Chapter VII

Summary of Findings & Conclusions
Sugar Industry in India

Structurally, there are two main stages of production within the sugarcane industry. The primary stage covers all the activities and process of production from the preparation of the land, planting and tending the sugarcane plants right up to and including harvesting of the cane. Its transportation to the mills or factories for processing into sugar. The secondary stage of the industry involves harvesting the production of sugar, whether raw or refined, and manufacture of its by-products. Once the sugar has been produced, it has to be marketed and distributed.

The efficiency of willing operations as measured by the amount of cane it takes to produce a tonne of sugar, depends on a combination of technical and economic factors. At the technical level, the size of plant and scale of operations are clearly crucial factors. If, for example, there will be substantial underutilisation of capacity. Although, technically the extra capacity could be used to expand the scale of operations, this has to be set against the increased cost of transporting cane from a further field. While, on the other hand, a series of smaller mills each drawing cane from a smaller supply area, will reduce transport costs, it will push up processing costs per unit of output and the scale of operations will be too small to reap the benefits of economics of scale. A trade-off between processing costs and transport costs is thus one of the main determinants in the section of the Optimum size and location of sugar mills.
Sugar Industry is the second largest Industry to textiles in India. It occupies an inalienable place in the Industrial economy of rural India. The rural areas supply the crucial raw material for the sugar Industry viz., sugarcane which in turn becomes the major source of demand for its products. Sugarcane and its products have been known in India from ancient times. Annals of history from Upanishads to travelogue of Westerners bear ample testimony to the flourishing nature of Indian Sugar Industry and sugar trade. Nevertheless, the development of Sugar Industry on the modern lines started only after the second decade of the twentieth century when the Indian sugar Industry was granted Tariff protection against foreign competition.

Consequent upon the granting of Tariff Protection, there was a robust growth in the number of sugar mills in India from 31 in 1931-32 to 153 in 1936-37. More than two-thirds of these mills were concentrated in the two provinces viz., Uttar Pradesh and Bihar. Correspondingly, the area under sugarcane cultivation and sugar production went up at the average compound growth rate of about 2.9 per cent and 4.7 per cent respectively. After independence, the National Governments at the centre and states patronised the development of sugar industry by encouraging the cooperative movement. There was a phenomenal growth in both sugarcane cultivation and sugar production. The area under sugarcane cultivation compound at the average growth rate of about 1.98 per cent, sugarcane production at the rate of about 5.3 per cent during 1950-51 to 1997-98. The sugarcane yield per hectare also surged by more than 50 per cent from 40.5 tonnes per hectare to 65.0 tonnes per hectare during this period. The Government of India shared the
responsibility of encouraging the Sugarcane cultivation in India by announcing statutory minimum price for sugarcane at the beginning of every sowing year. This support price was linked to the basic recovery rate of sugar from sugarcane at 8.5 per cent. Over the period of 45 years, the minimum statutory price soared from Rs 4.60 to 39.10 per quintal. Adequate incentives were provided from cane with higher recovery rate. About 25 per cent of sugarcane was being utilized for the production of white sugar in the beginning of the planning era which steadily rose to about 43 per cent, registering a compound growth rate of 5.3 per cent per annum.

Correspondingly, there was a fall in the use of sugarcane for the production of Gur and Khandasari to 45 per cent in relative terms but in absolute terms, they went up by about 15 per cent. The sugar cane utilized for seed, feed and chewing remained stagnant around 12 per cent during the period.

The rapid surge in the use of sugarcane for white sugar production was made possible by the spectacular growth in the number of sugar units from 139 in 1950-51 to about 394 in 1993-94 thanks to the growth of co-operative movement. The cooperative sector accounted for about 56 percent of total units exhibiting an impressive growth of about 5-9 per cent per annum during the period from 1988-89 to 1997-98. The Joint sector units which accounted for the rest showed a splendid growth rate of about 23.8 per cent. About 3.26 lakh workers were employed in these sugar mills during 1990-91. More than two-thirds were unskilled and semi-skilled workers.
At the all India level, the co-operative sugar mills crushed about 55 per cent of total cane and the rest of joint sector sugar mills. The cooperative sugar mills had a still higher share of about 58 per cent in the total sugar produced in the country mainly due to the achievement of higher sugar recovery rate. While the cooperative sector achieved a record level of six per cent compound growth in the sugar production, the joint sector could achieve only 4.5 per cent growth. In terms of capacity utilization, cane crushed and duration of crushing season the co-operative sector fared better than the joint sector.

In the total cost of production of sugar, cost of sugarcane constituted more than 50 per cent. The other major components of cost were manufacturing cost and interest charges. Over the period of 10 years from 1988-89 to 1997-98, the total cost of sugar seemed to have doubled. Consequently, both levy and free sale prices of sugar were marked up. In view of mounting strain of the exchequer, the levy quota was curtailed from 65 per cent to 40 percent and correspondingly, the free sale quota was stepped up. In tune with the increase in the domestic sugar production from 30 lakh tonnes to 154.06 lakh tonnes during the period 1960-61 to 1997-98, the domestic consumption also increased from 25.89 lakh tonnes to 120.26 lakh tonnes. Even though the sugar production was falling in the next two years, the internal consumption continued to surge to touch the level of 129.6 lakh tonnes in 1996-97. The gap was being met partly by depleting buffer stocks and partly by imports. During the years the buffer production some marginal quantities of sugar were exported. In the year 1993-94 export of sugar and Molasses fetched foreign exchange equal to Rs. 178 crores compared to Rs. 13.32 crores in the
year 1960-61. Besides, sugar, Gur and Khandasari were consumed in the country on large scale particularly in rural areas. However, over the period from 1950-51 to 1992-93, the share of sugar in the total consumption rose from about 25 per cent to about 54 per cent and the share of Gur and Khandasari fell correspondingly. The per capita consumption of sugar surged from 3.0 Kg in 1960-51 to 13.6 Kg in 1993-94 while that of Gur and Khandasari rose marginally from 9.5 to 11.0 Kg.

The state-wise analysis of sugarcane cultivation and sugar production revealed a number of interesting findings. Uttar Pradesh was the largest sugarcane growing state in the country with an area of 17.74 lakh hectares, and with a production of 10.48 crore tonnes. This was followed by Maharashtra, Tamil Nadu, Karnataka, Andhra Pradesh occupied only fifth position. However, with regard to productivity, Tamil Nadu topped the list followed by Karnataka, Maharashtra, Kerala and Gujarat. Andhra Pradesh scored only Sixth rank in the yield per hectare of sugarcane.

With regard to sugar production, Maharashtra accounted for more than one-third of total sugar produced in the country in the year 1996-97. The three sugar giants viz, Maharashtra closely followed by Uttar Pradesh and Tamil Nadu shared two-thirds of total sugar production of 129.05 lakh tonnes in the country in the year 1996-97. Andhra Pradesh with a total sugar production of 6.47 lakh tonnes in 1993-94 occupied Fifth Position as in the case of area under sugarcane cultivation and sugarcane cultivation. The sugar recovery rate from sugarcane at all India level showed a marginal improvement from 9.92 per cent in 1976-77 to about 10 per cent in 1996-97 with fluctuations. Some
states particularly Andhra Pradesh, Gujarat, Haryana, Kerala and Tamil Nadu improved the Sugar recovery rate seemed to have deteriorated

In the year 1989-90 about 10,275 metric tonnes of sugar were put to sales in the country Maharashtra and Uttar Pradesh together accounted for about one-third of total sugar sales in the country. While the six other major states viz., Gujarat, West Bengal, Tamil Nadu, Madhya Pradesh and Bihar accounted for another one-third, all the other 17 states and Union territories shared only one-third of sugar sales in the country. In the consumption of sugar also broadly similar picture emerged.

From the summary of findings relating to problem and prospects of Sugar industry in India, it could be inferred that the development of white sugar industry stored only after the development of Tariff protection to sugar industry in 1932. The real progress in the growth of sugar Industry was seen only after the dawn of planning era when the cooperative sector was emerged. The fluctuations as measured in terms of co-efficient of variation were also considerably low. It has been clearly brought out that there were wide disparities with regard to area under sugarcane cultivation, production of sugarcane and yield, as well as in the number of sugar mills, production, consumption and sales of sugar among different states.

Structures and Growth of Sugar Industry in Andhra Pradesh:

• Sugar Industry in Andhra Pradesh, the fifth largest sugar producing state in India, flourished under the auspices of three sectors viz., Cooperative

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sector, public sector and private sector. The co-operative sector consists of 18 factories with a total crushing capacity of 30.36 lakh tonnes. The Giant Public Sector, Nizam sugars limited, is the largest single producer of sugar in Andhra Pradesh with eight units spread in different parts of the state with a total crushing capacity of 15.53 lakh tonnes per annum. The private sector accounts for 12 factories with a crushing capacity 43.55 lakh tonnes per annum. These sugar mills are supported by 1.60 crore metric tonnes of sugarcane produced in 2.09 lakh hectares of land spread throughout Andhra Pradesh (as per data relating to 1991-98). Over the 40 year period, the area under sugarcane increased by about three per cent and the sugarcane production by 2.38 per cent. In tune with the increase in the area under sugarcane cultivation and sugarcane production, the number of sugar factories in Andhra Pradesh increased by about six percent and their crushing capacity by about 9.5 per cent. The sugar production in Andhra Pradesh rose from 1.44 lakh quintals to 8.74 lakh quintals registering a linear growth rate of about 11 per cent per annum during the period 1956-57 to 1995-96. The co-operative sector sugar factories which took lead in the development of sugar Industry at all India level played only secondary role in Andhra Pradesh. Out of 107.28 lakh metric tonnes of sugarcane crushed in Andhra Pradesh in the year 1994-95, private sector took lead and crushed about 46 per cent of total cane which was followed by cooperative sector (36 per cent) and public sector (18 per cent). In terms of capacity utilisation also private sector seemed to have fared well as it achieved higher capacity utilization with less range of fluctuations when compared with other sectors. Moreover, the private sector sugar mills, on the average, worked for longer duration when compared to co-operative and public
sectors In view of these facts, the private sector sugar mills accounted for about 50 per cent of total sugar (8.74 lakh quintals) produced in Andhra Pradesh during 1994-95. The cooperative sugar mills in the state produced about 34 per cent and the public sector units about 16 per cent. Higher sugar recovery rate with low fluctuations might be another reason for higher sugar production in the private sector. In the production of molasses also private sector dominated which shared about 49 per cent of total production while the cooperative and public sector units shared about 34 per cent and 17 percent respectively. The total sugar consumption in Andhra Pradesh was put at 6.56 lakh tonnes accounting for about six per cent of total sugar consumption in India. Over the period of 15 years, the sugar consumption in the state is more than doubled.

The district wise and region wise data on sugar Industry indicated many important findings. Among the three regions, Coastal Andhra (consisting of three regions), Coastal Andhra (consisting of nine districts) accounting for an area of 63 per cent under sugarcane cultivation, Telengana (consisting of 10 districts) and Rayalaseema (comprising four districts) together shared the rest. In the case of sugarcane production also a similar picture was observed. The yield per hectare was very high in the four Rayalaseema district when compared to that in coastal Andhra and Telangana districts. Out of 38 Sugar mills in Andhra Pradesh, 22 were located in Coastal Andhra, eight in Rayalaseema and eight in Telangana districts. Out of 22 sugar mills in coastal Andhra, 12 were in cooperative sector, two in public sector and eight in private sector. Out of eight units in Rayalaseema, four were in cooperative sector, one
in public sector and three in private sector. Out of eight sugar mills sugar mills in Telangana region, two were in cooperative sector, five in public sector and one and in private sector. The statistics clearly indicated that two thirds of total sugar factories were located in coastal Andhra districts. In fact, out of 12 private sector units, eight were located in Coastal Andhra itself.

The bird's eye view of the development of sugar Industry in Andhra Pradesh brought home the fact that there has been a statistically significant growth (in terms of Linear and compound growth rates) in the number of sugar-factories ever since the formation of state in 1956. However, there has been an uneven distribution in the number of sugar factories across various regions/districts in Andhra Pradesh as could be understood from the foregoing discussion. In the light of summary of indicator both the hypothesis viz. Operational efficiency in respect of Private sugar factories is better than that of co-operative and public sugar factories, the location of the factory, present technology have an impact operational efficiency.

It is true that in terms of cane crushed, capacity utilisation, production of recovery rate and production of By-products, the private sector grew significantly.

The review of Literature relating to the development of sugar Industry in India and Andhra Pradesh yielded contradictory results. While the performance of cooperative sector seemed to be better at all India level, that of private sector was better in Andhra Pradesh. These seemingly contradictory conclusions compelled the researcher to have a further probe on these aspects.
The absence of such comprehensive studies also prompted the researcher to undertake the present work. Since an in-depth analysis of operational efficiency of all the sugar units in Chittoor district. In these five units, two units are recently started. The researcher mentioned cooperative unit and private unit. In addition to the available published data different institutions and different sugar units. The collected data for the period 1991-92 to 1997-98 were analysed using appropriate ratio analysis and statistical tools ranging from simple to highly rigorous. Many important findings of far reaching policy implications were obtained from the analysis.

Development of Sugar Industry in Study area:

Every year sugarcane cultivation is increasing move on the district. At the same time steps are being taken for starting new factories in the district. Chittoor district may stands first in the country production when one factory which got licence starts crushing. Among the eighteen factories in the State Chittoor district has got five factories. In unexpected way sugarcane cultivation is increasing every year in the district. All the same time in order to face the demand plans are going on for starting of new factories on private sector.

The two main cooperative sugar factories are responsible for the increase of extent of sugarcane cultivation. For the present in more than one lakh acres of land is being cultivated sugarcane. Two cooperative factories and three private factories are in the crushing capacity of 10,360 thousand tonnes per day. Before three decades sugarcane cultivation was limited to Chittoor surroundings step by step it spread through out the district.
A brief description of the profiles of the selected sample sugar factories covering the origin, working performance of the factories, linear and compound growth rates of working of Chittoor district sugar factories, sugarcane area, production and yield, cost of cultivation, recovery percentage, Grades of sugar, By products and Recovery Percentage, labour employed, wages and welfare expenses are provided in this chapter.

1. The Chittoor co-operative sugar factory limited (Chittoor).
2. Sri Venkateswara Co-operative Sugar factory Limited (Thrupati).
4. Predential Private Sugar factory (Pichaturu).

During the 1997-98 the Chittoor Co-operative sugar factory crushed 2.65 lakh tonnes of cane and produced the same quality of 0.66 lakh tonnes of sugar as in 1997-98, but with decrease in recovery to 8.82 per cent. The capacity utilisation was 127.67 per cent. The sales and operating profits/Losses were Rs 2451.43 lakhs and Rs 286.72 lakhs respectively. Linear growth rate in this factory 19.167 per cent, compound growth rate was 436.855 percent respectively.

During 1997-98 the cane crushed 2.42 lakh tonnes and sugar produced was 0.18 lakhs tonnes with a recovery of 8.20 per cent. The capacity utilisation at 148.76 percent. The sales was 1436.96 lakhs and operating losses was Rs 124.08 lakhs in Sri Venkateswara Co-operative sugar factory. In this factory linear growth rate was 26.595 percent, compound growth rate was 197.428 per cent respectively.
During 1997-98 the cane crushed was only 14.41 lakhs tonnes and produced 1,45,353 lakhs tonnes of sugar. The capacity utilisation was increased by 360.25 per cent. The sales were increased to 2405.51 lakhs in Shree Vaani Sugar Factory. In this factory linear growth rate was 11.249 per cent, and compound growth rate was 12.208 per cent respectively.

Prudential and KCP Mayura sugar factories are recently started. These factories' performance is also better than cooperative sugar factories.

The sugarcane crop was classified into two categories viz., platoon crop and retoon crop, for calculating the cost of cultivation of sugarcane. The cost of cultivation is more in the private sector, but in co-operative sectors the level is less.

Because of high technology used in the private sectors.

There were 1,106 labourers in the Chittoor Co-operative sugar factory in 1997-98 of whom 252 were permanent, 334 were seasonal, and 520 were casual, accounting for 22.78 per cent, 30.19 per cent, and 47.03 per cent respectively.

During 1997-98 the total number of labourers in Shree Vaani Private Sugar factory 366 of whom 213 were permanent, 138 were seasonal, and 15 were casual, accounting for 58.19 per cent, 37.72 per cent, and 15 per cent respectively. This is the comparison of two factories. More labour concentration is in the co-operative sector, less labour concentration in the private sector.

Wages and welfare expenses in Chittoor Co-operative sugar factory during 1997-98, 450.24 lakhs were wages, 12.41 lakhs were welfare expenses. And in the private sector, Rs 105.50 lakhs were wages, 41.81 lakhs were welfare expenses respectively.
In all five sugar Units are located the sugarcane areas. But some factories are not development of Infrastructure facilities like Roads, Transport facilities etc. Private Units are following present technology, but co-operative units are not following. Hence, the hypothesis tested(3) that the Location of the factory, current technology have an impact on operational efficiency. The private sector units achieved a higher growth rate of sales when compared to their counter parts.

Organisation and Administration of Sugar Industry:

The sugar factories in Cooperative sector in the state under the Jurisdiction and dual control of the Directorate of sugar and commissioner of Sugarcane, Government of Andhra Pradesh, Hyderabad. The cooperative Sugar factories are managed by boards of directors of the factory. One of the directors is elected as Chairman of the Board of Directors which lays down policies and decisions, regarding the conduct and administration of the factory. The State Government, on the advice of the Director of sugar, appoints one managing director to implement the policies and decisions, taken by the Board. The managing Director is the Chief Executive and administration of the unit. The State Government will also appoint managerial personnel like Chief Engineer, Deputy Chief Engineer, Chief Chemist, Chief Agricultural Officer, Deputy Chief Agricultural Officer, Chief Accounts Officer, administrative officer etc, for any co-operative sugar factory located in the State. These personnel will head their respective departments. They are liable to transfer to any other co-operative sugar factory within the Zone in which they are working.
Sugar factories in the Public sector in Andhra Pradesh are controlled and governed by the Nizam Sugar factory Limited (NSF), the registered and administrative office of which is located in Hyderabad. The NSF Limited at present owns six sugar factories are also considered to be public sector units. The Nizam sugar factory limited is governed and administered by a board of directors, nominated by the State Government. The Government nominates one of them as chairman of the board of directors. The Government of Andhra Pradesh appoints a senior I A S Officer as managing director to look after the affairs of the units and implement the policies, laid down by the board of directors. The managing director, with the approval of the board, appoints general managers to administer individual units. In each unit, several officers like Chief Engineer, Chief Chemist, personnel officer etc will look after all officers pertaining to their department.

The sugar mills in the private sector have comparatively greater freedom in the management of their affairs, subject to the conditions, rules and regulations framed under the Indian companies Act, 1956, and other legislations, enacted to regulate the administration, management and control of joint stock companies, factory established etc. Like other sugar Units under the co-operative and public sectors, the management of these units also get employed highly skilled persons to run the units in a most profitable manner.

The Chittoor Sugar Units, besides raising resources through equity and preferential shares, depended heavily on state and central Governments as well as on term Lending institutions. It is heartening to note that the sample sugar mills in the two sectors have deployed most of their fixed capital in plant.
and machinery. The growth rate of this component in two sectors has been substantially higher when compared to the components. Most of the current assets of sugar units in the two sectors were in the form of inventories followed by loans and advances. These two components have recorded significant growth during the study period. Creditors and advances were major sources of short-term finance to co-operative and private sector units.

Efficiency in the development of financial resources was analysed in terms of various ratios. The analysis revealed that the current ratio—an Index of industry's financial stability—was very much unfavourable in the co-operative Unit but it was found to be favourable in the private units.

With regard to debtors—turnover ratio, if must be emphasized that no single unit has crossed the safe limit of 90 to 120 days. The debt-equity ratio—a measure of solvency of an Unit—was very high in cooperative Unit, but very low in private unit implying that the owners of the private sector units in comfortable position when compared to cooperative units. Broadly, a similar picture was observed in the case of interest coverage ratio. The gross profits have been positive have been showing an increasing trend in two sectors. Operating profits were negative in co-operative unit implying that these units were not able to meet Operational expenditures from out of its gross profits. The fluctuations in gross and operating profits were very less in the Private Sector and were exhibiting steady increasing trend. Other incomes and total income before taxes were either insignificant or showing negative signs in cooperative sector and substantial in the private sector.
The gross profit ratio has been positive with moderate rising trend in two sectors while the net profit ratio was zero in cooperative sector, but positive and declining in the private sector. A similar picture was obtained from the analysis of Return on shareholders Funds and Return on capital Employed. The implication of this is that unless urgent corrective measures are taken, profits are also bound to disappear even from the private sector units. In the Light of Summary of indicators both the hypothesis tested (2,4).

Efficient management determines operational efficiency and Low financial performance because of Low operational efficiency has adverse impact on farmers.

Operational Efficiency of Sugarcane industry in study area:

Since the Efficiency evaluation is an exercise in comparison which aims at comparing the accomplishments with goals on sample results with population parameters, an attempt was made to have relative look at some key indicators of efficiency of sugar units in relation to those of Chittoor district. 

The analysis revealed that in terms of capacity utilization, the cooperative sector is adjudged to be efficient as it had higher average and statistically significant student ‘t’ test statistic value. However, in terms of sugar recovery rate, the Private sector was considered to be more efficient both in terms of mean ‘t’ test statistic.

The cost of goods sold and total cost of production seemed to have risen rapidly in private unit when compared to cooperate units. Among different cost
components, materials consumed accounted for substantial proportion and registered a higher growth when compared to all other components in two sectors. The analysis of operating cost of sample sugar units indicated that interest and tax burdens were higher in private unit than in cooperative units. The share of cost of production in the total cost was higher and it had registered higher growth in cooperative units and when compared to the private units. The share of selling and distribution expenses were worked out to be very meagre and have recorded very low growth in all the sectors. In spite of higher cost of production recorded in private sector, the break up of total cost of sugar per Kg in the two sectors revealed that cost of sugar per Kg was more in Cooperative and less in private units in that order. While the cost of Sugar per Kg was steadily rising in cooperative Unit, it was declining in the private unit in the last few years of the study period. Consequently, the burden of subsidy involved in levy sugar was very less (0.41 paise) in private unit when compared to cooperative (5.65 paise) in 1996-97. In almost all the units, the cost of sugarcane constituted about 50 per cent of total cost and it has been existing upward trend as well. The other important components of cost were manufacturing and administrative expenditures. As noted already the incidence of interest and tax had been increasing in almost all two units and more impressively in private unit. Regarding cost-benefit analysis ratio it is found that as costs are escalating, benefits are not rising, in proportion, the reason is price is not enhanced by State.
The analysis of determinants of cost of sugar per quintal (using Multiple Regression Analysis) in the sugar units in Chittoor district provided a number of interesting findings. In the case of cooperative Unit, except output per worker and capital productivity, all other variables and tend to increase the cost of production. All the four variables were associated with positive sign implying that all of them tend to push up cost of production. In the case of private sector, except ne variable viz., capital productivity, all other variables tend to reduce the cost of sugar per quintal. Accordingly, the total cost of production of sugar was very low in private unit implying a higher degree of efficiency when compared to cooperative unit.

In the light of these findings the hypothesis is tested (1) viz., operational efficiency in respect of private sugar factories is better than that of co-operative sugar factories.

In brief the policy implications of the present study is that judged by majority of indicators of Efficiency of sample sugar units in Chittoor district. The Private unit is adjudged to be a better choice when compared to cooperative units. Here also, unless precautionary measures are taken, cost of production is expected to rise steeply and consequently the probability of erosion of profits is very high and imminent.