STRATEGIES FOR INCLUSIVE & SUSTAINABLE DEVELOPMENT

WORKING PAPERS

Volume – IV

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Poverty and Gainfulness of Employment: Normative Approach

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In this study the concept of gainfulness of employment of manual workers is looked at first from a worker's subjective point of view and then from a normative point of view. It is argued that possibilities of negative gain from work exist in both senses for workers not having land or other income earning assets, in a labour surplus developing economy. A criterion of gainfulness of work of such workers is formulated under a normative approach taking into account different types of costs of work and returns from work.

The study puts forward the view that observation of a reduction in income poverty of manual workers in terms of a poverty line or a decrease in the rate of their unemployment in accordance with a time criterion, can both be misleading from a developmental point of view especially in the unorganized sector of a developing economy; assessment of gainfulness of work in accordance with the suggested criterion can provide a more accurate description of their economic conditions.

Many poor families in countries such as India do not have land or other income earning assets or any formal skills and they have to depend mainly on manual work[1] in the unorganized sector for their livelihood. Manual workers of these families include casual workers, regular employees and the self employed.

How are their economic conditions changing? Facts on their employment, wages and earnings and headcount ratios with reference to a poverty line can provide misleading answers to this question. One reason

behind this is that there are often wide differences in the terms of labour contract and returns of the labourers from the same type of work in the unorganized sector of a developing labour surplus economy. Facts on the extent of their employment obtained in accordance with a time crirterion[2] of employment therefore can hardly serve to indicate their actual economic conditions.

Facts on wages and earnings of workers also cannot make possible any satisfactory assessment of their economic conditions as a result of another reason. The workers have to bear some costs for being in a position to work. These include the minimal costs which they have to meet for their very existence as well as some additional costs varying with the type and extent of work done. Unless all these costs are taken into account the adequacy of the income of a worker cannot be judged.

As regards a poverty line, it is defined as the average per capita expenditure required for meeting some basic needs of a people. But such an average cannot be taken as an accurate estimate of the amount of expenditure required for meeting the actual minimum needs of any particular individual or family. This is because the minimal requirements of different items can significantly differ from individual to individual and from family to family. These can also vary with the type and extent of work performed by an individual. It may be inappropriate therefore, to identify a worker as poor or non-poor with reference to a poverty line however defined. It is quite possible that in spite of being above a certain stipulated poverty line a worker remains in absolute poverty as a result of her inability to meet the costs, which she has to incur in connection with her work.

In view of the above mentioned facts it appears that the state of income poverty of a manual worker could be understood better if in addition to the conventional ways of looking at it, a qualitative aspect of employment - namely its gainfulness from the point of view of a worker, would also be taken into account. But what can gainfulness of employment actually mean? How can one distinguish between the states of being gainfully or not gainfully employed? Is it possible that some workers continue to remain employed with negative gainfulness of their work? Can full employment of a worker under some existing terms of employment ensure attainment of gainfulness of work?

These questions cannot be answered unless one thinks in terms of a definite concept of gainfulness of work. There seems to be a need for a special approach for defining gainfulness of employment of workers facing

possibilities of absolute poverty. This is because the behavioural pattern of a worker in poverty can have some special characteristics.

The present study is focused on the question of gainfulness of employment of manual workers in the unorganized sector of a labour surplus developing economy. But the normative approach adopted in this study can be relevant and useful for understanding the economic conditions of workers also in some developed capitalist economies in which absolute poverty is found to exist to varying extents

Search of a Concept

In classical economic writings one finds a subsistence theory of wages. The concept of subsistence wage and the economic reasoning for explaining the process of its determination changed significantly from author to author over centuries after Adam Smith. Lewis (1954) in connection with his assumption of a horizontal supply curve of labour assumes a constant level of institutionally fixed real wage rate, for minimum subsistence in a labour surplus rural economy. Some general norms underlying the idea of subsistence are reflected in the concept of a poverty line, which has evolved since the nineteenth century.[3] We shall return to these issues, while discussing the income criterion of employment and poverty lines.

The marginal productivity theory of wages looks at the question of gainfulness of employment mainly from the point of view of an employer. Also, the correspondence between marginal productivity and the real rate of return of a worker is not very clear in the real world. It is for example, a widely shared view that in peasant farming the return to the work of a family worker can be approximated better in terms of average rather than marginal productivity. Further, in the real world there are various types of wage paid work for which productivity can neither be clearly defined, nor regarded as a factor determining the level of employment. On account of these reasons, productivity cannot be taken to serve as a criterion of gainfulness of employment from the point of view of a worker.

Since the 1950s, the phenomenon of a coexistence of positive and downwardly rigid wages with severe unemployment has received attention of researchers. In an implicit and inadvertent way, the question of gainfulness of a labourer's work has been addressed in theoretical models for explaining the said phenomenon. Leibenstein (1957) and Majumdar (1959) explain the paradoxical phenomenon mentioned above, in terms of

an assumed link between nutrition and work efficiency. They argue that if there is a positive association between wages and the efficiency of labour, it can be profitable for employers to pay the workers at a rate higher than the subsistence wage rate Rodgers (1975) looks at the problem in terms of the number of work units.

Through oligopsonic decisions regarding labour time and time wage adjustments, an equilibrium wage rate is determined. In accordance with the 'marginal productivity of work units' and with a given demand curve, the model makes possible the determination of the wage rate which is optimal from the employers' point of view. When demand for labour becomes too low as in the lean seasons, this rate is supposed to maintain at the subsistence level the number of work units required by the employers Keeping in view the relation between nutrition and productivity Dasgupta (1993) argues that allotment of small plots of land to landless workers can increase availability of labour with higher productivity at lower wage rates. Bardhan and Udry (1999) define the efficiency wage rate as that rate, which given a relation between wage rate and productivity, minimises the cost of buying one efficiency unit of labour. They also take into account an association of efficiency wages with long term labour contracts including various forms of tying arrangements covering the lean season, for ensuring availability of adequate number of workers during the peak season in agriculture. From the efficiency theory of wages it appears that it may be in the interest of the employers to prevent wage rates from falling too low as a result of presence of involuntary unemployment.

Solow (1990) speaks of a social norm forbidding the undercutting of wages by the unemployed and underemployed in the context of advanced industrial countries. The matter is explained differently in the context of a poor rural economy by Osmani (1990) in terms of a model of 'self-enforcing co-operation in an infinitely repeated non-cooperative game situation', which makes workers' wage bids higher than their reservation wages. From the different above mentioned studies it appears that rural labour markets can have a built in mechanism preventing employment of workers becoming non-gainful. These formulations obviously do not focus on the question of gainfulness of employment from the point of view of a worker as such Dandekar and Rath (1971) point out that an adequate level of employment must be defined in terms of its capacity to provide minimum living to the population. While commenting on the last mentioned study, Raj Krishna (1973) remarks that they reject the distinction between poverty, considered as consumption below a certain minimum, and unemployment

considered as an involuntary failure to get income-yielding work for the normal number of working days in a year.

One problem arising in connection with defining gainfulness of work in terms of Dandekar and Rath's income criterion of employment is that the income of a worker can include that from work as well as non-work sources. Another limitation of this approach is that to be in a position to work a manual worker like other workers, has to incur certain costs varying with the nature and extent of work performed. In some cases the costs incurred may eat up a major part of the worker's earnings. In such cases even if a worker's family has an income above a certain poverty line it can actually be in a state of absolute poverty. The income criterion of employment suggested by Dandekar and Rath does not take into account these costs incurred by a worker in connection with work As a matter of fact, the costs of and returns from a labourer's work can be looked at either from a worker's own subjective point of view or from a normative point of view.

We therefore, consider two different concepts of gainfulness of employment of manual workers - one using a subjective approach in the sense of a worker's subjective assessment of the gainfulness of his or her work, while the other is based on a normative approach. Both these look at the question of gainfulness from the point of view of a worker and the two concepts are not necessarily mutually exclusive in all respects.

Subjective Approach

While looking for a criterion of gainfulness of employment one cannot overlook a worker's own assessment of the gainfulness of his or her work. Such evaluation can be made theoretically in terms of the level of utility or satisfaction obtained from a combination of income and leisure and such satisfaction can depend on a host of subjective factors such as a person's outlook in respect of life and work, concern for other members of the family, sense of prestige associated with being engaged in any particular work etc.[4] For any given work such subjective evaluation is likely to differ significantly from person to person. In connection with his observations on peasants and dualism, Sen (1984) defines the "real cost of labour" as the "individual rate of indifferent substitution between income and labour" (Sen 1984: 39).

The concept of subjective evaluation of gainfulness of work is closely associated with the conclusion that in an economy, where a labourer has freedom of choosing a combination of work and leisure and where certain

other assumptions of competitive conditions are met, he or she will participate in an income earning work if and only if it is considered as gainful. In other words, if the real cost of work and return from work are defined in disutility and utility terms respectively, the possibility of negative gain from work becomes non-existent under the assumptions of mainstream economic theory. In the real world however, some existing work involvements of labourers can be considered to be non-gainful even in the subjective sense on account of the following reasons.

- As a result of incomplete knowledge of the prospects of income earning from a particular type of work on account of market imperfections and the existence of uncertainties, after a period of work a labourer can find that his or her expectations regarding income have not materialised.
- Even if extra-economic coercion is absent, a labourer can be compelled by some economic reasons to take up a job, knowing fully well that it will not be gainful in some ways.

The first of the above mentioned reasons points to the possibility of a gap between a person's own evaluation of gainfulness of work from the ex ante and ex post points of view. On the other hand, the second reason mentioned above indicates the possibility of a conflict between a worker's own subjective evaluation of gainfulness of a work and its evaluation in a normative way.

With the objective of avoiding total starvation of dependent members, an earning member of a labour household, under certain circumstances can agree to work even at an exceptionally low rate of wage which cannot meet the nutritional requirement of the individual or the household completely. Although taking up such a job can be regarded as a matter of free choice on the part of a labourer, describing such work as gainful is obviously anomalous. It is on account of an economic compulsion that the individual chooses to work despite his or her knowledge of the fact that earning from such work cannot replenish the energy used by the person in the process of the work. Even with the knowledge that a job is not gainful from the long run point of view, a labourer may decide to take it up with a view to avoid immediate starvation. Such wage work can be looked upon as a case of distress sale of an individual's labour power.

Normative Approach

Gainfulness of work can also be defined with reference to certain

norms. If being alive is preferred to the alternative of not being alive, the ability to avoid life ending hunger must be regarded as an important benefit obtained by a worker even if the worker's span of life becomes low as a result of undernourishment. In other words any income earning activity on the part of a poor worker cannot but be regarded as beneficial if it makes possible attainment of the survival objective.

But the question of survival involves questions of entitlement associated with a widely recognized fundamental right, namely the right to live. Such benefit can be regarded as a necessary condition for gainfulness of employment. But it may not be adequate for ensuring gainfulness of work in the sense in which we intend to define it.

In our view gainfulness of employment should be defined in terms of a comparison of income earned from work and costs incurred by a worker for being in a position to work. Each unit of labour, like other commodities, has a cost of production of its own. If a labour household is looked upon as an enterprise producing and supplying labour for economic uses, sustainability of this process of production requires at least the meeting the costs of different inputs used in the process of production of labour.

Can these costs of production of labour be approximated in terms of a poverty line? The answer is negative on account of various reasons. A poverty line can be defined in many different ways[5]. But even if it is defined as a level of income required for meeting some minimum needs, it cannot in general serve as a measure of these costs. The actual minimal nutritional requirements of individuals can deviate significantly from average energy norms on which a poverty line may be based.

Beside this, a poverty line defined in accordance with average nutritional requirements or any other social norm, does not take into account the additional costs which a worker has to bear for performing different types of work. As a result of these reasons a poverty line cannot serve as an indicator of the actual costs incurred by a worker.

Nutrition and Work Capacity

The nutritional cost and work capacity relation has been viewed theoretically in terms of curves of different shapes by authors including Dasgupta (1993) and Bardhan and Udry (1999). The basic idea underlying these curves is that a person has a certain basal metabolic rate (BMR) at which the ability to perform heavy tasks remains almost absent. As the nutritional level is gradually increased the physical work capacity of a

person responds positively depending on her physical endowments. After a certain extent of increase in nutrition, work capacity increases less and reaches a limit after which any further increase in nutrition starts reducing work capacity.

During the last few decades many empirical studies have been conducted on different aspects of the relation between nutrition and physical work capacity, making use of different scientific techniques. We do not intend to enter into the technicalities of such studies. But as regards the question of gainfulness of work it is important to know whether additional nutritional requirements of a worker over and above her basal metabolic rate (BMR) can vary directly with the nature and extent of the work performed or not. Results of empirical studies provide different answers to this question.

Edmundson and Sukhatme (1990) for example, observe, "workers with low energy intakes are often as or more productive than workers with high intakes" (Edmundson and Sukhatme 1990: 264). Reviewing studies on nutrition and work capacity Dasgupta (1993) concludes that people enjoying superior nutritional status "can perform a greater range of tasks (e.g. lift heavier loads) and accomplish them in less time" (Dasgupta 1993: 465).

The present writer conducted a number of case studies in the Birbhum and Burdwan districts of West Bengal and in Kolkata. From these studies it is found that the consumption level of staples including rice and wheat differ among individual adults when they continue to remain without any hard physical work. Their consumption requirements increase to extents varying from individual to individual, when they participate in such work. It is also found that the average consumption requirement of adults differs among groups of persons engaged in different kinds of manual work.

From the Indian Council of Medical Research (1990) it is found that an average Indian man weighing 60 kgs requires 3,800 calories if he is engaged in heavy activity but only 2,425 calories when engaged in sedentary activity, this implying that in the case of heavy work, calorie requirements are estimated to be 60% higher. With reference to the last mentioned finding Deaton and Dreze (2009) write, "The importance of accounting for activity levels in any calorie-based assessment of nutritional status arises from the fact that calorie requirements increase quite sharply with level of activity" (Deaton and Dreze 2009: 57).

Worker's Costs

A labour household is the basic unit from which the marketable labour service of a manual worker originates. For enabling its members to be in the labour force such a household must be in a position to meet at least the cost of metabolism of its members with moderate physical activity and the minimal costs of other items such as shelter, clothing, foot wear, fuel etc. These costs should also include the accessibility costs of primary education and health care, assuming that these are provided by the state. All these can be taken to comprise the total fixed cost of the labour household over a period of time.

The minimal fixed nutritional cost of a household can depend on factors such as its age and sex structure and the body mass indexes[6] (BMI) of the family members, their dietary habits and local market prices of the food items that are consumed. The minimum cost of the other items as mentioned in the preceding paragraph can depend on different characteristics of the members of a labour household and factors associated with urban or rural location of the household. The main difference of this view of a household's fixed cost from a poverty line is that we are here concerned with the actual rather than any estimated average cost. In contrast with a poverty line this fixed cost will be household specific and as such it can differ considerably from household to household.

In addition to the fixed cost the household will have to meet task-specific additional costs of its workers, which comprise the variable cost associated with the type and extent of work performed over a given period of time. One part this variable cost will be the minimum additional nutritional cost of performing specific tasks. The workers may also have to incur a number of incidental expenses in connection with work, which can depend not only on the number of days of work but also on circumstantial factors such as distance traveled for attending work and the urban or rural characteristics of work site.

Criterion of Gainfulness

For all categories of manual workers including casual workers, regular employees and the self-employed, a criterion of gainfulness of employment in accordance with our approach requires that over a period of time a worker's earning from work is adequate for meeting her share of the fixed cost of the household and the variable cost of her work. But such a definition would require an assumption regarding the pattern of sharing of

the costs of a household by different working members in case the number workers of a household is larger than one. But the pattern of cost sharing can differ widely from household to household as a result of various possible reasons so that an assumption regarding the pattern of intra-family cost sharing can be unrealistic. These questions relating to cost sharing can be avoided if gainfulness of employment is looked at from the point of view of a labour household as a whole, rather than from the point of view of an individual worker.

Over a period of work, the total cost incurred by a labour household can be estimated in terms of,

$$C = F + \sum_{i=1}^{L} xi \qquad (1)$$

F represents the fixed cost of the labour household over the period of time under consideration. This fixed cost is supposed to be the cost of the metabolism of all members of the household with moderate physical activities and other basic minimum requirements. L denotes the number of workers in the family. x_i represents the variable cost incurred by the ith labourer of the household as a result of participation in work. We have,

$$x_i = \sum_{t_i=1}^{T_i} m_{ti} n_{ti} + K_i$$

In the above expression ti denotes the alternative tasks performed by individual *i*, m_{ti} stands for additional daily nutritional requirement of individual *i* for performing task t_i and n_{ti} the number of days for which the labourer performs task t_i. For all the tasks performed, the working days add up to the total number of days, for which the individual is engaged in work during the period. K_i represents the variable incidental expenses incurred in connection with work.

Income earned by a worker can be represented differently depending on whether payment is received in terms of daily wage rates[7] or piece rates. If payment is in terms of daily wage, assuming that the rate can differ for particular types of manual work, the wage earning of the worker over a period of time can be written as,

$$w_i = \sum_{t_i=1}^{T_{ti}} w_{ti} n_{ti} \qquad (2)$$

If payment is made in piece rates varying from task to task we can write *ut* as the number of units of a task performed by the worker over the whole period under consideration. Letting w_t^p represent the payment received per unit of performance of task *t*, the annual income of the worker from all tasks performed at piece rates, can be written as,

$$wpi = \sum_{t_i=1}^{T_i} wti^p uti \tag{3}$$

In the case of self-employment, income can depend on various aspects of productivity and profitability of the activity concerned. It can be estimated by deducting from the gross revenue of the self-employed worker, all costs other than that of the worker's own labour. The income from self-employment over the whole period is written as *Ws*.

Assuming that a worker can receive payment for her work in one or more of the three different ways mentioned above, her aggregate income over the whole period can be defined as,

$$\sum_{i=1}^{L} yi = wi + wpi + wsi \tag{4}$$

The extent of gainfulness of work of the household can be measured in terms of,

$$G = \sum_{i=1}^{L} yi - C \tag{5}$$

From (5) we obtain,

Index of gainfulness (IGE) = (G ÷ C) × 100 (6)

The value of the index depends on a multiplicity of factors including the types of work in which the members of a household remain engaged, the wage rates, a worker's family structure and metabolic rates of family members with moderate physical activity, other fixed household level costs, market prices of goods consumed, minimal additional nutritional and other costs connected with work performance. The suggested index of gainfulness of work can therefore provide a more realistic and economically more meaningful picture of the state of poverty of a family of manual workers in comparison with the method of describing poverty in terms of

a poverty line defined as a fixed average of minimal consumption requirements.

Empirical Applicability

The present author has conducted case studies of a number of purposively selected manual labour households not having land or other income earning assets, in the rural and semi-urban areas of the Birbhum and Burdwan districts and in the Kolkata city of West Bengal in India. An attempt has been made to assess the IGE of each selected labour household with a view to examine the empirical applicability of the suggested criterion of gainfulness of employment. Some problems encountered in the process of collection of facts for computation of IGE of the labour households are mentioned first.

In some cases the respondent workers of the households lacked a clear view of the minimal fixed and variable costs of their households. An assessment of such costs was possible to some extent only after repeated interviews of other members of the households, including non-working members. Some worker respondents were unable to recollect even the magnitudes of their incomes beyond a short period of time past, such as a month. The present writer thinks that more or less accurate household level information regarding the minimum costs and incomes from work over a period of time can be obtained only if these facts are collected regularly after intervals as short as possible.

In this connection we would like to mention also that the case studies conducted by the present writer serve to provide only some preliminary impressions regarding the empirical plausibility of some propositions and arguments forwarded in the present paper. But our empirical findings do not make possible any statistical inference regarding any particular universe of discourse.

The labour households case studied in the rural areas include those with landless labourers mainly engaged in agricultural operations and those engaged in non-agricultural activities of different types. For both types of labour households it has been possible to identify some with negative values of IGE. It has been observed that the workers and other family members of the households with negative IGE are emaciated to varying extents and are unable to maintain their shelters satisfactorily. In some cases the children of these households remain wholly illiterate and remain engaged in activities including procurement of items of food or fuel

woods. As regards a household of agricultural labourers, the IGE seems to have a marked seasonal pattern of variation In the Kolkata city some labour households have been found with per capita earnings higher than most of those case studied in the rural areas. But these urban households are foot-path dwellers and are also not in a position to send their children to schools. Apparently their IGE values seem to be positive. But these values would definitely get considerably reduced if the costs of a little more hygienic urban accommodation and schooling of children were also to be taken into account.

From our empirical studies it is found that as a result of interfamily differences in fixed costs and work related variable costs there is no one-to-one correspondence between per capita income of a labour household and its IGE. This finding supports our argument regarding the impossibility of identification of the absolutely poor among the workers in terms of any conventional poverty line. Our empirical studies also serve to show that the extents of income poverty of workers not having any land or other income earning assets can be monitored much better in terms the index of gainfulness of employment.

Conclusion

Absolute poverty defined in terms of the suggested index of gainfulness of work differs significantly from that defined with reference to a conventional poverty line. Unlike a poverty line the IGE takes into account income earned from work as well as costs incurred by workers for being in a position to work and these depend on various individual and family level differences which cannot be realistically approximated in terms of any poverty line

Frequencies of workers corresponding to different levels of gainfulness of their employment can serve to indicate certain trends or potentialities of development, which remain obscure in a description of poverty in terms of a head count ratio with reference to a fixed poverty line.

From the present formulation it can be seen that when the value of the index of gainfulness of employment of a labour household equals zero, it can meet the bare minimum expenditure which it has to incur to enable its members to be in a position to work and to meet the minimal consumption requirements of the dependent members of the family. It can be regarded as a critical value and a family with a value of the index lower than zero can

be regarded as poor in an absolute sense If the index of gainfulness of work is found to be negative, it can have different implications or reasons behind it. For example, it can be because the workers are unable to find adequate work opportunities On the other hand, in case the workers of a family with negative IGE, are fully employed in accordance with a time criterion, it can be regarded as evidence supporting the hypothesis that despite low wage rates these people have opted for work, this amounting to distress sales of their labour power. Negative gainfulness of work can also be a result of many other individual factors including those associated with the temperaments and capabilities of the workers concerned Negative gainfulness of work is likely to keep the workers undernourished and unable to meet various essential requirements including those connected with health and hygiene. Such a state of existence can also be an important reason behind a lack of educational development of the children of a worker's family. There will obviously be individual differences in the pattern in which these different basic needs will remain unsatisfied as a result of a certain extent of negative gainfulness of work of a labour household. Speaking generally, such a state of existence can be associated with a downward pull in respect of the capabilities of work of workers and the family concerned. It can also be looked upon as a condition which can lead to increased indebtedness and a premature exit of the workers from the labour force.

In contrast with the two above mentioned cases a household with a value of the index above the critical value zero can be expected in principle to be in a position to save a part of its income. Such saving can serve to open up prospects of better education and skill development of the children of the family. It can also make it possible for a labour household to accumulate resources, which can facilitate self-employment of its workers as and when necessary. But there can be marked individual differences in the actual pattern of utilization of what may be defined as a potential surplus obtained by a labour household from work.

In so far as manual workers are concerned therefore, studies of trends of their poverty should be conducted not only in terms of the conventional poverty lines but also in terms of a criterion of gainfulness of their employment. Studies of employment and unemployment of these workers should also be accompanied by facts on gainfulness of employment.

Case studies of stratified samples of labour households can be make possible more or less accurate estimation of the index of gainfulness of employment of the workers belonging to labour households.

Notes

1. According to the National Sample Survey Organization (N.S.S.O) of India manual work is defined as job essentially involving physical labour. Persons engaged in jobs not involving much of physical labour and at the same time not requiring much educational background, such as peons, chowkidars, watchmen etc are also recognized as manual workers. This definition is found in Govt. of India (2006).
2. Application of the time criterion in large sample surveys may be associated with an element of arbitrariness in a statistical sense. For example, in India's first Agricultural Labour Enquiry (1950-51), Persons who worked even for a day during the reference period of a month were taken to have been gainfully employed The methodology of the First Agricultural Labour Enquiry is discussed in Govt. of India (2006).
3. Dadabhai Naoroji used a poverty line for estimating the head count of the poor in India. He read his paper on 'Poverty of India' before the Bombay branch of London's East India Association in 1876. This study was included in Naoroji (1899).
4. Sen (1984) mentions some of these aspects while discussing employment, institutions and technology.
5. As Srinivasan (2007) mentions, in India different analysts and the Planning Commission have defined and used many different poverty lines. At the global level also the head count ratio is obtained with respect to different stipulated levels of income.
6. BMI is the ratio of a person's weight to the square of his or her height.
7. Wages and salaries may be in cash or kind or partly in cash and partly in kind (excluding exchange labour). We are thinking in terms of money values of wages in kind estimated at market prices.

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2

Recessionary Shock and Factor Return in an Underemployed Economy

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Abstract

This paper builds a general equilibrium model for a small open economy with unemployment of unskilled labor to assess the impact of a recessionary shock. It is shown that irrespective of the factor intensity assumption skilled wage and rental ratio goes up if recession led price fall is significant. However, when the price fall is not sufficiently big, factor intensity assumption becomes crucial for the eventual effect on factors' return ration.

Keywords: *International Trade, general equilibrium*

JEL classification: F11, D5

In a very few recent papers the attempt has been made to look at the effects of recession on informal wage, informal output, skilled-unskilled wage gap, formal output etc. Notable among those are Marjit *et al*. (2010), Chaudhuri (2010), Mandal *et al*. (2010). All these papers have used a full employment framework where unionized formal sector leads to the emergence of informal units that absorb the left out unskilled workers. Unlike these works here we frame a trade theoretic general equilibrium set up to accommodate the possibility of unemployment of unskilled workers. Absence of informal units helps bringing in unemployment issue in such a structure.

The prime focus of the current paper is to take a look at the recessionary shock on skilled wage and rental in general and skilled wage-rental ratio in particular. Albeit being institutionally fixed, unskilled wage has a significant role in determining skilled wage-rental ratio in the post-recession phase[1]. The main result that we derive in this paper is that irrespective of factor intensity assumption recession is likely to raise the skilled wage-rental ratio. However, under a reasonable condition the ratio may decrease in post-recession situation.

The paper is structured as follows. Next section describes the model and derives basic results. Third section concludes the paper.

The Model and Basic Results

Taking clue from Batra and Beladi (1988, 1989) we develop a general equilibrium trade model in line of Jones (1965, 1971). We have a small open economy producing two goods *X* and *Y* using three factors of production viz., skilled labor (S), unskilled labor (L) and capital (K). $\overline{w}$ is the institutionally determined wage rate for those unskilled workers who get employment. All unskilled workers are not fortunate enough to get job at the wage rate $\overline{w}$. So the rest remain unemployed. This is how we characterize underemployment in this model. *S* and *K* face competitive factor market and earn w_s and *r* as return, respectively. Goods' markets are competitive and production functions are linearly homogeneous. Moreover, *S* and *K* are fully employed. Thus we have following set equations to describe the model.

Competitive price equations ensures equality between cost of production and commodity prices.

$$w_s a_{sx} + \overline{w} a_{lx} + r a_{kx} = P_x \tag{1}$$

$$\overline{w} a_{ly} + r a_{ky} = P_y \tag{2}$$

On the other hand, competitive conditions that factors S and K be fully employed are:

$$a_{sx}.X = \overline{S} \tag{3}$$

$$a_{kx}.X + a_{ky}.Y = \overline{K} \tag{4}$$

Unemployment of L is described as,

$$a_{lx}.X + a_{ly}.Y < \overline{L} \tag{5}$$

Input-output coefficients for *X* and *Y* are denoted by,

$$a_{ix} = a_{ix}\ w_s, \overline{w}, r \tag{6}$$

$$a_{iy} = a_{iy}\ \overline{w}, r \tag{7}$$

Note that here $P_j \Rightarrow$ price of the j[th] commodity ($j = X, Y$); $w_s \Rightarrow$ skilled wage; $\overline{w} \Rightarrow$ unskilled pre-determined wage; $r \Rightarrow$ rate of return to *K;* $a_{ij} \Rightarrow$ production requirement of the i[th] factor in one unit of j[th] commodity ($i = S,L,K$ and $j = X,Y$); $\overline{S} \Rightarrow$ total supply of skilled labor; $\overline{K}$ total supply of capital; and total supply of unskilled labor.

Here we have nine unknown variables ($X, Y, w_s, r, a_{sx}, a_{lx}, a_{kx}, a_{ly}, a_{ky}$) and nine equations (equations (1), (2), (3), (4), (6) and (7)). Note that equation (6) – (7) contains five different equations for input coefficients. Equation (5) becomes redundant as X and Y can be solved from (3) and (4). Hence our model is complete and solved.

A Recessionary Shock and Factor Return

During the last financial crisis led recession all the economies world wide have suffered. UNCTAD data (UNCTAD Report, 2009) shows that the global crisis has affected not only the manufacturing good but also the other goods. In between 2008-09, food prices have gone down by 30%, the price of agricultural raw material has experienced a fall of around 36%, it is 48% for vegetable oilseeds and oils, tropical beverages has been hit by 15% slash in price. These points are the trigger points of our comparative study. So we start from an observed phenomenon where p_x and p_y have decreased. Then we figure the possible theoretical consequences on factor prices. Without losing the essence of our analysis we presume that both p_x and p_y have fallen by the same extent. This would help us pin-point the focal issue of the paper.

As $\overline{w}$ is exogenous in the system it is not interesting to compare $\overline{w}$ with w_s and *r*. instead we emphasize on w_s/r or $\hat{w}_s - \hat{r}$ [where '$\wedge$' represents proportional change].

Totally differentiating the price equations and rearranging yields,

$$\hat{w}_s\theta_{sx} + \hat{\overline{w}}\theta_{lx} + \hat{r}\theta_{kx} = \hat{P}_x \tag{8}$$

$$\hat{\bar{w}}\theta_{ly} + \hat{r}\theta_{ky} = \hat{P}_y \tag{9}$$

θ_{ij} implies the value share of ith factor in jth commodity.

Solving for we get,

$$\hat{r} = \frac{\hat{P}_y}{\theta_{ky}} - \hat{\bar{w}}\frac{\theta_{ly}}{\theta_{ky}} \tag{10}$$

$$\hat{w}_s = \frac{1}{\theta_{sx}\theta_{ky}}\left\{\left(\hat{P}_x\theta_{ky} - \hat{P}_y\theta_{kx}\right) + \hat{\bar{w}}\left(\theta_{ly}\theta_{kx} - \theta_{lx}\theta_{ky}\right)\right\}$$

Note that $\theta_{sx} + \theta_{lx} + \theta_{kx}) = 1 = \theta_{ly} + \theta_{ky})$. Using this condition we have,

$$\hat{w}_s = \frac{1}{\theta_{sx}\theta_{ky}}\left\{\left(\hat{P}_x\theta_{ky} - \hat{P}_y\theta_{kx}\right) + \hat{\bar{w}}\left(\left(\theta_{ly}\theta_{lx}\right) - \theta_{sx}\theta_{ly}\right)\right\} \tag{11}$$

From (10) and (11),

$$\hat{w}_s - \hat{r}) = \frac{\theta}{\theta_{sx}\theta_{ky}}\left(\theta_{ky} - \theta_{lx} - 1\right) + \frac{\hat{\bar{w}}}{\theta_{sx}\theta_{ky}}\left(\theta_{ly} - \theta_{lx}\right) \tag{12}$$

As we have stated earlier, for sake of simplicity we assume, $\hat{P}_x = \hat{P}_y = \hat{P}$.

Whatever be the value of $\bar{}_{ky}$ and $\bar{}_{lx}$, ($\bar{}_{ky} - \bar{}_{lx} - 1) < 0$ as $0 < \bar{}_{ky}, \bar{}_{lx} < 1$. Therefore it is apparent from (12) that given $\bar{w}$, *P* and w_s/r are negatively related, whereas for any given P, a rise in $\bar{w}$ will cause an increase in w_s/r if $\bar{}_{ly} > \bar{}_{lx}$ and conversely if $\bar{}_{ly} < \bar{}_{lx}$. These arguments are diagrammatically represented in figure 1.

For given $\bar{w}$ or for $\bar{}_{ly} = \bar{}_{lx}$, the relation between *P* and w_s/r is given by AB line in figure-1. If $\bar{}_{ly} > \bar{}_{lx}$, AB will shift up to CD and when $\bar{}_{ly} > \bar{}_{lx}$, AB shifts down to EF.

Now we shall consider two situations simultaneously: a fall in general price level or *P* and an increase in institutionally determined $\bar{w}$. Say in the pre-recession phase the price level was at P_1 and the corresponding w_s/r was w_s/r_1. Let us assume that in the post recession phase *P* has been reduced to P_2 and $\bar{w}$ has been raised to some extent in tandem. Depending on the value share of labor in *Y* and *X AB* will shift up or down. It is shown in figure -1 that if *P* falls substantially, it does not matter whether $\bar{}_{ly} \gtrless \theta_{lx}$, w_s/r must go up. In other words the difference between skilled wage and rental must expand. This leads to Proposition-I.

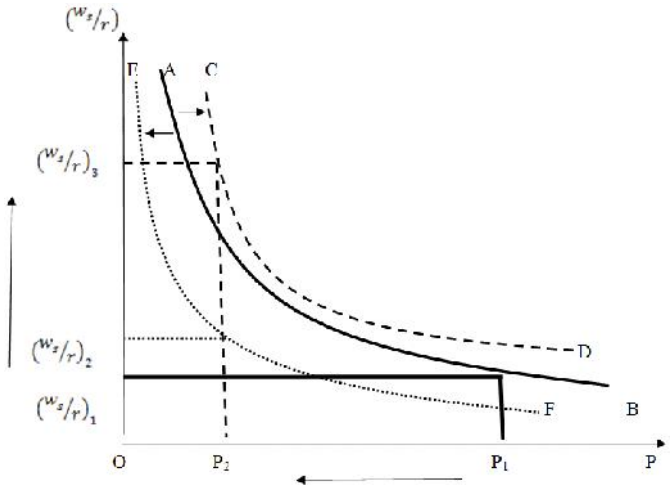

Fig. 1.

Proposition I: *Due to recessionary shock the gap between skilled wage and rental would be widened unambiguously if the extent of shock is relatively strong.* *QED*

Here it is important to note that for any given $\bar{w}$, a fall in P must increase (sliding up through AB) w_s/r ratio. Factor intensity assumption is redundant in this case.

However, if *P* does not fall significantly we may have an interesting result. If Y happens to be more labor intensive in value sense than X,

w_s/r would rise up to w_s/r_3 consequent upon a fall in P from P_1 to P_2.

Whereas if Y becomes less labor intensive than X, w_s/r would fall instead. This is shown in figure 2. Therefore the following Proposition is immediate.

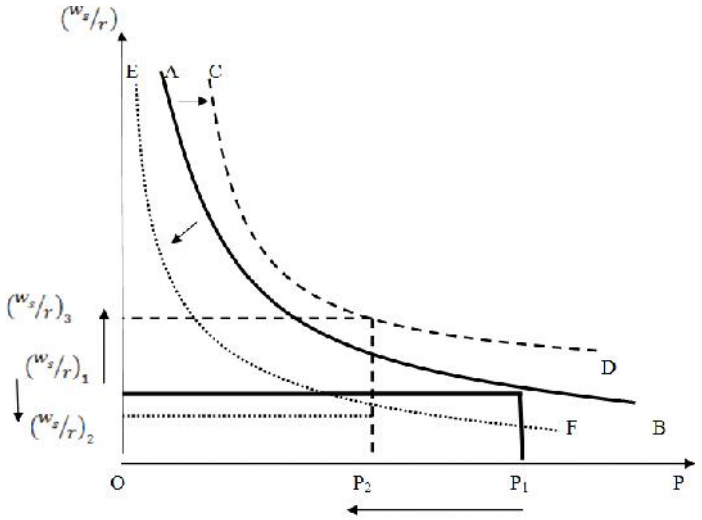

Fig. 2.

Proposition II: *If the recessionary shock is not so strong the skilled wage and rental ratio would rise if* $\bar{}_{ly} > \bar{}_{lx}$ *and would fall if* $\bar{}_{ly} < \bar{}_{lx}$.

QED

Conclusion

In this paper we have developed a general equilibrium model of trade for small open economy with unemployment. It is proved that a recessionary would enhance the skilled wage and rental ratio. If institutionally determined unskilled wage rate goes up in tandem with recessionary shock, the skilled wage and rental ratio would increase if the value share of labor in Y is greater than X. Interestingly the ration would decrease if X becomes more labor intensive compared to Y.

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3

Conditions of Women in Early India: As Described in Buddhist Literatures

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Abstract

In Indian traditions and culture we have seen that women are never placed in equal status with men. Man has greater ability to take decisions on all matters relating to important household matters that affects the well-being and others than woman since very early days. Woman's ability to dictate decisions are extremely minimal even in today's India. Even today gender inequality takes both material and ideological forms. These are the hangovers of the distant past. In this essay some representative cases from the early Buddhist literatures are taken up to look into the conditions and sufferings of women. The pervasive popular cultural ideal of womanhood as a death trap and woman as a selfless giver, someone who gives and gives endlessly, gracefully, seemingly, whatever the demand, however unreasonable and harmful to herself, is described highlighting some characters from the vast literature contained in the Jatakas.

Keywords: *Indian traditions, Buddhist literatures, Jatakas*

I

The social subordination of women stands out as a crucial fact even in today's society. It is the single relic of an old and ancient world order.

This subordination of one sex to the other is ethically wrong in itself and one of the chief impediments to human improvement. The popular cultural ideal of womanhood has become a death trap for too many of us. It is woman as a selfless giver, someone who gives and gives endlessly, gracefully, seemingly, whatever the demand, however unreasonable and harmful to herself. She gives not just love, affection and ungrudging service but also, if need be, her health and ultimately her life at the altar of her duty to her husband, children and the rest of her family. This ideology of slavery and contempt for women in the family plays a more important part in keeping women oppressed. In the past few years there has been a growing awareness of this disturbing phenomenon of discrimination against women and its long term impact on the empowerment, employment and development of women.

Inequalities between men and women are very important and dominant question in a society since long and the question have not lost its sheen even today. Problem is that how the conditions of women in a particular society and their quality of life should be judged. We have seen and it is also an established truth that women are deprived as they are often unable to enjoy the necessaries and conveniences of life compared to their mail counterpart in a society.

Women's well-being and quality of their life should be judged by looking at what they are actually able to do and what they wanted to be. We have seen that there are barriers in society erected against full justice for women.

Women are vital element in society. A society's progress depends a lot on them. All societies must strive to do everything possible to integrate women in all walks of life in an equitable and just manner. Any genuine concern about over all human rights question cannot be complete if women are not given due coverage and response. Women need to be considered the pivot not only of domestic life but of entire society.

However, the fact remains that the denials of rights to women have been often defended by various cultures and religions. As a result almost all sections of contemporary societies suffer from varying degrees of violation of human rights of women. Today, all women share a common degradation, indignity, oppression, violence and discrimination in every society. Also the fact that this discrimination on the basis of gender is so deeply rooted in the history of humanity that it is not even perceived as discrimination.

II

What is the traditional view of Hindu women? According to the classical and orthodox view as described in early Sanskrit literature and religious texts is that the perfect woman is the devoted wife whose entire existence is dedicated to her husband, a perfect mother dedicated to her children and a perfect servant dedicated to the all members of the family. Sometimes the word pativrata in Sanskrit, meaning a woman whose vow is to her husband, generally used to identify a perfect traditional Hindu woman. During her lifetime the good wife should regard her husband as her personal god. This also as per the ancient myths and traditional stories. This ideology was extremely powerful and was deeply rooted in Hindu society and is widely accepted and followed by both men and women even in India today.

A husband was always considered a woman's emblem and sign. Even the emperor's daughter, once married, was known as somebody's wife. There are, however, several cases where she is called so and so's mother and rarely famed under her own name. Woman was considered as the commodity supreme.

III

Buddhism also do not place women on a level with men though in Buddhism women played an important part in its early history. It is an established fact that in Buddhism the Indian woman secured a real advance.

The Avadanakalpalata of Khemendra gives us stories regarding the position of women in the contemporary society. It mentioned that woman was man's absolute property. Man could dispose of his wife in any way he liked.

The Avadanakalpalata tells us that Srisena, a charitable king .gave away his queen Jayaprava with a smiling face to the disciple of preceptor. Though this is also mentioned that the preceptor sent back the queen with due respect to the king. (Srisenavadana). In Manichurdavadana, there is a story where, in complying with the request of Vahikamuni, a disciple of Marichi, Manichurda the king of Saketa gave away his queen Padmavati along with her son to wait upon the old sage. In Visvantavadanam , the prince of Visvapuri, Visvantara donated his own wife Madri to Indra in Brahmin's guise.

IV

In the Buddhist Jatakas and other literatures women are depicted not better than the Hindu scriptures. Good household wives are always devoted and dutiful to their husbands. They always sacrifice their personal comforts and are always ready to undergo all sorts of misery in order to wait upon their beloved husbands. Wives are called supreme comrades.

Let us take a story from the *Sambula Jataka* that records an exemplary character of a devoted wife. The husband got leprosy and left the city and came to dwell in a forest. The husband while leaving home tried to stop his wife to accompany him. The devoted wife, frustrating all attempts of her husband to stop her, followed him to the wilderness to wait upon him. Her devotion to her husband was very great. Being the chief consort of a prince , bred and brought up in luxury, she nursed her husband like one habituated in performing all difficult and strenuous household duties. Regularly she used to get up early in the morning, sweep and clean the hermitage, keep some water for her husband to drink, furnish him with a tooth-stick and water to rinse his mouth. She used to grind various medicinal herbs and anoint his sores. Daily she went into the forest with a basket, a spade and a hook to gather wild fruits and herbs.

In this way she looked after her husband till the latter was cured of leprosy. On coming home the ungrateful husband took pleasure with other women and ignored the very existence of his devoted wife. She felt this dishonour strongly and through jealousy of her rivals she began to grow thin and pale so much so that her veins stood out upon her body. The true devotion which this woman cherished for her husband was given vent to when she said in grief, "A woman may be in splendid attire, but when she is an unloved wife she should put an end to her life by fixing a rope." The devoted wife ultimately regained her former position and honour from her husband with the intervention of an ascetic. Such devotion never go unrewarded in ancient Indian cultures and traditions.

Instances of virtual women may easily be multiplied. Thus we hear of Sujata, a faithful, virtuous and dutiful girl who properly discharged her duty to her husband and parents-in-law. Asithabhu was another good and beautiful wife. She was not taken care of by her husband who used to enjoy elsewhere. She took no notice of this indifference. She invited the two chief disciples of the Buddha, made them presents and listened to their teachings, until she obtained the fruit of the First Path. At last thinking that her husband had no need of her, she embraced religious life and in

course of time became a saint. *The Kakkata Jataka* gives us another instance of real devotion to husband. Once some robbers attacked a Savatthian landowner and his wife. The robber chief was deeply moved to see the beautiful woman and intended to get her by murdering her husband. The woman was a good, devoted and virtuous wife. She fell at the robber's feet and begged that she would take poison or would stop her breath and would kill herself too. She would never go with him (the robber chief).

V

The position of female slaves and servants was indeed very painful. A slave woman, like Roman slave girls, was the property of her master. The master had every control over her. The treatment of her master or mistress towards her was sometimes very unsatisfactory. She was ill-treated in the majority of the cases. There are painful instances of ill-treatment towards the maid-servant by the mistress of a house in the Buddhist literature *Majjhima Nikaya.* A woman named Kali was the maid-servant of a house-holder's wife named Vedehika living at Savatthi. She was very skilful and capable of doing her duties properly. She was never lazy. Her mistress's fame was great for performing household jobs beautifully. In order to find out whether her mistress's fame was due to her or not once she got up late in the morning and found her mistress was angry and showed dissatisfaction at this. On the second day she again rose up late and was rebuked. On the third day she got up still very late and she was beaten by mistress so much that her head was broken.

The *Vimanavatthu Commentary* provides us with pathetic pictures of ill-treatment. Once the servant girl of a Brahmin living in a Brahmin village named Thuna in Kosala went to fetch water. She saw the Buddha sitting at the foot of a tree. She thought that it was an opportune moment for her to liberate herself from slavery. She forgot that brahmins would rebuke her or even kill her if she offered water to Buddha. She offered a pot of water to Buddha.

Buddha drank water from the pot. By His miraculous power the pitcher became full every time its contents were exhausted and all the disciples quenched their thirst from it. The Buddha to increase her faith in Him showed that the pot of water given by her was sufficient to quench the thirst of the Buddha and his disciples and he returned the pot full of water to her. The Brahmin master heard all about it and was very angry with her and beat her to death. The same commentary furnishes us with another case of ill-treatment. A daughter of a Brahmin of Gayagrama became the

mistress of her father-in-law s house. She disliked a maid-servant's daughter. She hated and used to beat her for fault or no fault of hers. Even when the maid's daughter came of age, there was no remission of kicks and blows which became all the more severe as days went on. The fact was that at the time of Kassapa Buddha the girl had been the mistress and she used to ill-treat and beat her maid who was now born as the brahmana lady and the situation was reversed. But the ill-treatment was there in both the cases. The mistress, it is also mentioned that, used to punish the maid-servant's daughter by pulling the hair of her head. The maid-servant's daughter got her head shaven by a barber. Then the mistress tied her head with a rope and punished her and thus the girl came to be called Rajjumala. At last she went to a forest to commit suicide, unable any more to bear the torture by the mistress.

VI

Thus we describe the dark side of the conditions of women depicted in different Jatakas. In spite of the fact that in Buddhism Indian women secured a real advance, the women were never placed on a level with men. There was female education. The women who came under the influence of Buddhism were not steeped in ignorance and could follow religious teachings. But the overall position of women in society was not at all good. The popular teachings of many Jatakas are full of diatribes against women in general. In the literatures the greater part of a woman's life is taken up in her marriage and marital relations. Good household wives are shown as devoted and dutiful to their husbands. They sacrifice their personal comforts and are always ready to undergo all sorts of misery to wait upon their beloved husbands. Besides the lawfully married wife and other free women, in the household, there were a number of women who were slaves and maid-servants. Their position in the society were not good rather painful. In this essay some representative characters are described.

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4

Infrastructure – Determinant of Primary Education

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Abstract

Education is a decisive determinant of economic and social expansion, and also household livelihoods and food security status. Empirical studies also demonstrated that investment in elementary education amplifies the productivity in all the sectors of the economy much more than other levels of education and those economic returns to investment in primary education are greater than those arising from other levels of schooling. Education is the indicator of development. Level of development can be judged in terms of extent of literacy rate In India, shortfall in pupil enrolment and retention, especially in rural areas, in urban slums and among girls and members of scheduled castes and tribes remains a severe challenge for a long time. Our feeling is that not only the quantity but also the quality of primary education need to be emphasised if the goal is to create meaningful and capable human resources in this age of neo-liberal globalisation. The development of education depends on large number of factors including the infrastructure resources available to a school. School infrastructure, such as the site, buildings, furniture and equipments contribute to a learning environment. Improved infrastructure can be an important factor for improving the quality of education.

Keywords: *Education, empirical studies, globalization, environment*

Education is a decisive determinant of economic and social expansion, and also household livelihoods and food security status. Empirical studies also demonstrated that investment in elementary education amplifies the productivity in all the sectors of the economy much more than other levels of education and those economic returns to investment in primary education are greater than those arising from other levels of schooling. The development of education depends on large number of factors including the infrastructure resources available to a school. School infrastructure, such as the site, buildings, furniture and equipments contribute to a learning environment. Classrooms in most of the schools are inadequate in terms of decency, space, ventilation and insulation from heat; the incinerators and urinal are not conveniently placed , and the school plant was poorly maintained; these combined deficiencies constituted a major gap in the quality of environment. Hence the school infrastructure management and planning is signifying the regional planning agencies to improve the educational facility in a particular area.

Children are constantly interacting with the physical environment of their schools during structured or unstructured time, consciously or unconsciously. Yet not enough attention is paid to the importance of physical environment for learning. Often classrooms are overcrowded, with no alternative spaces to learn, nor are they attractive, inviting or sensitive towards children's needs. Inappropriate school design may drastically affect the teacher's productive output and classroom management. In fact, the role of this all - encompassing, physical environment has been restricted merely to shelter the educational activity. When children are asked about the kinds of spaces they like, very often they want to be in a place that is colourful, friendly, and peaceful, with lots of open space offering with small nooks and corners, animals, plants, flowers, trees, and toys. In order to attract and retain children, the school environment must have all these elements in and around them.

It is very painful that many villages in India have no primary school. The poor performance of the basic schooling is that most of the primary schools are unattractive – physically and pedagogically. The official policy is that a primary school must have at the minimum two rooms, two teachers and a pupil teacher ratio of 40: 1. It must be located within a kilometres walking distance for a child (Ramachandran, Mehrotra, Jandhalaya, 2007).

One of the major problems of primary education is related to physical infrastructure. Most of the primary schools are suffering from this problem. The space of the classrooms, teacher's room, and office room is very

scanty and of low quality type. Due to inadequate space for classroom students are not properly accommodated. On the other hand in most of the schools in India (especially which are located in rural areas) the toilet facility is very poor.

The drinking water facilities as wells as electricity facilities are not up to the mark. Half of India's have a leaking roof or no water supply. 35% of the schools have no black board or furniture, and close to 90% have functioning toilets (Ramachandran, Mehrotra, Jandhyalay, 2007). There is hardly any playground for the student.

The condition of physical infrastructure of primary schools in West Bengal is also very poor. We can explain it by the help of secondary data.

Data Collected

To analyse the infrastructure of the primary education of West Bengal we have to collect the data from secondary source from the year 2001-2002 to 2011-2012. To understand the effect of infrastructure in primary education the following four indicators are required. These indicators will help to judge the effect of infrastructure in primary education. These are:

(i) Student classroom ratio (SCR). (–)

(ii) Percentage of schools with girls' toilet facility. (+)

(iii) Percentage of schools with playground facility. (+)

(iv) Percentage of schools with electricity facility. (+)

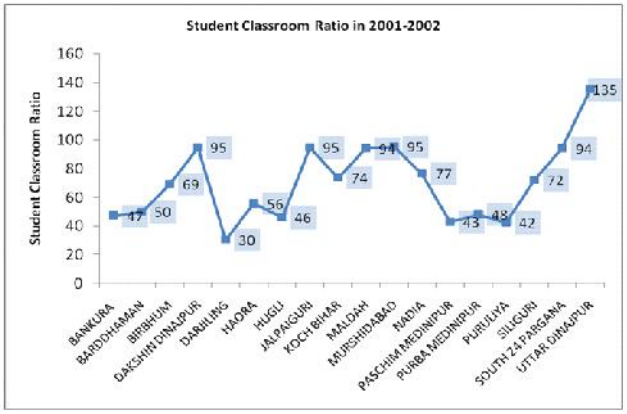
Among the four indicators three indicators have the positive effect on infrastructure that is as the percentage of schools with girls' toilet facility, playground facility, electricity facility increase then the infrastructure will also be strengthen.

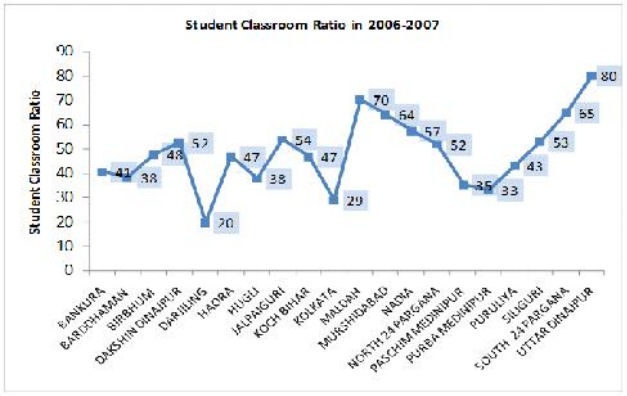
On the other hand Student Classroom Ratio has the negative effect on infrastructure. As the value of average student classroom ratio rises the students feel uncomfortable in classroom which will affect the education.

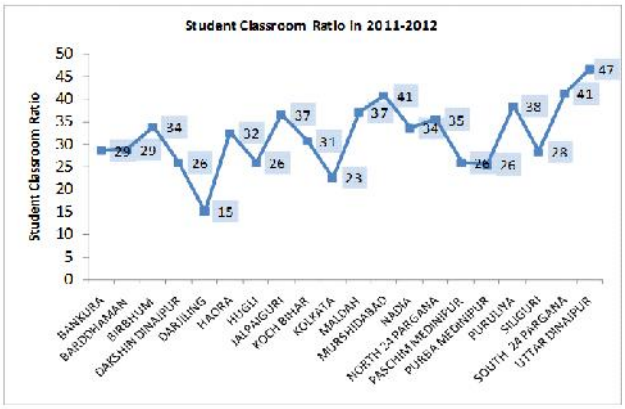
Now, we represent the secondary data through line diagram and pie diagram. These diagrams help to understand the comparative study from the year of 2001-2002 to 2006-2007 to 2011-2012.

Comparative Analysis: We make a comparative study for the year of 2001-2002, 2006-2007 and 2007-2008.

Student Classroom Ratio







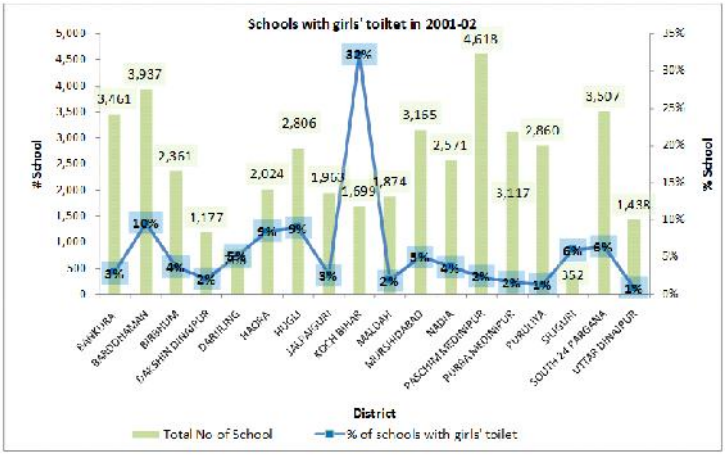
In the year of **2001-2002** the schools of Uttar Dinajpur has the highest student classroom and the schools of Darjeeling has the lowest of it. Dakhsin Dinajpur, South 24 Pargana, Jalpaiguri, Murshidabad are nearer to Uttar Dinajpur and Paschim Mediniupur and Puruliya are nearer to Darjeeling.

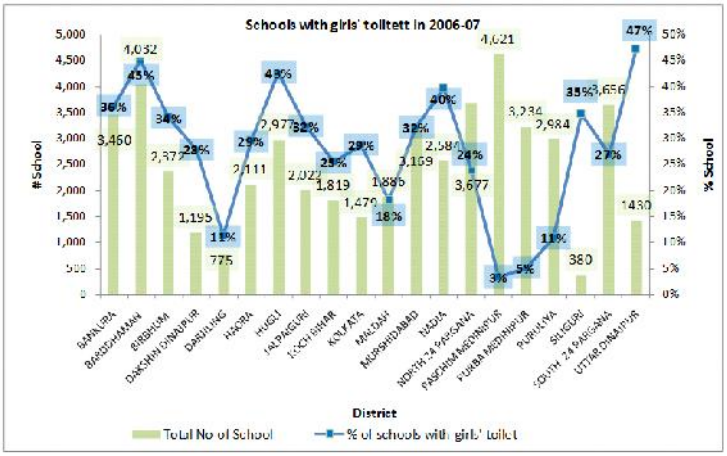
In the year of **2006-2007** the schools of Uttar Dinajpur has the highest student classroom and the schools of Darjeeling has the lowest of it. Maldah, Murshidabad and South 24 Pargana are nearer to Uttar Dinajpur and Kolkata is closer to Darjeeling.

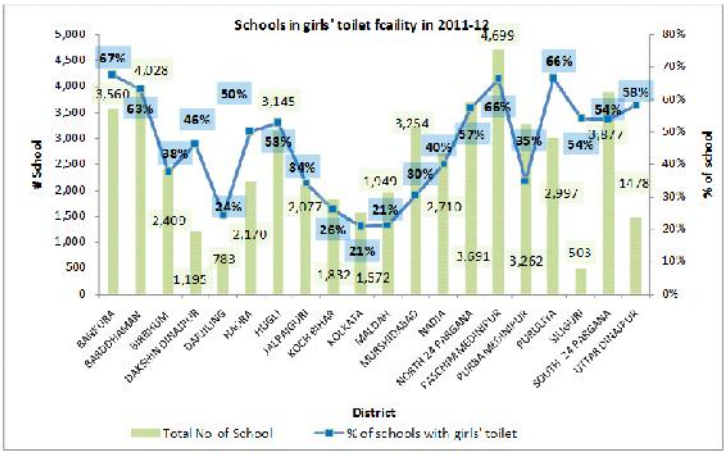
In the year of **2011-2012** the schools of Uttar Dinajpur has the highest student classroom and the schools of Darjeeling has the lowest of it. Murshidabad and South 24 Pargana is closer to Uttar Dinajpur and Dakhsin Dinajpur, Hugli, Paschim Medinipur, Purba Medinipur are closer to Darjeeling.

So it can be said that Uttar Dinajpur and Darjeeling are consistent over the 10 years. No improvement is noticed for the district of Darjeeling and Paschim Medinipur.

Girls' Toilet







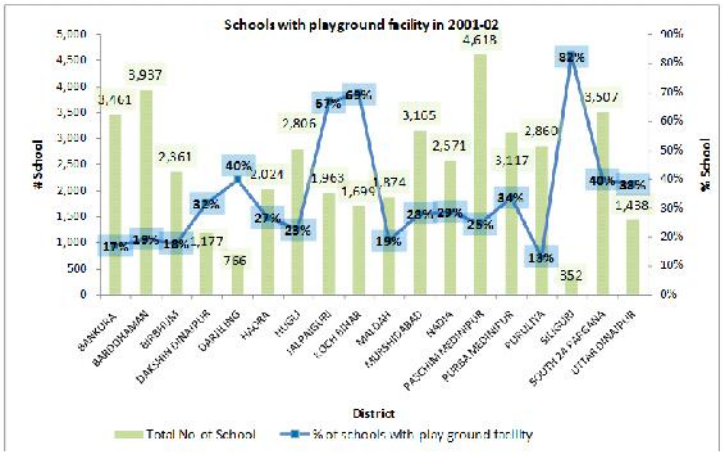
In the year of **2001-2002** in case of girls' toilet the schools of Koch Bihar has the highest value and the schools of Puruliya and Uttar Dinajpur has the lowest value. Except Koch Bihar the performance of all other districts is very poor.

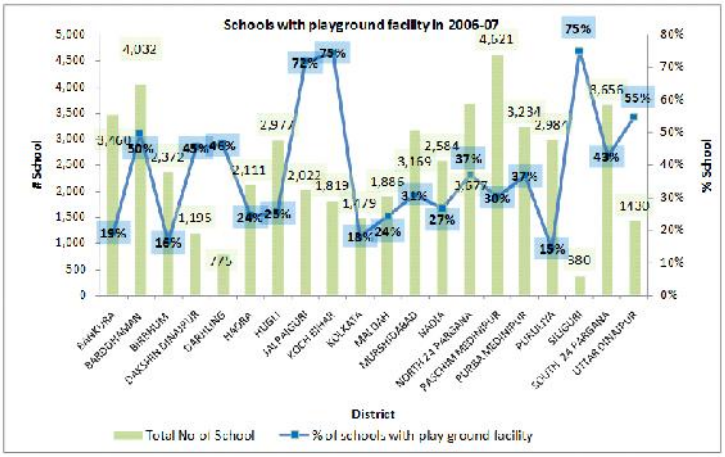
In the year of **2006-2007** the schools of Uttar Dinajpur has the highest contribution and the schools of Paschim Medinipur has the lowest contribution of it.Hugli is closer to Uttar Dinajpur and Purba Medinipur is closer to Paschim Medinipur.

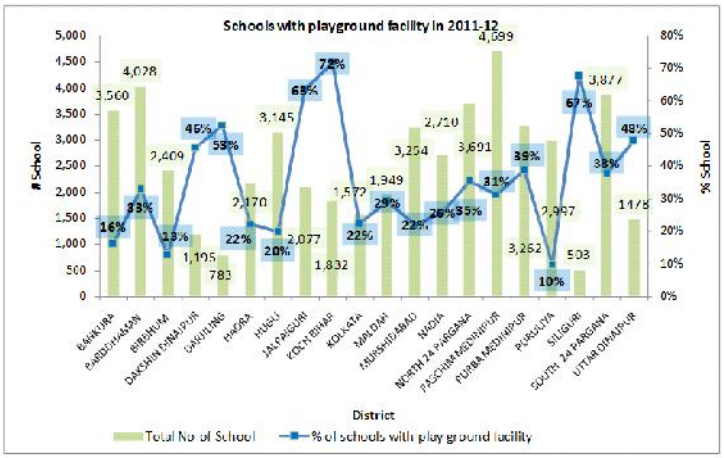
In the year of **2011-2012** the schools of Bankura has the highest contribution and the schools of Kolkata and Madah has the lowest contribution of it.Puruliya and Bardhaman are closer to Bankura. Darjeeling and Koch Bihar are closer to Kolkata and Maldah.

We can say that Uttra Dinajpur has made a significant improvement on it over 10 years where as Koch Bihar slow down on it.

Playground facility







In the year of **2001-2002** in case of playground facility the schools of Siliguri has the highest contribution and the schools of Puruliya have the lowest contribution. Jalpaiguri and Koch Bihar are closer toSiliguri. Bankura, Bardhaman, Birbhum, Maldah are very much nearer to Puruliya.

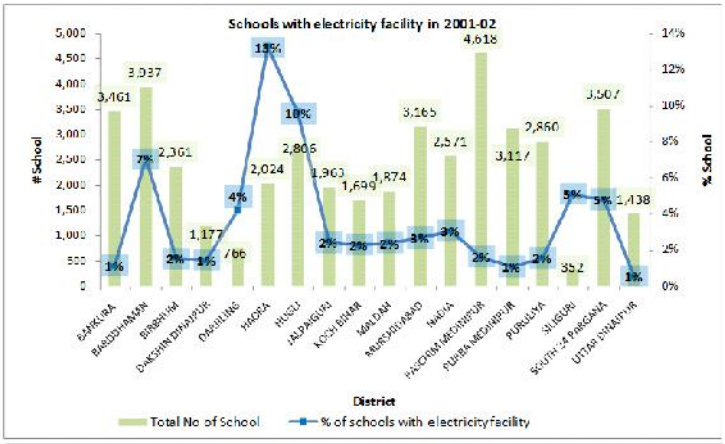
In the year of **2006-2007** the schools of Koch Bihar and Siliguri have the highest contribution and the schools of Puruliya have the lowest contribution of it. Jalpaiguri is very much closer to Koch Bihar and Siliguri. Birbhum is very much closer o Puruliya.

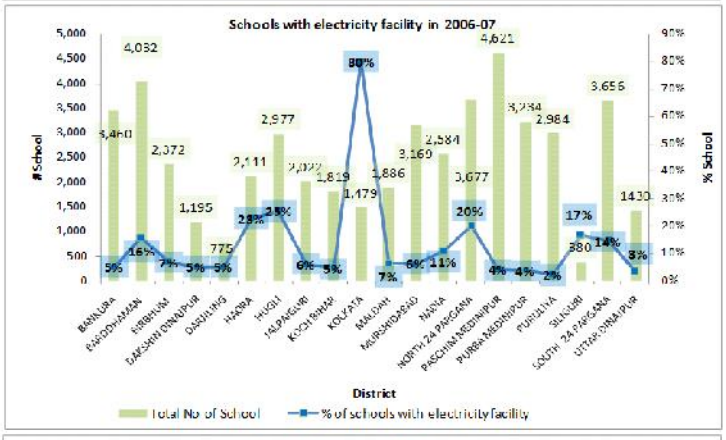
In the year of **2011-2012** the schools Koch Bihar has the contribution and the schools of Puruliya have the lowest contribution of it. Jalpaiguri and Siliguri are closer to Koch Bihar and Bankura and Birbhum are closer to Puruliya.

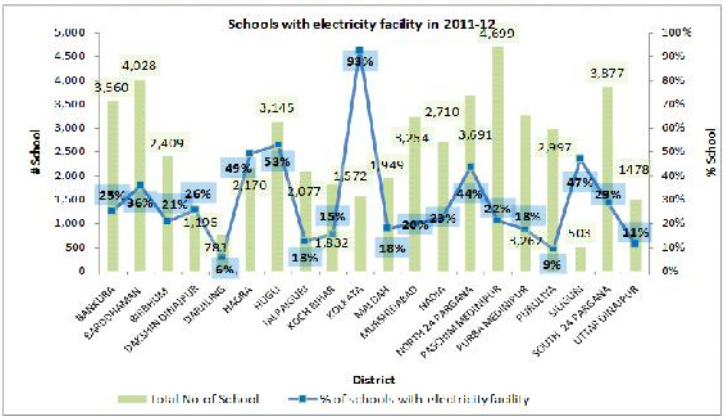
We can say that Koch Bihar is consistent through the 10 years. Siliguri also improved. There is no improvement in Puruliya Birbhum, Bankura.

Electricity facility

In the year of **2001-2002** in case of electricity facility the schools of Haora has the highest value and the schools of Uttar Dinajpur, Dakhsin Dinajpur, Bankura and Purba Medinipur have the lowest value. Hugly is nearer to Haora. Except Haora and Hugli the contribution of all other the districts of West Bengal is poor.


Schools with electricity facility in 2001-02
School
% School
District
Total No of School
% of schools with electricity facility


Schools with electricity facility in 2006-07
School
% School
District
Total No of School
% of schools with electricity facility


Schools with electricity facility in 2011-12
School
% School
District
Total No of School
% of schools with electricity facility

In the year of **2006-2007** the schools of Kolkata has the highest contribution and the schools of puruliya has the lowest contribution of it. Except Kolkata the electricity facility of all other districts is not very much up to the mark.

In the year of **2011-2012** the schools of Kolkata has the highest contribution and Darjeeling has the lowest contribution. Puruliya is closer to Darjeeling. No other district is nearer to Kolkata (like 93%). Hugli takes the second position (53%).

We can say that Kolkata's performance rises over the year. Haora's performance is far away from Kolkata. Puruliya's performance does not improve.

Conclusion

We can say that in absolute sense the infrastructural facility is not very high in the schools of West Bengal. India is a poor underdeveloped economy. Poverty affects the education. The fund for primary education should increase. The primary schools should enrich financially. We have to analyse the effect of infrastructure in primary education by collecting primary data from primary school.

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5

Purulia District: A Unique Contributor

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In Purulia district most of the cultivated land is situated at uplands. Simultaneously the district is known for its extreme climate with scanty rainfall. Both of these reasons made the district unsuitable for wetland cultivation. On the other hand as host trees grow in plenty in Purulia, the district is famous in the matter of lac cultivation and lac industry since time immemorial. Still there is immense scope of increasing employment both for cultivating lac and for industrial production of Seedlac and shellac with the development of the industry.

In this analysis we have brought different features of Purulia district which made it favourable to lac culture. To find the origin of lac culture we have taken help from different historical materials written on Purulia district. A brief discussion about this is mentioned in the form of "Historical Accounts" segment. Statistical evidences with comparison of national and state data have been incorporated into this discussion to highlight the significance of the district in lac production.

Location and Physical Features

Purulia is the westernmost district of West Bengal. It is an enclosed tract bounded by Bardhaman, Bankura and Midnapore in West Bengal and Bokaro and Ranchi districts of Jharkhand. The district has a gently undulating topography with occasional hillocks of hard rocks. These are residual hills, bearing testimony to the high plateau of ancient times which has been eroded down to form the present landform. Because of erosion, the texture of the present landform is of two kinds, viz. higher peneplains which include the police stations of Jhalda, Arsa, Baghmundi, Balarampur, Barabazar and Bandowan and the rests are in the zone of

lower undulating surface. The highlands rise very steeply from 300 meters but the slope becomes moderate above 500 meters. The natural forests of the district are mostly of mixed nature and restricted to north-west part of the district covering Ajodhya Hills and Panchet Hills of north-east. The predominant trees are sal, palas and ber. These types of thick jungles are the favourite haunts of the lac-insect and it is found in large numbers in the forest-clad tracts of this district.

Temperature is moderate, except during the hot months of April, May, and June, when the westerly winds from central India cause great heat with very low humidity. The mean temperature increases from 27.78° in March to 31.67° in April, May, and June. The mean maximum reaches from 35.00° in March to 38.33◦ in May, and the mean minimum from 20.00° to 24.44°. The monthly rainfall averages 140-150 millimeters, of which 123millimeters fall in June, 549 millimeters in July, 397 millimeters in August and 348 millimeters in September.

Lac culture is generally located in elevated terrains ranging between 300 to 900 meters having rainfall of about 100-150 millimeters, and temperature between 20°C-30°C. It is thus obvious that the lac producing belts of West Bengal particularly Purulia district falls in this category of areas. Most of the villages of the district have the potentiality of cultivation of lac because of existence of host trees mainly palas, ber and kusum.

Since the plateau of Purulia is still deprived of green revolution mainly due to lack of irrigation facilities, erratic distribution of rainfall, eroded undulating field and low soil fertility, intensive agriculture is, thus, beyond the reach of the farmers in the district. As a result people of the district have to supplement their family incomes traditionally by resorting to cultivation of cash crops.

Crude or raw lac is thus a gift of nature. The people of Purulia district regard this object as an important agricultural produce and as one of their major sources of livelihood.

Lac cultivation was once the main economic activity of the district and it was the main source of income for villagers because the land and its texture and climate were not congenial for traditional cultivation of paddy etc. Nowadays due to the advent of developed technology and its application in the agricultural arena more and more land is being cultivated for paddy and other traditional crops. As a result the prominence of lac cultivation has lost its position as main economic activity. Now it plays the role of supporting economic activity.

Historical Accounts

The story of the development of the lac industry in India, dating back thousands of years, is one of fortitude and gradual progress in a sphere in which India, till late twentieth century, held a monopoly.

The Indian shellac industry originated at Mirzapur, an old city situated on the bank of the river Ganga in Uttar Pradesh. Though neither the district of Mirzapur nor the state of Uttar Pradesh had abundance of sticklac (the raw material), the shellac industry flourished in this centre very rapidly. This was due to the first and original knowledge of shellac manufacturing discovered here and also because no skilled labourers were available elsewhere.

During the last decades of nineteenth century, the establishment of a shellac factory was planned in the district of Purulia, which holds a very proud position for producing best quality of lac since time immemorial. The history of the lac industry in the district of Purulia is very interesting.

(i) Jhalda: A tragic incident of a brutal murder towards the end of January 1896 led to the growth of Jhalda into the world's foremost shellac and seedlac manufacturing centre. A tiny village with barely 100 to 150 small huts and without any rail connection, Jhalda was very rich in lac cultivation both in quantity and in quality, but there was no shellac factory here. The main and the most important centre of shellac manufacturing in India in those days was Mirzapur in Uttar Pradesh. Many of the Mirzapur factories had their purchasing officers- gumastas- at Jhalda where they purchased sticklac for their factories. Mr. G. Carpiet was one of these factory-owners and he had appointed two gumastas in Jhalda- Bacheu Bania and Sitaram Bania. One day at mid-day there was some serious trouble between these two. Bacheu killed Sitaram and threw him into a well. When the news of this murder reached Mirzapur, Mr. Carpiet sent one of his assistants, Mr. Arathoon Mackertoon Arathoon, for enquiry into the matter. And that is how Mr. A.M. Arathoon, the founder of shellac industry in Jhalda, arrived here in January 1896.

After completing his enquiry Mr. A. M. Arathoon studied the local conditions very carefully and found a great scope for a prosperous shellac factory at Jhalda, a place only 235 miles from the port of Calcutta. Though there was no direct rail connection and people had to travel up to Purulia, the district head quarters and the rail point 28 miles from here, by man-driven push-push carts or bullock-carts, yet Mr. Arathoon found no-sense in taking the raw material from Jhalda to Mirzapur, a distance of about

450 miles, and bringing back the finished goods to Calcutta, another 500 miles. On return he put before his boss a suggestion for opening a shellac factory at Jhalda and Mr. Carpiet agreed to it. Thus Mr. Arathoon gave up his job at Mirzapur and returned to Jhalda and started his factory in early 1897, while raw material was very cheap, Mr. Arathoon had to undergo immense difficulties in getting skilled melters and seedlac cleaners. Most of the skilled workers needed for his factory had to be brought from Mirzapur. Later on local workers were trained.

After one year, Messrs. Shyambaran Mahadeoprasad and Mahadeo Kashiprasad established their lac-factories at Jhalda. Subsequently several new factories were started, mostly by those who at one time or other had worked with Mr. Arathoon. Mention may be made of Mr. S.J. Apear, who started his factory in1902; Mr. M.C.Gregory (1907); and Mr. Amin (1908). Later Creep Brothers and Horesop Brothers started their factories.Messrs. Fakirram Bhairoprasad of Mirzapur and Shri Achhruram of Rupar also built up factories here and established their trade marks of national and international fame. A.M. Jordon was also one of the pioneers in this trade.

(ii) Balarampur: The importance of Balarampur as a shellac manufacturing centre has increased in earlier decades of twentieth century because of the fine quality of Baisakhi lac which this area produces as also its convenient situation on the South-Eastern railway, being only 220 miles from Calcutta. The town is also connected by road from all directions. In earlier days the area used to supply only raw material to Sonamukhi in Bankura district and Mirzapur in Uttar Pradesh. Later Mirzapur people started lac-dye and shellac factories in Balarampur and imported skilled labourers from there, a good number of whom were engaged here in the trade. Prominent among the Mirzapur pioneers were Baldeo Das Sarju Prasad, Bechai Ram Jayaswal, Prasadi Ram Kejriwal (Hiralal Lalchand), Harinand Rai Chunnilal, and Trailakhya Nath Kundu.

(iii) Tulin: The first to recognise the potentiality of this tiny village as a high shellac manufacturing centre was probably the late Shri Mahesh Chand Banerjee, who came here about a century back from Sonamukhi in the district of Bankura, West Bengal. Shri Banerjee brought with him some skilled labourers also from Sonamukhi and started his factory at Tulin.

In 1880 came some other people from Bankura. Prominent among those are Shri Haradhan Kundu, Shri Surya Narayan Haldar and Shri Nandalal Bhattacharjee. The shellac factories started by them are still working. The next group arrived almost after 20 years in 1900. It consisted

of Shri Jogi Chakravarty and Kritibas Sen. The factory of latter is still in existence in different name.

Again in the beginning of the twentieth century another group of lac manufacturers came from Bankura and settled in Tulin. It is surprising that though Tulin and Jhalda are situated in adjacent areas but former is attracted by Mirzapur people and later was chosen by Bankura lac manufacturers.

Scope for Cultivation and Manufacturing

The district of Purulia stands on a plateau about 500 meters above sea level. It enjoys an equable climate and comparative immunity from severe forest. It is thus not only suitable for lac cultivation in every way, but at the same time has plenty of scope of development in the increase of the untapped forest wealth. The forests of the district are full of lac bearing trees of all the three major kinds, viz., kusum, ber and palas. From a report published in 1876 it is known that even in those days, Manbhum was considered as a convenient centre both for the collection of sticklac and for the manufacture of commercial products known as shellac and lac-dye.

According to Bengal District Gazetteers of Manbhum by H. Coupland published in 1911, the most important industry in the Manbhum district after coal was lac. The export of lac from this district in the form of sticklac and manufactured forms was 200,311 maunds (Around 7475.60 tonnes) valued at ₹ 40.50 lakhs in the year 1909, as compared with ₹ 150 lakhs for coal and ₹ 3 lakhs for all kinds of food grains. In 1909, there were 118 regular lac factories in Manbhum district.

Lac is grown throughout Purulia, but chiefly in the western and southern portions of the sadar-sub-divisions (East & West) where the climate is humid in summer and less cold in winter. Lac is grown on all the three important hosts namely kusum, ber and palas in this district. The ber trees are found in clumps round the homesteads in villages, although in a few places regular plantation exists. There are near about 8 lakhs of host trees. The cultivation of lac is done by the raiyats on their own trees or hired from owners by paying rent or on share basis. The number of lac cultivators in Purulia could not be estimated, as almost every household in the lac growing regions of the district has at least a few trees on which lac is reared. It is approximated that more than 70,000 cultivators are engaged in lac cultivation of which 60% belong to S.T. /S.C. and other economically backward communities of the district. Thousands of intermediaries also

are engaged in collecting raw lac from the local haats and selling those to manufacturers.

In Purulia district, the main region of lac cultivation is Tulin, Jhalda, Baghmundi, Manbazar, Bandowan, Garhjaipur, Raghunathpur and adjacent places. The cultivation of lac involves very simple operations. In general, lac cultivation involves climbing on trees for pruning, tyeing of broodlac bundles on host trees at different places, harvesting and spraying of pesticides are done by male laboureres, while bundling and selection of broodlac, collection of Phunki, and collection of harvested lac sticks, scraping of lac encrustation from twigs etc. are carried out by females for which manual and power operated mechanical scrapers have been developed.

Over 20% of national lac production comes from Purulia. It occupies a special place among the cottage industries of the district. Being a subsidiary industry and cash crop, cultivation of lac has an added importance in the economic development of the district. There are 142 (approx.) working lac factories of which 23 are registered processing units located in different areas of the district particularly in locations like Jhalda, Tulin and Balarampur.

The various lac processing units fall into two groups, namely non mechanised units and mechanised units. Non mechanised units manufacture handmade shellac, seedlac and buttonlac and each unit employs about 5 to 50 workers. The mechanised units manufacture machine made shellac. Few of these units use solvent extraction process, while the others use the mechanized heat process.

Under the supervision of the Govt. of West Bengal six broodlac farms have been established in different parts of the district. This broodlac farm is a compact area containing a large number of lac hosts in which systematic cultivation is carried out on a scientific basis with a view to increasing the availability of broodlac from season to season to even the remote cultivators. The location of the broodlac farms and the registered processing units is shown in the map on the next page.

However in view of the changing land use pattern, pressing need for food and cash crop, fluctuation of lac production due to little price support, competition from agricultural crops, susceptibility of lac crop to vagaries of weather and insects pests, indiscriminate cutting of host trees for different uses and changing socio economic conditions of the lac growers in general and tribe growers in particulars and slow growing habit

of these tree host species, intensive lac cultivation on plantation basis has limited scope in cultivation of lac crops now-a-days.

Statistics

In this segment our main aim is to highlight the production scenario of Purulia district, depending on the availability of production statistics from various books and journals, such as Souvenir (Silver Jubilee) of I.L.C.C, District Gazetteers, Census of West Bengal, and Annual Lac Bulletin of Indian Forest Productivity. We start with pre-plan period from 1930-31 to 1955-56 on which Purulia district was created. Total production of Purulia in comparison with that of West Bengal has been given here. Side by side annual growth rate of production is also taken under consideration in the table below.

Table 1: Production of Sticklac & Growth Rate of Production of Purulia and West Bengal

Year	Production (in Tonnes)		Annual Growth Rate of Purulia	Annual Growth Rate of West Bengal
	Purulia	W.B.		
32-33	9593.132	11898.1	33.16062	23.0695
33-34	7988.055	9462.486	-16.7315	-20.4706
34-35	8566.629	10339.68	7.242991	9.270217
35-36	8491.975	8697.275	-0.87146	-15.8845
36-37	16871.97	22135.13	98.68132	154.5064
37-38	8566.629	8641.284	-49.2257	-60.9612
38-39	10750.28	14874.95	25.4902	72.13823
39-40	11123.55	14389.7	3.472222	-3.26223
40-41	7278.835	9518.477	-34.5638	-33.8521
41-42	13213.89	18327.73	81.53846	92.54902
42-43	11590.15	16605.08	-12.2881	-9.39919
43-44	7932.064	8708.473	-31.562	-47.5554
44-45	7969.392	9440.09	0.470588	8.4012
45-46	9854.423	11498.69	23.6534	21.80704
46-47	15549.83	18687.94	57.79545	62.52232
47-48	8754.386	10004.85	-43.7011	-46.4636

48-49	5890.258	6796.379	-32.7165	-32.0692
49-50	11272.86	12896.6	91.3815	89.75697
50-51	6569.616	7278.835	-41.7219	-43.5601
51-52	8398.656	10600.97	27.84091	45.64103
52-53	9145.203	12000.75	8.888889	13.20423
53-54	4050.019	5841.732	-55.7143	-51.3219
54-55	6569.616	7316.163	62.21198	25.23962
55-56	6886.898	7633.445	4.829545	4.336735

Source: Silver Jubilee Souvenir (1931-1956) of Indian Lac Cess Committee, Ranchi.

Here we have converted the production measurements in maunds to production measurements in tonnes. Again we have tried to show annual growth rate (A.G.R.) of production (in %) year by year. In this presentation now the production scenario of Purulia and West Bengal can be compared. From this table it can be clearly observed that the trend of growth rate of production in West Bengal has been similar to that of Purulia.

Due to non availability of relevant data from 1957 to 1962 the presentation of production figure is discontinuous. The details of the production of sticklac in the district of Purulia compared to state West Bengal and Indian Union are given below:

Table 2: Production Statistics from 1963-64 to 1967-68

Place Year	Purulia (Quintals)	West Bengal (Quintals)	% of West Bengal Production	India Union (Quintals)	% of India Union Production
1963-64	36,018	39,750	90.61	2,87,206	12.54
1964-65	19,072	20,845	91.50	1,76,597	10.80
1965-66	20,342	24,075	84.50	2,34,763	8.66
1966-67	23,329	27,808	83.90	2,96,724	7.86
1967-68	34,525	39,004	88.52	3,87,791	8.90
Av. 5 years	26,657	30,301	87.80	2,76,616	9.75

Source: Census of India 1961 (West Bengal- Purulia)

It appears that, West Bengal's production on the average of last five years is about 11 percent to that of India Union, of which, about 9.8 percent has been produced in Purulia. About 88 percent of the production of West

Bengal on the average for the last five years has been produced in Purulia. From the figures cited herein, it is seen that, India's production in 1967-68 was 1 lakh quintal greater than that of in 1963-64, but Purulia's production remained almost the same in 1967-68 as that of in 1963-64. In the middle years Purulia experienced drastic fall in production.

In the Table 5.3 we consider the study period from 1963-64 to 1979-80. The production varies from 3900 M.T to 606 M.T. Again we see fluctuation of total production but over the years the sticklac production shows decreasing trend and ultimately in 1978-79 and in 1979-80 it reached below 1000 M.T.

Table 3: Production of Sticklac & Growth Rate of Production of Purulia (From 1963-64 to 1979-80)

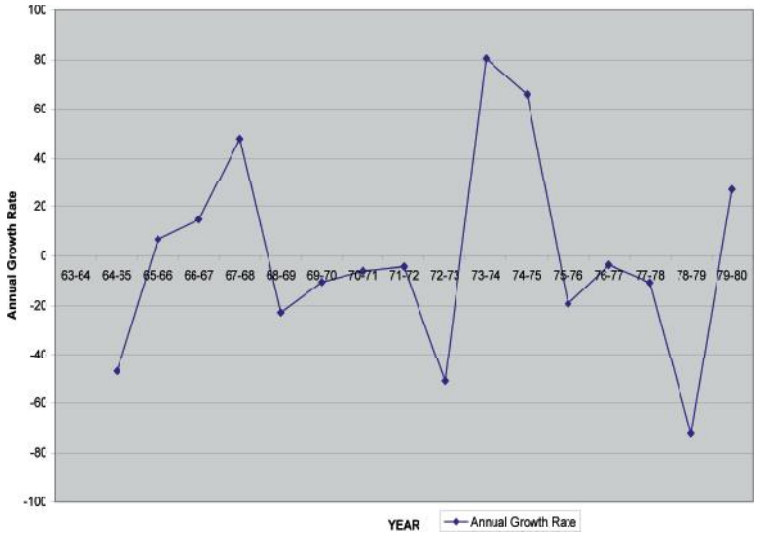
Year	Stick Lac Production (In M.T.)	Annual Growth Rate (%)
63-64	3601.8	
64-65	1907.2	-47.0487
65-66	2034.2	6.658977
66-67	2332.9	14.68391
67-68	3452.5	47.99177
68-69	2668	-22.7227
69-70	2389	-10.4573
70-71	2245	-6.02763
71-72	2148	-4.32071
72-73	1053	-50.9777
73-74	1900	80.43685
74-75	3153	65.94737
75-76	2547	-19.2198
76-77	2456	-3.57283
77-78	2194	-10.6678
78-79	606	-72.3792
79-80	769	26.89769

Source: 'Statistical Information on Lac at a Glance', SEPC Calcutta 1992

In the chart 1 we present diagrammatically the growth rate over the study period. It helps for better understanding the fluctuation nature of production.

Chart-1 :

Growth Rate of Sticklac Production in Purulia Over Study Period



Source: Compling from Table-3.

In the years 1964-68 there is general improvement on demand and supply so growth rate is upward rising. The production of lac in India declined sharply due to natural as well as economic factors during the period 1968-73.

Table 4: Production Statistics from 1981-82 to 1984-85

Place	Purulia (Metric Tonnes)	West Bengal (M.T.)	% of West Bengal Production	India Union (M.T.)	% of India Union Production
Year					
81-82	2250	2357	95.46	21,465	10.48
82-83	488	523	93.30	13,420	3.64
83-84	497	532	93.42	11,605	4.28
84-85	1005	1025	98.05	12,955	7.76
Average	1060	1109.25	95.06	14861.25	6.54

Source: Annual Lac Bulletin (from 1981-82 to 84-85)

Table 5: Production Statistics from 1985-86 to 1989-90

Place / Year	Purulia (M.T.)					West Bengal (M.T.)	% of West Bengal Production	India Union (M.T.)	% of India Union Production
	Baisakhi	Jethwi	Kusumi	Aghani	Total				
85-86	325	155	780	485	1745	2070	84.30	18,175	9.60
86-87	1020	30	25	365	1440	1800	80.00	20,340	7.08
87-88	610	10	5	320	945	1070	88.32	14,600	6.47
88-89	525	5	225	500	1255	1390	90.29	15,000	8.37
89-90	550	200	685	770	2205	2295	96.08	17,345	12.71
Average	606	80	344	488	1518	1725	87.80	17092	8.46

Source: Annual Lac Bulletin (from 1985-86 to 89-90)

Unlike the previous years the year 1973-74 had shown a significant improvement in the production of lac, which was about 80% of the previous year. Growing tendency is short lived and the production started to decline. In the year 1978-79 it fell by almost 80%. In brief we can say in the beginning of the period it showed negative growth rate then from year 1965-66 to 1967-68 it steadily increased after that we see declining trend here growth rate varying between -20% to -50%. Again in 1973- 74 it jumped by almost 130% showing growth rate of 80%. Almost the same growth rate prevailed in the immediately next year. Then upto the year 1978-79 it points out negative growth rate. At the end increasing tendency has been pointed out.

On an average, Purulia produced 1060 M.T. per annum over this period. In 1981-82 maximum lac had been produced and shared around 95% of the state production followed by the production of the year 84-85, 83-84 and 82-83. The notable thing is that district's production became negligible compared to India's Production.

The year wise data of sticklac production vis-a-vis percentage of state level and country level production reveals that highest production in all respect was in the year of 89-90. Purulia production in respect of West Bengal's production was very low (in case of year 86-87). Similar case happened in respect of country's production in the year 87-88. Purulia's production was subject to great fluctuation in the range of 1070 M.T. to 2295 M.T. During 1987-88 the production of crop was very low i.e. 945 M.T.

The findings from Table-6 reveal that about 8-10% of India's production came from Purulia. Out of four crops Jethwi and Kusumi have negligible contribution towards the total production. The average production of the district was about 1908 M.T. which included production under 1000 M.T. in the year 1991-92. Thus no improvement has been observed as compared to previous tables. A tendency has also been observed that production of Jethwi and Kusumi is going to insignificant levels in Purulia district's sticklac production. The main cause behind this phenomenon is shortage of respective broodlac. Katki crop generally supplies the broodlac for next Baisakhi crop and for this Katki crop is cultivated in a small quantity.

In the table below we have compiled the data of Table-4, Table-5 and Table-6. Here we show the year wise total production of Purulia district and annual growth rate of production in percentage figure.

Table 6: Production Statistics from 1991-92 to 1994-95

Place / Year	Purulia (M.T.)					West Bengal (M.T.)	% of West Bengal Production	India Union (M.T.)	% of India Union Production
	Baisakhi	Jethwi	Kusumi	Aghani	Total				
91-92	600	-	-	350	950	1020	93.14	10,810	8.79
92-93	925	-	-	440	1365	1455	93.81	11,685	7.92
93-94	not	-	avail	able	2795	3560	78.51	20,520	13.62
94-95	not	-	avail	able	2525	3245	77.81	22,460	11.24
Average					1908.75	2320	85.82	16369	10.39

Source: Annual Lac Bulletin (from 1991-92 to 94-95)

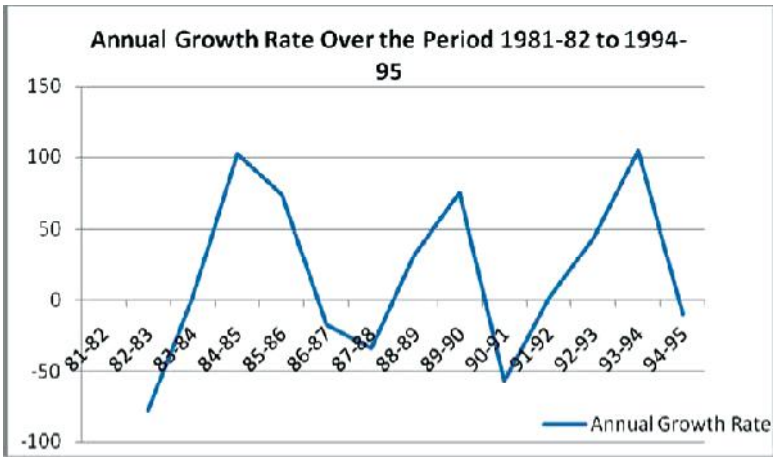
In this table we see that production of stick lac lays in the wide range from 488 M.T. to 2795 M.T. Production over 2000 M.T reached only four times in the years 1981-82, 1989-90, 1993-94 and 1994-95. Most of the times i.e. five times the production remained around 1000 M.T. The production below 500 M.T. was also observed twice, i.e. in the year 1982-83 & 1983-84. The scanty rainfall in the two years was the major cause of decline in production. On an average annually 1457.5 M.T. of sticklac was produced in this period. This table can be better explained by presenting chart-2. Growth rate picture, shown by blue coloured line, which is subject to greater fluctuation, will support our statement.

Table 7: Production of Sticklac & Growth Rate of Production of Purulia (from 1981-82 to 1994-95)

Year	Stick Lac Production (in M.T.)	Annual Growth Rate
81-82	2250	
82-83	488	-78.3111
83-84	497	1.844262
84-85	1005	102.2133
85-86	1745	73.63184
86-87	1440	-17.4785
87-88	945	-34.375
88-89	1255	32.80423
89-90	2205	75.69721
90-91	940	-57.3696
91-92	950	1.06383
92-93	1365	43.68421
93-94	2795	104.7619
94-95	2525	-9.66011

Source: Directorate of Micro and Small Scale Enterprises, Government of West Bengal & Lac Development Office, Purulia.

Chart-2



Source: Compiling Table-7

The ups and downs of growth rate are repeating in regular interval. Highest growth rate was achieved in 1993-94. Growth rate of the year 1984-85 stood in next position. On the other hand negative growth rate came five times. Among them in the year 1982-83 we got highest negative growth rate. In the connection of negative growth rate the years 1986- 87, 1987-88 and 1990-91 have notable significance.

Now let us come to the period from 1995-96 to 2011-12. In this period data on sticklac production have been collected from Lac Development Office and Annual Lac Bulletin. For recent few years we have taken help from Indian Lac Research Institute published "Lac Statistics at a Glance".

Table-8 shows that Baisakhi crop is the dominant crop. Sometimes the production of the crop fell short of another crop like as in the year 96-97. In this year district production was almost half of the state production. Overall accountability of the district in respect of percentage of state and country's production was 74.25 and 10.11 respectively which were slightly lower than that of the years mentioned in table-5.6. The improved situation will provide much income to the district cultivators. On the other hand steady production of sticklac did not arrive yet. Risk and uncertainty are always attached with the cultivation process. No one can be able to estimate rightly next year's production on the basis of current year production.

Table 8: Production Statistics from 1995-96 to 2000-2001

Place / Year	Purulia (M.T.)					West Bengal (M.T.)	% of West Bengal Production	India Union (M.T.)	% of India Union Production
	Baisakhi	Jethwi	Kusumi	Aghani	Total				
95-96	340	38	170	410	958	1238	42.81	20,080	4.77
96-97	350	60	430	640	1480	2830	52.30	19,840	7.46
97-98	1400	58	210	330	1998	2278	71.92	15,846	12.61
98-99	1320	70	90	370	1850	2070	89.37	10,355	17.87
99-00	455	45	75	380	955	985	96.95	11,956	12.52
00-01	not	-	avail	able	1121	1260	92.14	20,600	5.44
Average	644.17	45.2	162.5	355	1393.67	1776.83	74.25	13805.2	10.11

Source: Annual Lac Bulletin (from 1996-97 to 2000-2001)

Table 9: Production Statistics from 2001-02 to 2005-2006

Place / Year	Purulia (M.T.)					West Bengal (M.T.)	% of West Bengal Production	India Union (M.T.)	% of India Union Production
	Baisakhi	Jethwi	Kusumi	Aghani	Total				
01-02	not	-	avail	able	1228	1350	90.96	20450	6.00
02-03	327	101	210	128	746	835	89.34	17500	4.26
03-04	434	305	205	185	1129	1270	88.90	20500	5.51
04-05	222	153	488	393	1256	1395	90.04	21300	5.90
05-06	100	228	514	-	842	926	90.93	18000	4.68
Average	270.8	196.8	354.3	205.5	1040.2	1155.2	90.03	19550	5.27

Source: Annual Lac Bulletin (from 2001-02 to 2005-2006)

The production pattern of sticklac in respect of Purulia for the five years mentioned in the table showed that Purulia itself produced almost 75% of total production of West Bengal which is 10% lower than the period 1991-92 to 1994-95 (85.82%, see table-5.6), indicating declining trend to some extent. One may be puzzled at the drastic fluctuation in production of all four crops. These have adversely affected lac price and our precious exports. It is seen that Purulia's average production has been declining steadily. This is a matter of concern to the people attached with all aspects of lac production. If we look into percentage comparison to the India union the contribution of Purulia has been increasing (Table-4 6.54%, Table-5 8.46%, Table-6 10.39%, Table-8 10.11%) since 1980-81.

Due to unavailability of crop-wise data on 2001-02 the average is made by taking 4 years only in this table excluding the aforesaid year. Apart from (2002-03) and (2005-06) the sticklac production was moderate and Purulia did not regain the past glory of sticklac production. Only in 2001-02 the share of Purulia's production in country's production touched 6% level. It may be seen from this table that the percentage figure has declined steadily.

Actually Purulia had a virtual monopoly in the production of lac and since 1963- 64 it had been accounting nearly 90% of total West Bengal production. It is observed that during the last three decades Purulia's yield for some specific years is too low due to climatic hazards in the form of unusual fog and extremely hot summer. Such as in the years 82-83, 83-84, 2002-03 production has declined below 750M.T. Quite often bumper crops were also obtained such that resulting production was over 2000 M.T. (in the years 81-82, 89-90, 93-94,94-95). It is disheartening to note that recent year's productions are not falling in the bumper crop productions category. On the other hand average production within the study period stepped down to 1040.2 M.T. in Table-5.9 (from the year 2001-02 to 2005-06) from 1908.75 in the year range 1991-92 to 1995-96 (depicted in Table-7). The realization from the analysis is that Purulia has been experiencing declining trends and more clearly there is no sustainability in production from year to year. This will have very adverse effect on forecasting the production and strong policy making in this connection. The unpredictable fluctuating production of lac leads to unstable price and thereby hampered the interest of lac growers, industry and the trade as a whole. While India's production has shown same trend but the situation is not so worse as in the case of Purulia. That is rightly indicated by the percentage of India Union production column.

Table 10: Production Statistics from 2006-07 to 2011-2012

Place / Year	Purulia (M.T.)					West Bengal (M.T.)	% of West Bengal Production	India Union (M.T.)	% of India Union Production
	Baisakhi	Jethwi	Kusumi	Aghani	Total				
06-07	20	120	75	150	365	1240	29.44	23229	1.57
07-08	20	40	20	30	110	1140	9.65	20640	.53
08-09	10	15	20	50	95	830	11.43	17175	.55
09-10	05	20	10	05	40	855	4.68	16495	.24
10-11	10	45	15	50	120	1435	8.36	9035	1.33
11-12	30	10	20	10	70	1400	5.00	17900	.39
Average	16	42	27	49	133	1150	11.43	17412	0.77

Source: Lac Statistics at a Glance 2007–2008 to 2011-12

Table 11: Production of Sticklac & Growth Rate of Production of Purulia (From 1995-96 to 2007-08)

Year	Stick Lac Production (in M.T.)	Annual Growth Rate (in %)
95-96	958	
96-97	1480	54.48852
97-98	1998	35
98-99	1850	-7.40741
99-00	955	-48.3784
00-01	1121	17.3822
01-02	1228	9.545049
02-03	746	-39.2508
03-04	1129	51.34048
04-05	1256	11.24889
05-06	842	-32.9618
06-07	365	-56.6508
07-08	110	-69.863
08-09	95	-13.6364
09-10	40	-57.8947
10-11	120	200
11-12	70	-41.6667

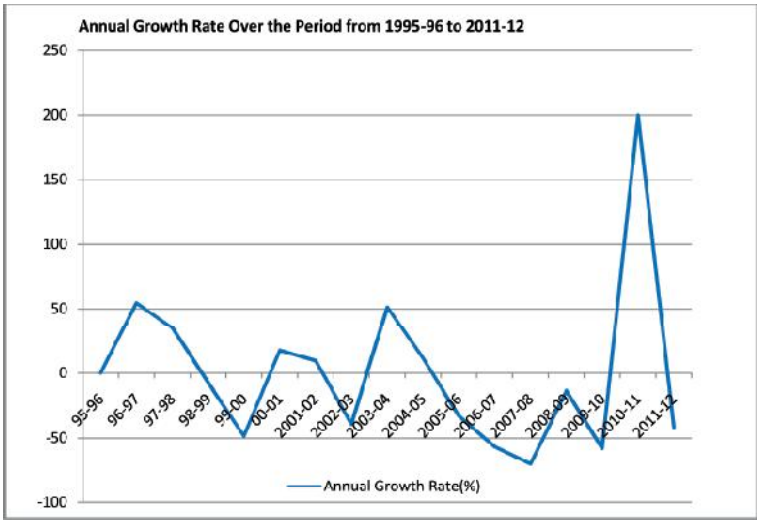
Source: Annual Lac Bulletin (from 1995-96 to 2005-06) and Lac Statistics at a Glance (2007- 2008 to 2011-12).

This table is compiled from Lac Statistics at a Glance, newly published Technical Bulletin by Indian Institute of Natural Resins and Gums (formerly Indian Lac Research Institute). The data from the journal show completely different pictures from other tables. If we take the average figure we see production of India and West Bengal has remained more or less the same but that of Purulia has become dangerously low. The district Midnapore, whose production during these years was 610 M.T., 950 M.T, 700 M.T, 550M.T, 1240 M.T. & 1180 M.T. respectively, has taken the leading position in West Bengal. From this Technical Bulletins we see that the amount of sticklac processed in Purulia during these years were the highest in India. This indicates that Purulia has emerged only as one of the famous lac processing district by wiping out the reputation of major lac cultivating district. For processing now district's industrialists

are to depend on supply coming from other districts as well as other states' production. This is certainly not a goodsign for the traditionally cultivators, processors and the large number of professional lac activists.

The production scenario here is under great degradation. Over 2000 M.T production is not obtained any year. Again overall average diminished from 1457.5 M.T. to 133 M.T. within a decade. This is really a disheartening situation when we consider the production of the year 2009-10, which is only 40 M.T such an amount has never been produced in the history of Lac agriculture in Purulia. The decreasing trend of production started in 9th decade in 20th century and at the beginning of the new century this tendency has worsened. Now take a look of the table diagrammatically in chart-3.

Chart-3



Source: Compiling from table-11.

Maximum times the line indicating the growth rate lies below the horizontal axis. In 1999-00 it shows more than 40% negative growth rate in year 2002-03 negative growth rate touches 40% level. Subsequently the production increases by 50% but again it is being arrested by negative growth rate. The lowest growth rate is achieved in the year 2009-10.

The growth of sticklac production over the year may be studied by fitting a trend equation to the time-series data (Table no. 12). Linear trend

equation is fitted to the given data. The trend equation is of the form,

$$Y = a + bX$$

where, Y represents production and X represents time. The parameters of the trend equation can be determined by the method of least squares.

Table 12: Trend Coefficient of Production Over the Years From 1963-64 to 2011-12

Year	X=(Year-1987-88)	Y= Total Production (in M.T.)	X*X	X*Y	Y*Y
63-64	-24	3602	576	-86448	12974404
64-65	-23	1907	529	-43861	3636649
65-66	-22	2034	484	-44748	4137156
66-67	-21	2333	441	-48993	5442889
67-68	-20	3453	400	-69060	11923209
68-69	-19	2668	361	-50692	7118224
69-70	-18	2389	324	-43002	5707321
70-71	-17	2245	289	-38165	5040025
71-72	-16	2148	256	-34368	4613904
72-73	-15	1053	225	-15795	1108809
73-74	-14	1900	196	-26600	3610000
74-75	-13	3153	169	-40989	9941409
75-76	-12	2547	144	-30564	6487209
76-77	-11	2456	121	-27016	6031936
77-78	-10	2194	100	-21940	4813636
78-79	-9	606	81	-5454	367236
79-80	-8	769	64	-6152	591361
80-81	-7	1512	49	-10584	2286144
81-82	-6	2250	36	-13500	5062500
82-83	-5	488	25	-2440	238144
83-84	-4	497	16	-1988	247009
84-85	-3	1005	9	-3015	1010025
85-86	-2	1745	4	-3490	3045025
86-87	-1	1440	1	-1440	2073600

87-88	0	945	0	0	893025
88-89	1	1255	1	1255	1575025
89-90	2	2205	4	4410	4862025
90-91	3	940	9	2820	883600
91-92	4	950	16	3800	902500
92-93	5	1365	25	6825	1863225
93-94	6	2795	36	16770	7812025
94-95	7	2525	49	17675	6375625
95-96	8	958	64	7664	917764
96-97	9	1480	81	13320	2190400
97-98	10	1998	100	19980	3992004
98-99	11	1850	121	20350	3422500
99-00	12	955	144	11460	912025
00-01	13	1121	169	14573	1256641
01-02	14	1228	196	17192	1507984
02-03	15	746	225	11190	556516
03-04	16	1129	256	18064	1274641
04-05	17	1256	289	21352	1577536
05-06	18	842	324	15156	708964
06-07	19	365	361	6935	133225
07-08	20	110	400	2200	12100
08-09	21	95	441	1995	9025
09-10	22	40	484	880	1600
10-11	23	120	529	2760	14400
11-12	24	70	576	1680	4900
Total	0	73737	9800	-429998	151167099

Source: Compiling from Table- 3, 7, 11.

So here b= -429998/9800 = -43.87734694 = -43.88 (approx)

Over the period of 49 years from 1963-64 to 2011-12, a linear declining trend in sticklac production is observed, the trend coefficient being -43.88, shows negative relationship between Y and X i.e. production decreases as time goes on. One point should be noted that due to unavailability of

Purulia data in those years i.e. 1968-69 to 1980-81 the data for these years are replaced by respective data of West Bengal.

$a = \sum Y/n$ = 73737/49 =1504.84

The estimated regression line shows Y= 1504.84 – 43.88X.

Conclusion

Lac production depends on technological factors like quality of broodlac, scientific method of cultivation, nature of host plan etc. It is also greatly influenced by weather conditions like annual rainfall, occurrence of hail storm, frost etc. It also depends on economic factors like price of the product, marketing and credit facilities available, socio-economic profile of lac growers. Over the study period several times natural and economic factors coupled with technological factors have acted either adversely or in favour of lac production and caused fluctuation in production.

In this analysis our aim was to show how sticklac production of the district has changed over the years during the time period 1931-32 to 2011-12. Although unavailability of data from 1956-57 to 1962-63 causes to break in the continuity of the analysis. Neglecting this, the tables (table-2 to table-10) postulated in the chapter exhibits the total production of Purulia with their growth rate.

We saw the growth rate is subject to extreme fluctuation such that sometimes it reaches to level of 80% growth rate then within a three to four years it falls to - 80%. On the other hand trend analysis (in Table-12) reveals that sticklac production over the period borne high negative trend co-efficient i.e.-43.88. That means the district can no longer be described as a major producer of sticklac in India. The plan-wise analysis says the same thing.

So when the diminishing tendency of the crops production has been detected we have to move towards the solution of the problems attached with lac industry in Purulia. The production as well as growth rate of production analysis so far are not in favour of lac industry. The growth of lac industry must have been arrested by some definite problems which may be weather related or economy related. Now we have to find out the problems and its extent of effectiveness on different lac oriented activity considering both supply side and demand side.

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6

Trend and Pattern of Urbanization and Availability of Basic Amenities in Urban India

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Abstract

This paper has analysed the trend and pattern of urbanization and availability of urban basic services across different Indian states. Although the availability of safe water, toilet facilities and electricity to urban households have improved at the national level over the period under consideration, there has been large variations in the pace of achievement across states and importantly, these have become significant in the case of capital intensive and networked facilities. This has implications for the quality of life enjoyed by urban households with the gap between the better off states and the poorer ones increasing unless there is targeted government intervention. Further, financial self-reliance or autonomy at the municipal level does not necessarily translate into greater availability of basic urban amenities. This observation questions the popular approach of only strengthening financial health of the municipalities to address the problem of poor urban service delivery. Therefore, along with the financial empowerment of the municipalities, the paper argues in favour of adopting comprehensive set of reform policies with special emphasis on the aspects of governance, planning, capacity building and innovation.

Keywords: *Urbanization, urban, governance, capacity building, innovation.*

The Background

Indian cities are envisioned as 'engines of growth' with urban India constituting 31.16 percent of the national population (Census of India 2011) and contributing 60% of country's GDP, with a potential to cross 75% by 2031 (Ahluwalia *et.al.* 2014). As per Census 2011 data, 53 million plus cities accounts for 43% of India's urban population and the corresponding figure for class I cities[1] with population over 3 lakhs is about 56 percent. Moreover, the share of population in towns below 100000 populations has also increased and, in particular, the share of census towns is now almost 36%. In essence, urban growth is occurring across the 'urban spectrum' (Mukhopadhyay *et. al.* 2014). McKinsey Global Institute (2010) predicts an urban population of 590 million by 2030, as compared to 340 million in 2008. Therefore, any meaningful long-term vision for India would be incomplete without planning for the cities and quite rightly, the Planning Commission describes urbanization as one of the country's top four developmental challenges. Realization of full potential of cities depends crucially on their ability to provide 'enabling' environment especially in terms of sustained provision of a wide range of urban services that promote both private sector activities and provide community services to urban residents.

Unfortunately, inadequate provisioning and improper maintenance of public goods and services are very common to almost all the cities in India which, in turn, greatly reduce their economic potential and overshadow the positive role of urbanization. Many urban residents have little access to basic services like water and sanitation, solid waste collection, roads and shelter etc. (HPEC, 2011). As per Census 2011, only 71 percent of urban population is covered by individual water connections. Duration of water supply in Indian cities ranges from 1 hour to 6 hour. Even a partial sewerage network is absent in 4861 cities and towns of India, about 13 percent of urban household do not have any access to any form of latrine facility. 37% of urban households are connected with open drainage and another 18% are not connected at all. Thus, the situation in Indian cities has become unmanageable and more alarming with the growing inequalities arising out of lags in adjustment to rapid and extensive urbanization (Shaw *et.al.* 2013). Consequently, a substantial amount of investment is needed to remove the current backlogs in infrastructure provision and also to augment the infrastructural facilities for keeping pace with the demand for the same. The HPEC (2011) estimated an urban investment need of ₹ 39.2 lakh crore for the period 2012-31 and the new investment

needs are roughly equivalent to an annual amount of 1.1 percent of GDP by 2032. But, decrepit financial positions as well as the weak capacities of governments at all level exacerbate the problem of financing urban infrastructure.

Against this background this paper examines the trend and pattern of urbanization and availability of basic amenities in India as well as in fifteen major states. The rest of the paper is structured as follows. The second section performs an interstate analysis of trend and pattern of urbanization in India. Availability of basic urban amenities is examined in the third section. The final section contains the main conclusions.

Section 2: Trend and Pattern of Urbanization – An Interstate Analysis

The first three decades of the twentieth century saw the level of urbanization in India remaining somewhere between 11 and 12%. The first remarkable increase in the level of urbanization was during 1941-51, when it increased from 13.85% to 17.29%, the urban population registering an annual compound growth rate of 3.53% (Table 1). After having a moderate decade of urban growth during 1951-61, the decades of 1961-71 and 1971-81 observed successive increase in both the level and the rate of urbanization. In 1991, the level of urbanization was 25.72%, which was an increase from 23.34% during 1981, there was a significant decline in the rate of urbanization from 3.83 percent during 1971-81 to 3.09% during 1981-91, which was even less than what it was during 1961-71.

Table 1: Urbanization in India 1901-2011

Census year	No. of towns/urban areas	urban population(as percentage of total population)
1901	1827	10.84
1911	1815	10.29
1921	1949	11.18
1931	2072	11.99
1941	2250	13.86
1951	2843	17.29
1961	2365	17.97
1971	2590	19.91
1981	3378	23.34

1991	3768	25.72
2001	4368	27.78
2011	6616	31.16

The decade of 1991- 2001 has however shown a further decline in the growth of urban population. The central point here is that, despite significant fluctuations over the past few decades, urban growth has at best been modest in India. Further, it appears that the current status of India's increasing urbanization and the assumption that this trend would continue for the next few years are mostly based on absolute population.

Table 2 presents the variation in the urban share of total population across India's 15 major states in India.

Table 2: Level of Urbanization in Indian States

States	1971	1981	1991	2001	2011
India	19.90	23.34	25.72	27.78	31.16
Andhra Pradesh	19.3	23.3	26.8	27.1	**33.49**
Assam	8.8	9.9	11.1	12.7	14.08
Bihar	10	12.5	13.2	10.5	11.30
Gujrat	28.1	31.1	34.4	37.4	**42.58**
Jharkhand	NA	NA	NA	22.3	24.05
Karnataka	24.3	28.9	30.9	34	**38.57**
Kerala	16.2	18.8	26.4	26	**47.72**
Madhya Pradesh	16.3	20.3	23.2	26.7	27.63
Maharastra	31.2	35	38.7	42.4	**45.23**
Oridsa	8.4	11.8	13.4	15	16.68
Punjab	23.7	27.7	29.7	34	37.49
Rajasthan	17.6	20.9	22.9	23.4	24.89
Tamilnadu	30.3	33	34.2	43.9	**48.45**
Uttar Pradesh	14	18	19.9	20.8	22.28
West Bengal	24.8	26.5	27.4	28	**31.89**

Notes:

(a) The figures for the states of Uttar Pradesh, Bihar and Madhya Pradesh for the 1970s and 1980s pertain to the undivided states as existed during that time. The figures for the 1990s are, however,

for the new states and hence these figures are not temporally comparable.

(b) In the absence of the Census data for total and urban population for the year 1981 in case of Assam, the urban and total population growth rates have been assumed to be constant during 1970s and 1980s. The percentage of urban population has been arrived for Assam (1981) (1991) based on these assumptions.

Source: Population Census, Paper 2, 1981, 1991, 2001 and 2011.

Most of the states have undergone significant changes over the past few decades. A large proportion of urban population is currently concentrated in the six most developed states, namely Maharashtra, Gujarat, Tamil Nadu, Karnataka, Punjab and West Bengal, accounting for a major portion of the country's urban population. This pattern is an inheritance from the colonial period and all these states report a percentage of urban population much higher than the national average of 27.8 in 2001. Several studies have shown that the levels of urbanization in the states with high per capita income are generally high, the opposite being the case in less urbanised states (Sivaramakrishna, Kundu and Singh 2005).

The pattern of urban growth across states is significantly different from that of the levels of urbanisation. From Independence until 1991, most of the developed states have shown medium or low growth of urban population. In contrast, high urban growth was observed in economically backward states, such as Assam, Bihar, Uttar Pradesh, Rajasthan, and Madhya Pradesh, these states also having low percentages of urban population (Table 2). However, developed state like Maharashtra may be considered as exceptions, as it has recorded urban growth slightly higher than that of the country. In brief, the urban scenario in the post-Independence period was characterized by dualism. The developed states attracted population in urban areas due to industrialization and infrastructural investment but this was largely in and around large cities and upcoming industrial centers. A large part of rural–urban migration into smaller towns from their rural hinterland in backward states can, however, be explained in terms of push factors, owing to the lack of diversification in the agrarian economy. The rate of urbanization has increased slowly between 1991 and 2001, as mentioned in the above section but it increased in 2011. The backward states, on the other hand, have experienced growth either below the national average or, at most, equal to that. The urbanization process has, thus, become concentrated in

developed regions and larger cities in recent years, with backward areas and smaller towns tending to stagnate.

Section 3: State of Basic Urban Amenities – An Inter State Analysis

The discussion in the previous section reveals that the overall urbanization process has slowed down in the eighties as compared to that of seventies, which again increased after 2001. However, the situation of basic amenities particularly water supply, sanitation facilities and electricity coverage has remained far from satisfactory. We utilize the data provided by the Census of India for the year 1991, 2001 and 2011 on household amenities in urban areas as well as the NSSO Reports - Number 429 and Number 488 on 'Housing conditions in India' for January-June 1993 and July December 2002 respectively. It also needs mention that "basic amenities" here includes Drinking water supply, sanitation (latrine) facilities and electricity coverage. Specifically, given the availability of data, we consider the following indicators: (i) percentages of urban households having access to safe drinking water through tap (within the premises, near the premises and away the premises); (ii) percentages of urban households having access to safe drinking water through hand pump (within the premises, near the premises and away the premises); (iii) percentages of urban households having access to safe drinking water through tube well (within the premises, near the premises and away the premises); (iv) percentages of urban households having access to safe drinking water through well (within the premises, near the premises and away the premises), (v) percentages of urban households having access to in-house toilets and(vi) percentages of urban households having access to electricity.

There has been a gradual improvement at the all India level in the provision of safe water (tap) supply over the census period 2001 to 2011 (Table 3). For dwelling unit with drinking water from a tap available within the premises, the increase has been from 51% in 2001 to75.92% in 2011. Most of the states, (8 out of 15) have almost covered 75% of urban households in 2011 in providing water supply. States like Rajasthan, Gujarat, Maharashtra almost covered 90% of the urban household in 2011. Exceptions are Tamil Nadu with 83.49% coverage, Kerala with only 32.60% and Assam -30.92%. This is because wells in the south and springs in the more mountainous north-east are the major source of water supply providing potable water. But as per government definition,

they do not come under the category of “safe” as they are not covered sources and hence we have got the lower figures for these states. Andhra Pradesh (88.26%), Punjab (77.46%), Rajasthan (93.12%) showed a steady improvement in providing hand pump to their urban households.

In few states like Madhya Pradesh, Bihar, West Bengal, Jharkhand and Orissa the percentages of urban households covered by tap water within premises between 2001 and 2011 have decreased indicating that population expansion has exceeded the 2001 networked capacity. A similar trend is observed for the other two categories, i.e., for tap water availability near the premises and away the premises. Andhra Pradesh (82.08%) water supply coverage near the premises and (55.06%) away the premises for the year 2011 which shows a steady improvement from that of 2001 with (70.03%) and (50.03) respectively for both categories. Turning now to the change in coverage of safe water supply - near and away the premises we have got better results for states like Uttar Pradesh (30.21%), (20.43%) in 2001 to (32.74%), (22.20%) in 2011, Assam (23.41%) in 2001 to (26.26%) in 2011.

Table 3: State wise Percentage of Urban Household Covered by Tap Water

	2001			2011		
States	premises	near	away	Premises	near	Away
Andhra Pradesh	77.32	70.03	53.03	88.26	82.08	55.06
Madhya Pradesh	79.52	61.86	37.67	75.07	55.44	27.06
Uttar Pradesh	62.47	30.21	20.43	57.29	32.74	22.20
Assam	35.08	23.41	29.46	30.98	26.26	28.49
Bihar	30.74	15.81	16.07	22.05	13.67	12.98
West Bengal	63.58	51.28	41.24	60.57	52.95	43.00
Jharkhand	59.40	34.05	30.83	48.93	32.09	29.38
Rajasthan	92.39	49.43	26.63	93.12	54.30	27.12
Gujrat	91.44	65.59	41.37	90.26	68.47	45.45
Karnataka	85.40	76.14	54.81	85.30	75.36	51.92
Kerala	37.19	52.83	44.60	32.60	47.82	42.19
Tamilnadu	72.36	63.40	41.14	83.49	79.63	55.12
Oridsa	59.36	35.87	25.32	56.62	42.42	29.10

Maharastra	94.42	80.26	54.65	94.12	75.64	53.40
Punjab	68.92	42.86	40.50	77.46	66.12	55.09

Source: Census of India-2001& 2011 Table- HH-11 & H-12 : Households classified by main source and location of drinking water and availability of electricity and latrine.

Table 4 shows the inter-state variation in percentages of urban households covered by drinking water with hand pump as the source. At the all India level, the provision of safe water (hand pump) supply over the census period 2001-2011 has improved. Specifically, for households covered by drinking water from a hand pump available within the premises, there have been a gradual decline over the census period taken in to consideration.

On the other hand, there has been a steady increase in percentage of households covered by drinking water from near and away their premises through hand pump. This is because of the improvement in the coverage of tap water services. Few of the states, (4 out of 15) have almost covered 30% of urban households in 2011 in providing water supply. States like Madhya Pradesh, Jharkhand, and Orissa have recorded increase in percentage of households covered near the premises and away the premises from the source of the drinking water.

States like Andhra Pradesh (2.74%), Madhya Pradesh (4.11), Uttar Pradesh (31.68), Rajasthan (1.66), Gujarat(1.63), Karnataka (0.37), Tamil Nadu (2.93), Punjab (9.75) have experienced a sharp decline in in-house coverage of hand pump in the year 2011 as compared to 2001. Madhya Pradesh (from 19.93% to 23.35%), Jharkhand (from 28.59% to 41.28%), Orissa (from 19.72% to 20.44%) have showed a steady improvement in providing hand pump services mainly for near and away the premises of the urban household.

To better understand the differences in the performances of service delivery of the 15 major states, one should take the demographic and economic characteristics of the states. The demand of basic services and the delivery of services and their gap may be discussed on the basis of demographic factors.

Table 4: Percentage of Urban Household Covered by Hand Pump

States	2001			2011		
	Premises	**Near**	**Away**	**Premises**	**Near**	**Away**
Andhra Pradesh	7.10	17.99	17.59	2.74	6.89	10.30
Madhya Pradesh	6.40	19.93	26.80	4.11	23.35	36.62
Uttar Pradesh	35.06	61.08	60.16	31.68	54.28	59.69
Assam	34.05	40.61	19.42	34.91	30.06	19.14
Bihar	57.82	63.88	44.41	63.47	71.19	57.11
Westbengal	19.58	27.12	25.65	18.92	26.52	28.69
Jharkhand	9.86	28.59	19.65	18.07	41.28	39.06
Rajasthan	3.44	31.22	32.70	1.66	19.22	27.56
Gujrat	3.00	19.84	14.22	1.63	11.98	12.79
Karnataka	1.83	10.32	15.17	0.37	2.10	6.73
Kerala	0.84	1.61	0.92	0.66	0.49	0.52
Tamilnadu	10.48	18.18	17.47	2.93	4.84	7.41
Oridsa	4.04	19.72	16.36	6.63	20.44	21.52
Maharastra	1.75	10.94	15.85	0.81	8.87	15.60
Punjab	28.00	48.07	37.43	9.75	16.45	19.64

Census of India 2001, 2011.

In few states like Madhya Pradesh, Bihar, West Bengal, Jharkhand and Orissa the percentages of urban households covered by tap water within premises between 2001 and 2011 have decreased indicating that population expansion has exceeded the 2001 networked capacity. A somewhat similar trend is observed for the other two categories, that is for water availability through hand pump near the premises and away from the premises. Andhra Pradesh (82.08%) water supply coverage near the premises and (55.06%) away the premises for the ear 2011 which shows a steady improvement from that of 2001 with (70.03%) and (50.03) respectively for both categories. Turning now to the change in coverage of safe water supply - near and away the premises we have got a better result for states like Uttar Pradesh (30.21%), (20.43%) in 2001 to (32.74%), (22.20%) in 2011, Assam (23.41%) in 2001 to (26.26%) in 2011.

Table 5 shows the inter-state variation in percentages of households covered by well. There has been a gradual decline in the percentage of well

coverage (within the premises) across the states over the census period 2001-2011. The situation mentioned above is same for most of the states. There has also been a gradual decline over the census period of households covered by drinking water from a well available near the premises and away the premises. The probable reason might be the increased availability of tap water services within the premises.

Table 5: State wise Percentage of Urban Household Covered by Well

States	2001			2011		
	Premises	Near	Away	Premises	Near	Away
Andhra Pradesh	7.68	5.39	9.03	1.98	0.02	4.28
Madhya Pradesh	5.82	12.14	20.42	3.67	0.06	11.34
Uttar Pradesh	0.50	5.62	10.50	0.43	0.02	3.01
Assam	24.37	24.72	25.38	17.48	0.18	21.10
Bihar	3.36	14.14	25.99	1.79	0.06	11.82
West Bengal	7.29	5.10	6.92	5.43	0.03	4.19
Jharkhand	26.87	31.32	31.10	18.51	0.22	19.13
Rajasthan	1.14	11.08	17.45	0.66	0.04	6.46
Gujrat	0.24	3.21	9.06	0.29	0.02	6.52
Karnataka	6.96	4.38	9.01	4.94	0.03	6.18
Kerala	59.40	41.33	46.22	62.41	0.41	42.50
Tamilnadu	8.47	9.10	16.87	3.18	0.05	10.22
Oridsa	29.39	20.35	21.10	21.54	0.14	15.15
Maharastra	2.17	4.67	11.52	1.91	0.04	0.56
Punjab	0.15	1.05	1.33	0.20	0.01	0.00

Source: Census of India 2001, 2011

Table 6 shows the inter-state variation in percentages of households covered by drinking water from tube well. There has been a gradual improvement across different states in the provision of safe water (tube well) supply over the census period 2001-2011. The improvement is mainly seen in the provision of households having access to tube well within the premises. The states which performed better throughout the census period are- Madhya Pradesh, Uttar Pradesh, Assam, Bihar, West Bengal, Jharkhand, Rajasthan, Gujrat, Karnataka, Kerela, Orissa, Maharasthra and

Punjab for the year 2001 and 2011 respectively. Exceptions are Tamil Nadu and Andhra Pradesh. The trend is same for the other two categories –near the premises and away the premises.

Table 6: State wise Percentage of Urban Household Covered by Tube Well

States	2001			2011		
	Premises	**Near**	**Away**	**Premises**	**Near**	**Away**
Andhra Pradesh	7.58	3.72	8.29	7.01	4.61	8.00
Madhya Pradesh	8.10	4.70	8.32	17.15	12.52	14.13
Uttar Pradesh	1.67	1.25	2.38	10.60	5.94	5.55
Assam	4.88	4.72	3.67	16.62	10.78	6.46
Bihar	7.90	4.46	5.00	12.69	3.41	2.71
Westbengal	9.25	15.10	21.31	15.08	14.76	19.44
Jharkhand	3.76	3.73	4.13	14.50	2.93	2.57
Rajasthan	2.71	3.72	5.63	4.56	9.45	8.83
Gujrat	5.22	5.39	5.68	7.82	9.74	7.21
Karnataka	5.67	7.85	14.30	9.38	11.88	17.46
Kerala	2.23	1.14	1.37	4.32	2.02	1.92
Tamilnadu	8.27	3.70	5.79	10.39	5.97	11.06
Oridsa	7.06	22.09	28.35	15.21	21.34	27.25
Maharastra	1.45	1.77	4.42	3.17	5.07	9.12
Punjab	2.70	1.42	3.27	12.59	7.34	6.95

Source: Census of India 2001, 2011

Table 7 shows the inter-state variation in percentages of households having access to latrine. In our study we are mainly interested in the percentages of households having access to latrine. With the similar kind of analysis we have also got the figures for the urban households who do not have the access to latrine.

It is very much clear from the above table that there has been a steady improvement in the percentages of households having latrine. States for example- Andhra Pradesh, Madhya Pradesh, Uttar Pradesh, Assam, Bihar, West Bengal, Jharkhand, Rajasthan, Gujrat, Karnataka, Kerela, Tamil Nadu, Orissa, Maharasthra and Punjab. Thus, it is evident that electricity coverage has increased from 2001 to 2011.

Table 7: State wise Percentage of Urban Household covered by Latrine Facilities

States	2001		2011	
	Available	**Not available**	**Available**	**Not available**
Andhra Pradesh	78.07	21.93	86.13	13.87
Madhya Pradesh	67.74	32.26	74.22	25.78
Uttar Pradesh	80.01	19.99	83.11	16.89
Assam	94.60	5.40	93.71	6.29
Bihar	69.69	30.31	68.96	31.04
Westbengal	84.85	15.15	85.01	14.99
Jharkhand	66.68	33.32	67.17	32.83
Rajasthan	76.11	23.89	82.02	17.98
Gujrat	80.55	19.45	87.70	12.30
Karnataka	75.23	24.77	84.93	15.07
Kerala	92.02	7.98	97.43	2.57
Tamilnadu	64.33	35.67	75.15	24.85
Oridsa	59.69	40.31	64.78	35.22
Maharastra	58.08	41.92	71.27	28.73
Punjab	86.52	13.48	93.37	6.63

Table 8 shows the inter-state variation in percentages of households having access to electricity. In our study we are mainly interested in the percentages of households having access to electricity. With the similar kind of analysis we have also got the figures for the urban households who do not have the access to electricity. It is very much clear from the above table that there has been a steady improvement in the percentages of households covered by electricity. Most of the states have almost covered 90% of the urban households with the services of electricity. States for example- Andhra Pradesh, Madhya Pradesh, Uttar Pradesh from, Bihar from, Jharkhand, Rajasthan, Gujrat, Tamil Nadu, Orissa, Maharasthra and Punjab. Thus from the above figures it is evident that electricity coverage has improved from 2001 to 2011.

Table 8: State wise Percentage of Urban Household covered by Electricity

States	2001		2011	
	Available	**Not available**	**Available**	**Not available**
Andhra Pradesh	89.99	10.01	97.29	2.71

Madhya Pradesh	92.26	7.74	92.73	7.27
Uttar Pradesh	79.92	20.08	81.42	18.58
Assam	74.29	25.71	84.08	15.92
Bihar	59.28	40.72	66.73	33.27
Westbengal	79.56	20.44	85.13	14.87
Jharkhand	75.61	24.39	25.10	12.02
Rajasthan	89.61	10.39	93.88	6.12
Gujrat	93.39	6.61	97.19	2.81
Karnataka	145.28	9.47	96.42	3.58
Kerala	84.34	15.66	97.01	2.99
Tamilnadu	88.00	12.00	96.11	3.89
Oridsa	74.08	25.92	83.10	16.90
Maharastra	94.28	5.72	96.16	3.84
Punjab	96.49	3.51	98.34	1.66

Source: Census of India 2001, 2011

Financial Health of the ULBs and Availability of Urban Basic Services

Generally, it is assumed that strong financial health of the municipalities and higher municipal expenditures imply better service delivery both in terms of quantity and quality. Improvement of basic services is essential to increase peoples' satisfaction and improve their quality of life. So, we examine the relationship between financial performance of the ULBs and availability of urban basic amenities in major states of India. Financial positions of the ULBs have been represented with the help of two indicators – namely revenue autonomy ratio (RA) and financial autonomy ratio (FA). The revenue autonomy ratio (RA) is the percentage share of own source revenue (tax as well as non-tax) to total revenue. It reflects on the state of autonomy by the local bodies, i.e., the extent to which the local bodies can raise their revenues independently. The financial autonomy ratio (FA) is defined as the percentage share of the ULBs' revenue expenditures funded out of own source revenue. Thus, these two measures are used as the indicators of fiscal health of the ULBs: a higher autonomy ratio indicate better fiscal health of the ULBs and *vice-versa*. It is important to note here that, to ensure comparability, we have correlated (i) the financial indicators for the year 2002-03 with the availability of urban basic amenities as per 2001 census and (ii) the

financial indicators for the year 2007-08 with the availability of urban basic amenities as per 2011 census.

Table 9: Correlation between Revenue Autonomy Ratios and select urban basic amenities

	latrine facilities	**electricity coverage**	**tap water (within)**
	0.452	-0.151	-0.437
Revenue Autonomy Ratio (2002-03)	0.091	0.591	0.103
	0.599*	0.33	0.234
Revenue Autonomy Ratio (2007-08)	0.018	0.23	0.402

* Pearson's Correlation is significant at the 0.05 level (2-tailed)

Table 10: Correlation between Financial Autonomy Ratios and Select Urban Basic Amenities

	latrine facilities	**electricity coverage**	**tap water (within)**
Financial Autonomy Ratio(2002-03)	0.474	0.186	-0.264
	0.074	0.507	0.342
Financial Autonomy Ratio(2007-08)	0.549*	0.349	0.277
	0.034	0.203	0.318

* Pearson's Correlation is significant at the 0.05 level (2-tailed)

From table 9 and table 10, we observe that except for the latrine facilities, the correlation coefficients between the RA ratios and the availability of electricity facilities and tap water (within premises) turn out to be negative in the first half of the last decade.However, in the latter half of the last decade, the correlation coefficients turn out to be positive among the variables under consideration. The correlations among FA ratios and availability of select urban amenities also follow similar trend. Importantly, except for the latrine facilities, the associations remain insignificant in both halves of the last decade. Our findings are quite revealing in the sense that the better financial health do not necessarily translate into greater availability of all the basic urban services under consideration. This observation questions the popular approach of strengthening financial of the ULBs to address the problem of poor urban service delivery. The implication is that the state of municipal finances

is, undoubtedly, important in service delivery outcomes. However, at the same time, institutional arrangements for the services are also likely to have impacts on service delivery outcomes.

Section 4: Summing Up

This paper has analysed the trend and pattern of urbanization and availability of urban basic services across different Indian states. The analysis focuses on three basic services namely water supply, sanitation facilities and electricity. The analysis considers both the temporal as well as inter-state variation. It is observed that there has been an increase in the rate of urbanization between 2001 and 2011. Although the availability of safe water, toilet facilities and electricity to urban households have improved at the national level over the period under consideration, there has been large variations in the pace of achievement across states and importantly, these have become significant in the case of capital intensive and networked facilities such as tap water supply, electricity and closed drainage systems. Non-networked facilities such as water supplied through hand pumps and tube wells and the availability of a latrine in the house have showed an improvement across the states including even the poor ones.

Thus, while there has been progress in the coverage of basic amenities across urban India, it has been of a qualitatively different order in the higher income states compared to the lower and middle income states. This has implications for the quality of life enjoyed by urban households with the gap between the better off states and the poorer ones increasing unless there is targeted government intervention. The poorer states will need continued assistance from the central government to catch up with their economically well off counterparts. Moreover, we have found that the improvement in the availability of urban basic amenities has not been significantly correlated with the urban local bodies' income. This has got important implications. The deplorable state of urban services is certainly attributed to the poor financial health of the urban local bodies. Given, very little effort put in strengthening the economic base and resource generating capacity of cities, emphasize should be placed on the reforms for enhancement of revenue and expenditure of the ULBs. However, apart from insufficient resources, institutional inefficiencies and inadequate governance capacities also contribute to the infrastructural deficiencies prevailing in most of the Indian cities. These are reflected through a multitude of overlapping administrative bodies and bureaucratic rigidities; inadequate transparency and social accountability; inertia in

adapting to new management techniques and systems of service delivery; and decision-making influenced by political considerations and vested interests. Quite rightly, the 12th FYP has not only recognized the need for greater investment in urban infrastructure but also has put emphasis on measures to address the weaknesses in governance issues. Therefore, any meaningful approach to manage India's urbanization should focus on strengthening the five pillars – governance, planning, financing, capacity building and innovation.

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