR	3.21	7.64	3.31	-20.17	14.46	-1.02	1.72

Descriptive Statistics of TEKL

Company	Mean	S.D	Median	Minimum	Maximum	Skewness	Kurtosis
NW	1623.63	5830.22	-1461.23	-6205.02	11790	0.67	-1.24
CAP_EMP	3767.95	4233.66	1403.31	-455.81	11745	0.87	-1.01
CAP_INV	5192.76	1084.35	4707.39	4143.48	7385.7	0.7	-1.07
WC	3181.78	3793.85	1029.71	-710.9	9933	0.82	-1.09
DER	1.48	0.98	0.75	0.5	3.13	0.5	-1.51
CR	1.65	0.75	1.25	0.87	3.16	0.89	-0.85
ROI	3.83	34.52	3.85	-69.84	65.13	-0.34	-0.65
RTR	5.48	1.68	5.31	3.1	10.09	0.97	0.59
SFGS	1.12	0.79	0.97	0.14	2.93	0.7	-0.54
SRMC	1.8	0.42	1.82	0.74	2.58	-0.14	0.06
CS	61.56	6.91	62.23	48.64	76.87	0.09	-0.65
NPR	-0.36	14.14	1.88	-31.7	22.98	-0.74	-0.13

Descriptive Statistics of KAL

Company	Mean	S.D	Median	Minimum	Maximum	Skewness	Kurtosis
NW	-706.23	1295.93	-793.94	-4207.76	975.11	-0.99	0.64
CAP_EMP	461.55	607.87	432.18	-954.51	1432.81	-0.5	-0.2
CAP_INV	1971.08	784.59	1767.03	1227.77	4351	1.74	2.23
WC	234.05	595.58	191.22	-1119.67	1246.8	-0.31	-0.34
DER	1.72	1.26	1.69	0.2	4.55	0.71	-0.55
CR	1.57	0.65	1.3	0.48	2.63	-0.01	-1.37
ROI	-3.15	23.51	0.42	-67.65	30.65	-1.44	1.99
RTR	1.47	1.02	1.03	0.37	3.48	0.75	-0.94
SFGS	1.51	1.06	1.15	0.16	3.93	0.54	-0.77
SRMC	1.97	1.99	1.59	0.13	6.65	0.97	-0.2
CS	66.22	10.93	62.72	54.73	106.08	2	4.49
NPR	-12.49	50.75	0.45	-148.3	52.63	-1.15	0.67

Descriptive Statistics of KAICL

Company	Mean	S.D	Median	Minimum	Maximum	Skewness	Kurtosis
NW	807.96	1685.18	21.03	-433.07	5421.03	1.82	1.96
CAP_EMP	1143.06	1887.57	373.85	-60.95	6239.71	1.81	1.82
CAP_INV	810.73	277.86	671.9	541.9	1296.89	0.63	-1.31
WC	76.92	744.12	-5.46	-750.37	2363.07	2.02	3.73
DER	0.71	0.59	0.42	0.14	1.74	0.63	-1.3
CR	1.01	0.29	0.98	0.54	1.81	1.1	1.43
ROI	1.16	30.51	1.04	-56.24	95.78	0.78	2.11
RTR	3.7	1.82	3.33	0.68	7.43	0.1	-0.98
SFGS	0.82	0.49	0.71	0.09	1.79	0.49	-1.16
SRMC	0.49	0.27	0.62	0.03	0.9	-0.49	-1.2
CS	11.65	18.45	1.73	0.19	55.91	1.42	0.46
NPR	0.78	4.04	0.81	-5.85	11.09	0.69	1.17

Descriptive Statistics of TSCL

Company	Mean	S.D	Median	Minimum	Maximum	Skewness	Kurtosis
NW	-38.44	311.76	-113.13	-417.22	729.59	1.08	0.06
CAP_EMP	9.64	301.88	-78.58	-334.76	770.02	1.24	0.4
CAP_INV	149.84	47.47	172	50	210.62	-1.3	0.22
WC	-29.85	272.4	-100.37	-360.57	670.33	1.22	0.43
DER	0.7	0.5	0.49	0.11	1.86	0.56	-1.07
CR	0.92	0.54	0.78	0.35	2.17	1.17	0.09
ROI	-50.89	181.15	-7.71	-574.78	218.35	-1.52	2.21
RTR	0.89	1.11	0.16	0.01	3.13	0.94	-0.68
SFGS	0.44	0.48	0.17	0.01	1.29	0.77	-1.25
SRMC	2.63	2.17	1.91	0.32	8.64	0.94	0.2
CS	44.15	13.67	45.42	22.84	71.39	0.12	-0.79
NPR	-3.96	20.34	2.08	-61.85	34.13	-1.04	1.02

Descriptive Statistics of STL

Company	Mean	S.D	Median	Minimum	Maximum	Skewness	Kurtosis
NW	-2103.01	1059.66	-2001.61	-3909.99	-441.32	-0.34	-1.27
CAP_EMP	-42.63	374.2	-137.8	-503.22	954.97	0.99	0.29
CAP_INV	3148.04	1511.83	2834.52	1142.42	6216.71	0.46	-1.03
WC	-206.98	277.75	-279.64	-560.62	670.49	1.18	1.63
DER	3.55	1.59	3.57	0.23	6.44	-0.39	-0.1
CR	0.73	0.62	0.58	0.21	3.22	2.53	7.38
ROI	-47.59	28.63	-47.8	-121.04	1.03	-0.52	0
RTR	0.85	0.71	0.72	0.04	2.29	0.34	-1.36
SFGS	0.74	0.47	0.66	0.08	1.72	0.6	-0.86
SRMC	0.63	0.58	0.53	0.11	2.66	2.29	4.94
CS	61.81	4.84	60.98	53.27	70.04	0.25	-1.06
NPR	12.67	22.39	13.52	-34.24	64.86	-0.08	0.02

Descriptive Statistics of HDCL

Company	Mean	S.D	Median	Minimum	Maximum	Skewness	Kurtosis
NW	-34.27	168.89	4.2	-440.72	174	-0.58	-0.72
CAP_EMP	514.92	457.67	294.49	84.72	1483.79	1.01	-0.56
CAP_INV	803.49	570.57	604.9	212.11	2201.3	0.93	-0.28
WC	466.51	437.6	253.24	46.58	1337.26	0.92	-0.81
DER	1.95	1.9	1.19	0.21	6.95	1.18	0.32
CR	2.32	1.36	1.67	1.15	5.03	1.04	-0.55
ROI	-9.76	25.97	0.07	-78.25	26.5	-1.42	0.9
RTR	1.01	0.86	0.68	0.42	3.95	2.15	3.86
SFGS	6.25	1.38	5.87	4.26	8.63	0.35	-1.21
SRMC	0.71	0.9	0.3	0.01	2.78	1.34	0.15
CS	32.5	22.87	33.5	-4.03	57.88	-0.26	-1.73
NPR	-8.15	16.33	-0.46	-43.84	14.12	-0.84	-0.52

Descriptive Statistics of KSBCL

Company	Mean	S.D	Median	Minimum	Maximum	Skewness	Kurtosis
NW	-253.78	1097.71	217.35	-3031.33	725.51	-1.26	0.36
CAP_EMP	655.04	268.88	747.01	236.43	1234.67	0.06	-1.11
CAP_INV	1371.73	1071.4	1069.91	334.78	3444.16	0.9	-0.72
WC	384.7	215.48	385.04	-26.8	755.33	-0.12	-1.01
DER	1.02	1.14	0.67	0.02	3.7	1.27	0.22
CR	2.66	1.13	2.53	0.97	4.97	0.4	-0.9
ROI	-11.42	25.88	0.83	-61.51	20.29	-0.64	-1.08
RTR	0.76	0.49	0.78	0.05	1.62	0.12	-1.44
SFGS	2.4	1.38	2.47	0.32	5.7	0.55	-0.38
SRMC	1.54	0.62	1.26	0.9	3.08	1.12	-0.09
CS	68.25	9.57	70.62	49.29	87.33	-0.05	-0.75
NPR	-0.87	19.85	1.71	-53.65	29.47	-0.88	0.55

Descriptive Statistics of KSCSCL

Company	Mean	S.D	Median	Minimum	Maximum	Skewness	Kurtosis
NW	-23990.8	17541.48	-21112	-59026	-3068.22	-0.55	-1.12
CAP_EMP	6056.17	7696.86	7603.79	-15358.3	15505.13	-0.78	0.13
CAP_INV	32614.29	21988.38	30838.89	3821.09	68685.08	0.28	-1.4
WC	4774.38	7951.83	6225.74	-18279.3	14644.13	-0.9	0.62
DER	34.61	28.88	31.24	0.16	79.24	0.28	-1.52
CR	1.91	1.11	1.48	0.76	4.25	0.7	-1.07
ROI	-76.74	106.79	-33.41	-398.76	15.41	-1.49	1.66
RTR	0.81	0.82	0.51	0.09	3	1.24	0.38
SFGS	1.09	0.37	1	0.62	2.18	1.71	2.65
SRMC	0.3	0.25	0.23	0.01	0.95	0.78	0.03
CS	96.91	8.56	96.01	88.96	134.13	3.22	11.44
NPR	-0.16	7.64	-0.41	-17.1	12.87	-0.09	-0.49

Descriptive Statistics of KSADCL

Company	Mean	S.D	Median	Minimum	Maximum	Skewness	Kurtosis
NW	56.97	102.93	25.51	-68.07	388.6	1.47	2.07
CAP_EMP	251.11	220.71	228.41	1.82	871.6	0.9	0.47
CAP_INV	423.96	257.7	428.63	68.41	993.13	0.19	-0.9
WC	244.56	219.03	227	-1.06	860.49	0.92	0.45
DER	0.89	0.13	0.89	0.58	1.14	-0.04	-0.12
CR	9.04	10.24	3.68	1.25	31.05	1.18	-0.33
ROI	-121.46	211.8	-2.36	-685.05	4.36	-1.43	0.62
RTR	3.69	2.32	2.96	0.48	7.04	0.18	-1.63
SFGS	0.9	0.49	0.92	0.02	1.5	-0.33	-1.18
CS	73.79	19.18	82.2	35.1	92.18	-0.64	-1.17
NPR	-1.6	45.83	-0.2	-84.4	92.6	0.19	-0.42

Descriptive Statistics of KSPDWWCL

Company	Mean	S.D	Median	Minimum	Maximum	Skewness	Kurtosis
NW	46.31	31	41.75	-5.27	98.15	0.16	-0.89
CAP_EMP	94.58	74.17	69.49	6.95	265.02	1.01	-0.14
CAP_INV	122.06	85.53	95.41	18.35	305.67	0.94	-0.33
WC	55.3	60.54	26.43	6.61	214.24	1.4	0.5
DER	0.97	0.88	0.53	0.05	2.71	0.47	-1.34
CR	5.58	4.39	3.37	1.31	16.67	0.88	-0.49
ROI	-13.63	20.41	-3.39	-68.17	9.65	-1.01	-0.03
RTR	11.06	10.54	7.77	0.27	32.69	0.78	-0.76
SFGS	2.85	2.49	2.12	0.14	8.58	0.91	-0.37
SRMC	31.34	21.59	35.25	0.08	62.99	-0.01	-1.39
CS	49.75	23.66	48.23	-9.63	90.35	-0.29	-0.33
NPR	-147.14	268.99	-6.48	-727.06	33.93	-1.31	-0.14

Descriptive Statistics of KSINCL

Company	Mean	S.D	Median	Minimum	Maximum	Skewness	Kurtosis
NW	1189.8	724.03	1115.72	115.32	2326.47	0.18	-1.4
CAP_EMP	1245.74	674.68	1118.65	204.91	2326.47	0.2	-1.29
CAP_INV	1506.53	938.67	1066.96	556.3	3600	0.86	-0.82
WC	747.71	508	715.18	-87.66	1514.1	-0.01	-1.11
DER	0.48	0.7	0.15	0.01	2.51	1.64	1.44
CR	3.39	1.89	3.37	0.16	8.46	0.43	0.1
ROI	0.37	5.45	1.74	-17.33	7.42	-1.45	2.28
RTR	5.73	7.15	3.11	1.47	32.69	2.55	6.08
SFGS	2.23	1.65	2.15	0.63	3.92	0.05	-2.33
SRMC	5.17	8.16	0.84	0.08	14.58	0.38	-2.33
CS	26.54	13.37	22.53	10.81	54.44	0.73	-0.75
NPR	3.93	10.74	5.22	-21.83	26.79	-0.5	0.24