2.1 Discussion of Various General Issues Concerning Time Allocation

Time is often more precious than money and is regarded as a universal and natural concept. A detailed picture regarding the problem of time allocation and its influence upon women is studied extensively by so many economists and sociologists. In spite of all such developments in the field of time allocation, I found a missing link. Time allocation by working women across different occupations in a developing economy and the rural urban comparison among different occupations is often left unanswered. Land ownership is a main factor that produces significant influence upon family’s economic and social life.

Therefore while analyzing time allocation pattern of women, their ownership of assets is also to be accounted. Often ownership of large assets of women results in less outside employment and availability of more domestic helpers they can afford. In this elevated atmosphere women get more time for leisure. A large research gap in this crucial area is found without ignoring the contribution of Lundberg, Komarovsky and Mc Lerny. They collected data from 2460 residents of Westchester country (New York), categorized them on the basis of their activities. It was purely a sub urban study in which males are grouped under executives, professionals, white collar workers and labourers and females under white collar workers, laborers and housewives. Similarly, Ennis (1968) gives a more detailed picture of leisure and work patterns for specific occupational income and educational groups. Perhaps “the higher
level of occupations……have the same amount of leisure because they spent less time (but may be more money) on maintenance-nurturance” (p-556). A detailed occupational distribution of women can be seen in the works of Aromolaran (2004), and it mainly focused on female schooling, non market productivity, and labour market productivity in Nigeria.

The multiple roles women play in the household: as mother, caretaker, income earner, domestic worker etc cause the problem of time and resource allocation. The factors that influence women’s bargaining power or her influence over resource distribution depend upon economic, demographic and socio-cultural factors. It is very significant to know how gainful employment affect her total allocation of time, how she divides her time, how she organizes various tasks etc. The Specialization of human capital creates a better division of labour in the allocation of time. Child care and the household work are tiring and various domestic works such as cooking, cleaning, laundry; etc consumes major portion of the time and energy of women. Becker presents a model of allocation of energy among different activities, for example child care requires more energy and women who perform all these duties are left with less energy to perform market work. Such loss of energy and time affect their efficiency in various occupations. In the western societies heavy stress and strain between market and non market work results in an increase in divorce rates. And such inefficiency in time allocation results in the deterioration of future human capital through family dissolvement. Marital separation is also an important factor that influences woman’s labour market entry. If the time spent in the household activities are complementary, work hours increase following separation.

To my limited knowledge, I found that majority of studies relating to time allocation and home production in developing countries are confined to rural households, for example Philippines study of Evanson et.al, study in Botswana by Eva Muller, Bangladesh study by Kandekhar. One significant study relating to market and non market time allocation in urban area in a developing country is carried over by Malathy (1994). To bridge this gap, in this thesis sample working women are taken from both rural and urban areas.
2.2 Theories: Alternative Theoretical Arguments and Concepts Applied to Time Allocation—A Critical Evaluation

A detailed examination of the various theories relating to time allocation and labour force participation and the relative concepts underlying such theories are systematically presented here. The traditional models of family behaviour assume that family members act as if they are maximizing a single utility function. The unitary or common preference model which is based on joint utility maximization is in fact developed by Samuelson (1956) and it forms the systematic stating point of the theories concerning time allocation. He was of the view that family members act collectively to maximize a single utility function, in which the total consumption and leisure time of each member is maximized jointly subject to a budget constraint where all the family members income are pooled. Samuelson points out that “where the family is concerned the phenomenon of altruism inevitably raises its head”. The concept of altruism is systematically developed by Becker who defines it as the positive dependence of one person utility function on the wellbeing of another person. To quote Becker “an altruistic family can be said to have a family utility function that is voluntarily maximized by all members regardless of the distribution of family income” (1981, p-173). The common preference ordering may be the outcome of consensus among the family members or it is based on the preference of a dominant and altruistic family member (Becker, 1981). Under this model the utility interdependency is the basic rule. In a family of husband, wife and children their time are in fact influencing each other and they turned to be complementary to each other. One of the main criticisms raised against the joint utility approach is that empirical testing of joint utility is very difficult, the labour supply, working hours and earnings of the spouses are in fact have its own independent existence. In the unitary models the preference of individual family members is not defined and no attention is paid to how the family preferences are originated. Nerlov (1974) and many others criticized joint utility function because of its inability to explain changes in household composition. A set of game theoretic models relating to divergent and conflicting interest within the family is systematically developed by Manser and Brown (1980), Mc Elroy and Horney (1981), Kooreman and Kapetyn (1990) and Lundberg and
Pollak (1993). They are of the view that a generalization of unitary model is presented with the help of cooperative Bargaining models which is based on individual utility functions. The bargaining models permit the introduction of individual utility function and it also reconciles difference among family members. Individual utility function which is based on non cooperative bargaining is put forward by Leuthold (1968), Ulph (1988), Kanbur and Haddad (1994), Bergstrom (1996). A collective approach which was developed by Chiappori (1988, 1992) avoids specifying a model of intra family allocation and the collective model rest upon the assumption that family allocations obeys a pareto efficient sharing rule. Chiappori points out the unitary models is not grounded on methodological individualism (1992). All these models consider changes in individual specific control of resources which translate into changes in household expenditure pattern. Unlike unitary model recent models suggest that targeted government policies also influence resource allocation within the household, as a result it create changes in the individual and collective welfare of the household. The problem of inter generational households and its allocation is also explained in the new models (Pezzine and Schone, 1997). The more recent cooperative or non cooperative bargaining models allow individual family members to differ in their objective and to bargain for resources within the family based on the family income composition (Lundberg and Pollak, 1997). Also the bargaining models found that the more the mother’s contribution to family income, the more involved the fathers in the domestic work. Relative income is not the only variable that affects the intra household decision process, different distributional factors such as sex ratio also had produced significant changes in the collective models. Since such distributional factors influence the sharing rules within the family. One important limitation of collective models is that it has not been generalized to the case where at least one member is not working. A detailed theoretical review is presented below which helps to generate a more fruitful development of the present problem under consideration that is ‘time allocation of working women across different occupations’.

Theoretical background of the study starts from Jevons (1911), who is considered as the progenitor of the labour-leisure models. He was of the view that a true theory of economy can only be attained by going back to the great springs of
human action. In the theory of labour, he is of the view that labour will be exerted both in intensity and duration until a further increment will be more painful, than the increment of produce thereby obtained is pleasurable.

One of the first studies to examine the home production behaviour of families was made by Reid (1934). She gives a clear picture of household production which ‘consists of those unpaid activities which are carried on, by and for the members, which activities might be replaced by market goods or paid services, if circumstances such as income, market conditions and personal inclinations permit the services being delegated to someone outside the household group’. An example of time allocation is provided through the substitution between store brought and home delivered milk. Store brought milk plus the foregone value of time to carry it to the home is equivalent to the price of home delivered milk. She also explained a third party criterion which provided a consistent basis for distinguishing productive activity from other non economic activity which is not organized for the market. The test was simply whether a given activity could be performed by a person other than the person receiving the benefit. For example, cooking is considered as a productive activity, eating was not (even though it generates energy for further production). If an activity which benefits you is performed by someone else, it is theoretically possible to pay for this. So many studies which try to value household production adopt the third party criteria. Time devoted to non market work is tabulated by economic and demographic characteristics. She found that family size and composition, family income, location of residence etc produce significant influence on home production.

A much detailed examination of household production is presented by Reid in the following years (1943, 1947). Woman is often considered as home makers and they have the prime responsibility for household tasks without any monetary benefit. Regarding the trends in household tasks she explains that home has always been a centre of production and consumption. Household tasks include so many tasks such as preparation and serving of meals, the care of children, the care of dwelling, clothing, furniture and equipment, buying of grocery etc. She found that increase in gainful occupation of married woman and those who are employed away from home results in the reduction of home production time. Since with increase in the proportion of
working women more dependence upon cooked and semi cooked food from the market increased. Home production still continues to be significant in the case of those women who remain at home due to traditions or the lack of employment opportunities. Within the families child care is a very time consuming task and sometimes due to lack of satisfactory child care outside so many woman are refused to work even at attractive wages. Among the rural communities due to poor infrastructure, much time is wasted for travelling. But with more and more female labour force participation a decrease in full time home makers take place.

Common preference approach of the household or the joint utility maximization found its starting point with Samuelson (1947) who was also considered as a pioneer in the field of unitary model of family. He tries to shows that if the spouses agree to maximize a family social welfare function, subject to a pooled family budget constraint, then the family’s expenditure pattern would look like the expenditure pattern of a utility maximizing individual. This conveniently implies that family demands will posses all the standard properties of individual demand function and depends upon price and gross family income. He argues that for a group of individuals with distinct utility functions are to be treated as if they are maximizing single household utility function. Income must be reallocated in such a way that the marginal rate of substitution should be equal among all family members. The maximization of such household utility function is reached by a consensus among individual household members but the process by which consensus is achieved is not described by him.

The basic economic model which is the starting point of economic analysis of women’s labour supply centers on the family context of work and leisure decisions. Such a model was originally formulated and applied by Mincer (1962). A Strong substitutions effect more than the income effect is found in the labour supply of women. It is explained by the substitutability of market goods and services for home production. Husbands’ wage produce a negative effect on wife’s labour supply and it has two interpretations i.e. increase in husband’s wage made wife to consume more leisure or women who like leisure tend to marry men with high wages. Distribution of work at home and the market depends upon individuals' relative productivity in two
sectors; the greater the market wage relative to home productivity greater is the shift to market work. First comprehensive estimate of the on-the-job training cost was provided by him. Individuals economic growth is examined from his wage profile, a typical wage profile is concave, grows rapidly during the first decade of working life, decelerate subsequently and decrease ultimately.

Time allocation in its pure theoretical form appeared in the ‘Household production model’ or the ‘New Theory of Consumer Behaviour’ or The New Home Economics’, of Becker (1965). The importance of time costs (i.e. opportunity cost of time) is mentioned by Becker, 1960. According to him the family is assumed be a utility maximiser, maximizing household utility subject to budget, time, and production function as constraints. In the joint utility function more importance is given to the ‘basic commodities’ (or home produced) which are produced using household members time, their capacities, market produced goods. These basic commodities often possess shadow prices and market prices. The production of basic commodities is subject to money income constraints. But he does not provide a clear distinction between work at home and leisure. Becker introduced many new concepts like ‘full income, full price etc’. Full income is defined as the income which could be obtained by devoting all the time and resources of a household in yielding income, with no regard for consumption. Full income depends on four parameters: Property income, wage rate function, available time, and supply of energy per unit of time. Full price of basic commodities is defined as the sum of the prices of market goods and time used to produce a unit of the basic commodity. On the basis of time intensity full price may differ between households even if the price of market goods used to produce the commodities are identical. He considered the household as a monolithic or unitary unit i.e., home-holds allocation decisions are the result of bargaining between its members. Subject to a budget constraint the home hold combines its labour with market inputs to produce a composite consumer good which is distributed among the members according to single home hold preference. Another view that came up with him is that the improvements in women’s status not affect the household allocation. Becker’s household commodities are non-market goods that are output of production process where market goods and household members labour time
are used as inputs. He also suggests that the number of household commodities is typically much smaller than the number of market goods.

In addition to time and money constraints, stamina constraints influences choices among activities, which are measured in ‘task units’ (Mabry, 1970) utilizing quantity of money, time and effort inputs. It is found that a young worker entering the labour force and forming a family, stamina is the least restrictive constraint, since good health is the characteristic of the majority of the youth. But he failed to define operationally the concept of task units. Mabry criticised the concept of full income of Becker, and he explains that the full cost approach may not accurately measure the opportunity cost of activities if large quantities of marginal time have no market value.

The significance of education and its profound influence upon labour supply and home production is thoroughly analysed by Leibowitz (1974). More women came to labour force due to higher educational attainment. Increase in their income, affects the total amount of work they perform: both at home and in the market. Within the household, better educated women expected to consume more leisure, because they spend more time in the labour market. Purchased goods and domestic workers time can be used as substitutes for the wife’s time in the production of most household products. He also noticed that more educated women spend less time on household production, but devote more time to child care. Econometric techniques are applied to study the influence on time spent in household production. Number and age of children are producing significant influence on time spent in home production.

A new approach to equilibrium labour force through the time series labour force participation equation receives considerable attention. One of the major findings associated with, is the labour force varies inversely with unemployment rate- ‘discouraged worker effect’ (Wachter, 1974). In the discouraged worker model cyclical changes in the labour force participation are ascribed to changes in the unemployment rate. Due to increase in unemployment rate some leave the scene because they are not able to find a job. Therefore a time trend is added in the labour force participation equation to gain a clear picture of the real world scenario.
Later Gronau (1974, 1977, and 1980) reformulated Becker’s model by distinguishing work at home and leisure. Increased female labour force participation makes its own effects on marriage and divorce patterns, fertility and education of children. To examine the intra family allocation of time, he presents two cases: when both members of the family participate in the labour force, when husband only works in the market. While analyzing the value of housewife’s time he found that wife’s decision to refrain from entering into the labour force indicate that her value of time exceeds her potential wage rate. A strong support to the neo classical time use model is presented by Gronau (1977). In this model of married women’s time allocation pattern he assumes that home time produces a good that is a perfect substitute for a composite good that may be purchased in the market.

Within the household regarding the mother’s occupational status and its effects on the nutritional status of children is examined by Hart (1975). He is of the view that children of working mothers have lower nutritional status than whose mothers who do not work outside home. Even though working mothers gain more income than nonworking mothers, they can only devote less time for child care. Even breast milk is not properly provided to the children, which may result in their lower nutritional status. Sometimes the poor nutritional status among the children of working mothers in many of the studies is due to the conditions of poverty which drove the mothers to work outside.

By criticizing Becker’s view Pollak and Wachter (1975) show that if basic commodities (household commodities) are produced with constant returns to scale and no joint production. The shadow prices for these commodities are determined by the prices of market goods and wage rate for market labour, independently of the quantities demanded. They are of the view that unless the production of household commodities permits separation of production and consumption activities, there is little to be gained from adding unobservable household commodities to the model. And to remove this difficulty the demand for market goods and leisure are considered to be direct functions of wage and prices of market goods. They also observed that the demand function for the activity input in fact depend upon household’s decision to allocate time (a lot, some, a little or no time) to specific activities. A more analytical
interpretation of the theory underlying new home economics maintains that joint production is inherently important in household technology.

In his ‘Theory of Practice’, Bourdieu (1977) combines the macro (structural) with micro (individual) level of analysis by studying ‘Habitus’ (Latin word refers to disposition to behave in a certain way which means the gender role attitudes of men and women), ‘capital’ (economic, cultural and social) and ‘practice’ (frequent repeated action, customs or duties) and their interconnections. It is concluded that habitus and capital influence the division of work both directly and indirectly through policies. The representation of agents vary with their positions, with their interest associated with the habitus as a system of scheme of perception and appreciation of practice, cognitive and evaluative structures which are acquired through the lasting experience of a social position. Habitus implies a sense of one’s place and also a sense of place of others.

Regarding the estimation of household utility function, Wales and Woodland (1977) presents a model of household in which time is allocated between job work, leisure and housework. Leisure is in fact a function of wage rate of husband, wife, and price of Hicksian composite good, full income. When housework hours are treated as endogenous, as income increases, demand for big house, to perform household duties more labour saving appliances arise. To examine the working hours of each spouse, wage rate non labour income and socio-economic factors are taken as explanatory variables. Results of these studies are used to determine the extent to which work effort of the husband or wife that change as a result of the changes in the wage rate of each spouse.

Household full income is preferred to earned income as an index for comparing the wellbeing of households of equal size. It provides a measure of available opportunities which is independent of labour leisure choice, Manser (1979), Manser and Brown (1980). Number of children and its associated problems is also examined while analyzing the wellbeing of households, since child care time may reduce the utility to parents but children provide a direct source of utility to them. Household is considered as a place for exchanging intangible goods by permitting the exchange of love and companionship. Household also provides security in terms of illness and helps in daily routine. Each member within the household enjoy a utility much greater than that he earns from outside. A shift parameter is also introduced in the welfare
function of the household which introduces intra household environmental parameters divided into demographic, legal, other macro economic conditions external to the household and subdivided into sex ratio, alimony, child support etc.

In the economics of the family, distinction has been made between the numbers of children a couple may want and the quality which the parents wish their children to attain. Becker (1981) put forward the famous ‘Rotten Kid Theorem’, which explains that each beneficiary, no matter how selfish, would maximize the family income of his benefactor and thereby would internalize all effects of his action on other beneficiaries. The scarce resource, love is used economically because sufficient caring by an altruist induces even a selfish beneficiary to act as if she cares about her benefactor as much as she cares for herself. It has its implications for efficiency, the division of labour, and many other aspects of family behaviour. It implies that for ‘rotten kids’ to act rotten, they must have rotten parents and that rotten wives must have rotten husbands. Even selfish and envious children or wives act as if they are altruistic towards their siblings and parents or husbands. This theorem does not imply that families with altruistic members are perfectly harmonious. Selfish children want larger contribution of their parents and selfish wives want large contribution of their husbands etc. It also explains why a parent delays some contribution until later stages of his lifetime. Income pooling property of the unitary model is rejected by the collective model of Chiappori.

A new concept in the field of labour force participation i.e. the ‘reservation hour’ is introduced by Cogan (1980, 1981) through his model of fixed cost. He presents a theoretical and empirical model of labour supply when there are fixed cost associated with entry into labour market (married women’s labour supply behaviour is also considered in detail). One difference with Heckman’s model is that this model assumes a weaker association between labour force participation and hour’s decision due to the cost associated with labour market entry. He found that a minimum number of hours had to be worked to meet this. It is the fixed cost of work which is explained as reservation hours. He also realized that if the desired working hours are less than the reservation hours, the individual will get more utility from non-work. Fixed cost includes both time cost (reservation hour) and money cost (money wage).
Cooperative bargaining models of marriage was introduced by Manser and Brown (1980) & Mc Elroy and Horney (1981). Bargaining theory allows for different utility function and provides a means by which the differences are reconciled. They assume that among couples each spouse has a utility function that depends on his or her own consumption. It is based on two main assumptions: (1) each party knows the other party’s preference with reasonable confidence. And if any one does not state his true preference the other party should be able to infer them fairly accurately (2) a bargain which satisfy the property of symmetry which is independent of the labels of individuals involved. If not the symmetric property exists dictatorial marriage take place in which one partner determines the allocation decisions. On the basis of this assumption there are two types of models: dictatorial and symmetric bargain model.

If the spouses fail to reach an agreement, it results in default utilities which are referred to as ‘threat point’ or ‘disagreement point’, ‘break down point’ or ‘fall back position’. This threat point is sometimes interpreted as divorce. Manser and Brown consider the implications of Nash and Kalay-Smorodinsky bargaining concepts. Nash bargaining provides the leading solution concept in co-operative bargaining models of marriage. In this Nash bargaining solution, the utilities received by husband and wife depend upon the threat point. In the Nash bargaining models, the couple’s expenditure pattern depends upon prices, total income and the determinants of the threat point also. Here, different utility functions are defined over a vector of private goods, shared goods, and own leisure. Moreover certain goods such as children’s services, housing etc have the property to be shared by the members of the household. Therefore such theories permit the resulting allocative and distributional problems to be resolved. The Nash models highlights the significance of different extra household environmental parameters such as governmental and social setting; wages, non wages, employment of its members, family members role in marriage and re marriage market, social networks and social restrictions such as caste and religion, legal structures such as alimony and child support etc. They start by explaining two members who link together by the ties of marriage, and in the conclusion they point out that it can be generalized and applied to institutional household forming agreement other than marriage. Woman’s work hours due to divorce is no longer the outcome of a
bargaining process because as a divorcee they can control their own household resources. It also gives econometric specification of a commodity demand and household production equations which are quite different from the existing equations and it is empirically testable also. The Nash bargaining solution is explained on the basis of five good economy which include public good within the household, market goods consumed by husband and wife, leisure, total time available etc. And it is assumed that all decisions are pareto efficient. They also analysed that such Nash bargaining solutions create some restrictions upon household labour supply and demand for goods which are expressed in the form of partial differential labour supply. It could be possible to test it empirically against the unitary model.

Women’s productive roles are one of the most important determinants of their bargaining power within the household as is examined by Bennet (1981). The joint household utility function according to Bennet based upon equal bargaining power of its members. And all the members benefit equally from the way resources are allocated. He focuses that among Hindus living in the hills of Nepal, a number of additional social factors, such as support from family of origin, freedom to divorce and remarry, polygamy and individual personality also affect women’s bargaining power.

Labour force participation and hour’s decision are limited by the available job opportunities, and it is also influenced by the institutional structure at the work place. A minimum hour constraint model is put forward by Moffit (1982). Wages are not included in this model. If the individuals desired hours of work are greater than the minimum hour constraint, the minimum hour constraint is not binding. If the desired hours are less than the minimum hours, individual will decide between working at minimum hours or not working. Three stages of work are adopted in this model: not working, working at desired hours, working the constraint number of hours.

Within the household regarding the role of mother Engle (1983), points out that mothers can more efficiently allocate resources to children than the fathers, because they are more attached to their children. Fathers may assume that mother’s bear the primary responsibility for nurturing. It was also analysed that the women’s power and status within the households are associated with their income earning ability.
Similarly, Dwyer (1983) examined the relationship between women’s work and their child care responsibilities. He also found that women’s allocation priorities are often based upon their survival strategies, while men’s priorities may focus on mobility.

Within the family regarding the type of work performed by women, Huffman (1984) argued that the type of work a women does in developing countries in a significant manner influence breast-feeding and the time they spent with their infant. She also argues that breast feeding is more likely to be compatible with part time or flexible work schedules. While comparing working women with non-working women, she found that working women may not be able to spend as much time on breast feeding the child compared to non-working women. The working women because of their tight work schedules, may be compelled to introduce supplementary food to the infants. She also cites out that the main factors which determine the duration and incidence of breast feeding are the type of work performed by the mother, location of work, time required for traveling to the work place, alternative child care availability etc.

Two main components of the demand induced fall in employment are presented by Lundberg (1985). They are added worker effect and discouraged worker effect. Added worker effect refers to the temporary increase in the labour supply of married women whose husbands have become unemployed. Discouraged worker effect indicates that due to the deterioration in employment opportunities more workers get discouraged and drop out of the labour force. When unemployment increases discouraged worker effect is greater than added worker effect. In the static model of household labour supply the added worker effect functions like the following: When a male bread winner becomes unemployed, the labour supply of his wife is affected. A decrease is household income along with an increase in husband’s non market time take place. This reduces value of the wife’s non market time.

Mothers’ time allocation to child care including breast feeding is examined by Dex and Shaw (1986). They are of the view that the time mothers spend caring for their children represent the most important cause for their occupational degrading when they return to the labour market.
As against the unitary model of household put forward by Becker, Chiappori (1988) and Apps & Rees (1988) introduced the collective models of household consumption and labor supply. The collective models give representation of individual behavior within the household. For a model of allocation between leisure and consumption of an aggregate good, Chiappori shows collective rationality. Such collective rationality imposes Pareto efficient condition. It implies a set of restrictions on the labor supply function, and these are sufficient to identify the individual preference and the income sharing rule up to an additive constant. This model is extended in many directions, like home hold production, children etc. He also found that transfer and sharing rules among the family members can be identified from the observable demand function of certain goods assigned to specific household components such as clothing or food for children. The Pareto efficient outcome of the household is examined on the basis of a three good model. If the agents are assumed to be egoistic as they consider their own consumption and leisure. It is possible to derive -falsifiable condition upon household labour supply from both a parametric and non parametric view point.

The effect of availability of sources of informal care on the employment of women with children less than five years is examined by Leibowitz et.al (1988). Information relating to child care cost can be calculated on the basis of family’s weekly expenditure. Their behavioural model of labour force participation of women specifies the main factors affecting women’s market and home productivity. Wage rate, educational level, child care cost, socio-economic characters affect her market productivity, marital status, household income available to her and substitute for mothers time etc influence her home productivity.

The unitary model is criticized by Lundberg (1988) for its inability to explain changes in household composition due to separation, divorce, the decision of the youth to leave his parent’s household. It also fails to analyse intra household inequalities and empirical support too is in a weak position. Lundberg points out that home time is in fact complementary and women are compelled to work more hours after separation. From a sample of 381 pairs, Lundberg found that the standard joint utility model seem to be inadequate when confronted with sharp difference in the
behaviour of families with or without children. An augmented version which includes children as a joint consumption good and the care of children as an alternative use of time is a much promising approach. Bargaining models are quite consistent with these results i.e. young children might affect outcome through the threat point. This article also uses a simultaneous equation model of husband’s and wife’s work to test various theories of family’s labour supply behaviour. If they had young children strong interactions in working hours can be found and negative cross earning effects can also be found which was often rejected in the traditional family model.

The Slutsky restrictions, which impose the symmetry of cross wage effects on the labour supply of each household is rejected by Ulph (1988). Each individual is considered to determine their decision to maximize their personal pay off conditional on the decision of others.

Regarding the relations within the family Sen (1990), found that gender relations within the family are characterized by cooperation and conflict, and bargaining between men and women. He also examined that imparting higher education to girls results an increase in the value of human capital. But women even with higher education and employment compelled to do their traditional duties like cooking, shouldering the responsibility of childcare and other household chores.

Similarly with regard to market and non- market activities Hewlett (1991) points out that more and more mothers entry to the labour market results in an increase in the time they spend for economic activities and less time can be spent for domestic activities especially that of time spent with children. This less time devotion for non-market or domestic activities will produce a significant negative effect upon their children.

Gregson and Lowe (1994) concentrates on dual-earner professional couples in full time paid work, by taking into consideration samples from different occupational and educational background. On the basis, it is clear that in seventy per cent of these households bathroom cleaning, laundry, ironing, cleaning etc were performed exclusively by women. Cooking was an exclusive female activity in sixty per cent of
the home holds. And shopping, hovering and washing were a shared activity in sixty per cent of house hold.

A detailed comparison of the merits and demerits of unitary and collective models is undertaken by Alderman et.al (1995). They found that unitary models can be extended to include household decisions (common preference) about child care, education, fertility, health, home production, labour supply etc and the household is assumed to act like one. Under this approach altruism can also be used to explain why family acts like one. It also fails to incorporate the process by which resources are distributed within the household. The collective models focus upon the individuality of household members and showed that how individual preferences lead to a collective choice. Common among various collective models is that they show how individual household members reconcile different preferences. Just like unitary models it also starts by saying that individual form a household because they realize that it is more beneficial for them to form a household rather than remaining alone.

Along with market and non-market work performed by women, Ezia and Deckman (1996) stressed upon the flexible and fixed work schedules. They found that women on flexible work schedules were able to balance their work-family demands better than the women on the fixed work schedules. Because, under flexible work schedules women can better perform their market work as well as household work including child care than under fixed work schedules.

Universal decentralization and its connection with unitary and collective models are examined by Chiuri and Simmons (1997). The collective models are considered as the more decentralized family models, which have no household preference function, but have individual preference function. The household determines consumption and labour supplies through a partially decentralized process. Chiappori models that household having utility distribution among its members. Each family member determines their own private consumption and labour supply by maximizing the individual utility subject to their budget constraint which results in the attainment of Pareto efficient situation. Alternative collective models explain the household is attaining Nash equilibrium with different family members having responsibilities for different functions. In this article Chiappori system of income
sharing within the household is extended to cases including household public goods and externalities to multi person, multi good household. The collective model is extended to analyse non co-operative Nash equilibrium and cooperative Lindhal equilibrium models of financing and total demand for household public goods. They also realized that the decentralized utility maximization of the Chiappori model is practicable only when there are no public goods within the household, but in reality children in the family is considered as public good and the model cannot be applied to families with children.

On the basis of the co-operative bargaining models of 1980’s, Beblo (1999) presents a Non co-operative bargaining framework, i.e., one partner’s utility dominates the other.

In the same year Chiuri (1999) presented a model of household time allocation which considers both unitary (or traditional household utility function) and the collective one which include pre-school children also. They point out that in addition to the unitary model, the collective model allows for different preference structures which affect the simultaneous decisions of husband and wife’s labour supply, their care for children etc. Here the individual choices are considered as Pareto efficient. The Study is based on the 1993 Italian Survey of Household Income and Wealth conducted by the Bank of Italy. On the basis of the data collected, the study came to the conclusion that partial income pooling and the Slutsky symmetry condition, both required by the unitary model are stand rejected.

Coltrane (2000) identified that the allocation of housework was linked to life course issues like gender ideology, role specification, marital quality, kin relations, interpersonal power, performance of paid work etc. The study reveals that women spend more time on household duties when they get married and become mothers. As a result of this, they can devote only less time on paid work. Conversely, men spend more time on paid work and less time on household work after marriage.

On the basis of bargaining power within the households, Kishor (2000) categorizes women’s bargaining power into 3 types: (1) those that give direct evidence of such power, such as women’s participation in household decision making, (2) those
that are sources of such power such as employment and income, (3) those that characterize the background of such power such as age and educational difference between spouses.

Overlapping activities were bought into the field of time use by Floro and Miles (2001). Overlapping activities are those secondary and tertiary activities that are performed in addition to primary ones. They are of the view that the inclusion of overlapped activities in the time use surveys can provide a more accurate estimate of individual’s economic contribution, especially in the area of non market production of goods and services They also point out that overlapped work activity reduces the level of discretion if the primary activity is of a non-work nature like leisure.

Collective and unitary models of households are compared by Beninger and Laisney (2002), on the basis of stimulated collective data with income taxation. They distinguish the cases of individual and joint taxation. They collected data from 2000 households in three different fiscal situations, and provided evidence on the distortions connected with the use of estimates from the unitary model for the evaluation of the fiscal reforms.

Extension of collective approach to household production is undertaken by Apps and Rees (2002). A model where adults engaged into a type of within household Ricardian trade and specialization and undertake market and non market activities according to comparative advantage. Their working hypothesis is that there can be gains from trade of home production inputs between the two adults and one main problem found is that home production output are unobservable.

The significance of Becker in the field of research on family is recognised by Pollak (2002), and even hails him as the inventor of the economics of family. He argues that many of Becker’s preposterous conclusions are not inevitable consequences of using the tools of neo-classical economics and cannot be deducted from the foundational assumptions of maximizing behavior and equilibrium. He was of the view that many of Becker’s conclusions depend on auxiliary theoretical assumptions to which neo-classical economics has no commitment and which lack
empirical support. In spite of all the criticisms he considered the significance of Becker in the field.

While analyzing the relationship between educated mother and children’s educational outcome within the family Foster (2002) found a positive relation between educated mother and children’s educational outcomes, which is much influenced by the family budget. Thus even in marriage market, selection often goes to educated and employed women.

Quisumbing and Maluccio (2003) emphasized the tests of the unitary model against collective model of households. The investigation linked plausible measure of household members’ bargaining power verses household demand for goods and services such as food and health. The consequences of the above items on children’s health were also investigated.

Lundberg (2005) focus upon collective and bargaining model of a married or cohabiting couples’ family and role that gender plays in this model. In particular, what is the relationship between a gendered division of labour and relative well being of men and women is examined.

Intra-family resource allocation model of Stafford and Yeung (2005) examines the intra-family resource allocation decisions of couples and the development of children through these resource allocations. In this model, it is found that quantity and quality of children contribute to the satisfaction of the parents. They consider child development occurs in a highly stylized production setting, and developmental outcome of a child is considered as a public good, and those who care more about the public good are most likely to match up in marriage and tend to be more stable. They found a positive association between mothers’ human capital and the level of time children spent in cognitively stimulating activities regardless of mothers’ employment status.

Recently, with regard to the time use pattern of married mothers Bianchi (2006) focused upon their overall workloads, time with children, individual health and well being, marriage and connection to others. Employed mothers experience time deficit in an array of activities than non-employed mothers. Employed mothers can get
Allocation of Time of Working Women in Kerala; A Comparative Study Across Occupations

only less time to sleep, their house are less clean etc. In spite of all these in recent time attitude towards maternal employment have become more and more accepted.

Grossbard (2011) in her paper, discusses an alternative model to unitary and bargaining models, that is independent individual models of decision making that do not make any specific assumption of joint decision making in the household. In this work she attempts to right the wrongs of the unitary models, like the models which do not consider who within the household earn a particular income, since Apps and Rees (2009) called it as the anonymity implication. But it is very essential to matter that who earns income in a household. Similarly, the significance of distribution factors like se ratio is considered as an explanatory variable in examining the labour supply of household members.

2.3 Time Allocation of Working Women across Occupations-A Methodological Review

The methodological background for the theory of time allocation starts from Reid (1934), who did some cross tabulations of time devoted to non-market work by various economic and demographic characteristics. Following Reid, Samuelson (1947) in the context of unitary model of family, social welfare function for the family is evolved subject to family’s budget constraint. By the year 1971, De Serpa made an important extension by directly incorporate activity time allocation component in the direct utility function in addition to consumer goods. He proposed three components of value of time in the canon time constrained activity. They are:

1) Value of time as a Resource (VOTR)
2) Value of Activity Time (VOAT)
3) Value of Saving Time (VOST)

A discriminant analysis approach is adopted to analyse the labour force decision of married female teachers by Lee Gramm (1973). Earlier studies consider labour force participation or labour supply as the dependent variable and this status is expressed in the form of a dummy variable giving value equal to one if the woman is in the labour force and zero if not. One important problem associated with this is that
it does not consider full time and part time work separately. In the paper three types of labour supply status are examined: no work, part time work, and full time work. In this analysis individuals are classified into different groups on the basis of values of certain variables or attributes. It also involves estimation of the discriminant function i.e. linear function of the attributes. This classification is made on the basis of the characteristic wage. Two types of classification criteria are used: (1) likelihood method (in this method 3 discriminant functions for each class is estimated). On the basis of this discriminant scores for each sample is calculated and the individuals are then classified into groups associated with highest discriminant score. This is known as the likelihood discriminant function. The size and sign of the estimated coefficients show the influence of different variables on the classification of an observation. A variable contributes most to classify an individual into a particular group if the coefficient of this variable is positive and large, if it is negative less significant and if it is zero the variables are not important in discriminating between groups. (2) Characteristic root method. In this method the same results can be obtained, but sometimes one discriminant function is sufficient to discriminate among the groups. The coefficients of this function give slightly different interpretation than the likelihood method i.e. a large positive coefficient for a variable implies that the individual characteristic of the concerned variable will fall in the group with highest discriminant scores. A large negative coefficient implies that the individual characteristic with large values fall in the group with low discriminant scores. On the basis of this, two tests are undertaken: testing of hypothesis in which test statistic is transformed to F statistic and to assess the ability of discriminant function individuals are classified into a ‘confusion matrix’ which summarises all information. Wages of husband, full time and part time wage of wife, household assets, household age, and number of children under 6 years are used as variables in the discriminant function.

Statistical model of labour supply, simultaneous labour force participation and supply of hour’s decision are examined in detail by Heckman, (1974). He adopted linear and log linear forms to express hours of work and wage equations. Two types of labour force: working and non working is examined along with the relation between market wage and reservation wage. A log linear function is presented and in which the
second term corresponds to the hour’s decision for workers. But there are reasons to believe that this model is restrictive, individuals are usually constrained possibly by choices relating to the number of hour’s they choose and seem to have more control over the decision to work rather than how much they work. He also estimates an informal child care price function which incorporates measures of the availability of child care and its cost. It also include an indicator which shows the presence of sister, parent, grandparent of the women, number of children between 16-18 years all provides informal child care. On the basis of the influence of childcare and its relative cost, he examined the labour supply behaviour of women.

Similarly Becker (1976) analyzed the cost of time, which can be calculated in the same manner like that of the cost of market goods. Since human beings function both as producers and consumers, it is very essential that a specific time allocation is required between working time (market work i.e., working time to increase ones income) and working time at home (non-market work i.e., working time that one spends on “quality commodities including leisure”)

Later Wales and Woodland (1977) formulated a model of a household in which time is allocated between work on job, leisure, and housework. They define leisure to be net of time spent on house work, and develop a model in which income, leisure and housework hours of both spouses are determined simultaneously. The model of a household is estimated under two alternative stochastic specifications and the results compared to those obtained by assuming that housework time is part of leisure time. Using Full Information Maximum Likelihood (FIML) method, they estimated a model of household time allocation. In 1980, they present a version of Heckman’s labour supply model and expressed it in terms of Tobit model.

In a detailed examination of women’s earnings Mincer and Polachek (1978) made some important methodological contributions in relation to Human capital earning function. Such a methodological specification is made on the basis of human capital investment occurs at different rates over the life cycle. Such a function is important to those when market work does not continue throughout the usual working age due to some job change or occupational or geographic mobility. Earnings of women in fact based upon certain propositions: (1) women whose past experience is
low (low job investment) gain only less wages, (2) erosion of job skill takes place when there is any interruption in the work experience and therefore human capital is reduced by depreciation or ‘atrophy’. Two stage least squares adopted which requires that each endogenous variables be estimated using all exogenous variables of the system as instruments and then perform an instrumental equation. Among common explanatory variables they introduce an important one i.e. years of home time (years not worked due to child bearing, child rearing, and non participation in market work). Well developed methodology adopted by them also proved that if we turn the above said variable into endogenous the results remain unchanged.

Regarding the division of household work Berk and Berk (1979) on the basis of various concepts and test hypothesis, reveals that household work to a great extent depends upon the complex pattern of social relations which are ever changing.

Fixed cost labour supply model of Cogan (1980, 1981) is presented on the basis of data taken from 1967 National longitudinal panel survey which covers 1829 households from which 898 working and 931 non working women aged in between 30 and 44 are selected as samples. If the time and money cost of labour market entry is not directly observed, a quasi reduced form labour supply function is adopted and it will reflect not only parameter of the individual’s utility function but also the effects of variations in the cost of work. An augmented hours of work function and reservation hour function is adopted, and this function uses wife’s hourly wage, her education, number of preschool children in the home, husband’s income, wife’s age, her prior labour market experience, level of education, and a dummy variable U which assumes the value one if the women resides in urban area and zero if she resides in the rural areas are used as the explanatory variable to explain the hours of work. For comparative purposes OLS estimates of the wage offer equation are presented. Comparing these OLS estimates with the selectivity bias free estimates provides some evidence of the effect of the selectivity bias on individual parameter estimates. The major bias appears to be in the estimate of the intercept term, which accounts for the entire difference between conditional and unconditional average wage at the sample means. An entry cost parameter model is also performed.
Monetary value for household work is calculated by Acharya and Bennett (1983). They are of the view that, household work should result in a product that can be valued on the basis of the market purchase price of an equivalent product. They found that it is difficult to value unpaid domestic services, since it is difficult to calculate the monetary value of cooking, childcare etc, which are not purchased in a traditional subsistence economy of Nepal. To collect time allocation data, they used ‘random spot check observational method’. They are also point out that paid employment of women raises the quality of life not only at the level of household but also for the society at large.

Jelin (1984) in her paper addresses methodological and conceptual issues pertaining to the measurement and analysis of process of social and political change, and their effects on household dynamics. She also analysed shifts and transitions of life cycle which take place in the family. It explains that Household organization and dynamics can be analysed at two levels, one in relation to external political and social institutions and, second in relation to the intra-household division of labour and allocation of resources.

Duraisamy (1984, 1985), examines a rural households choice on family size, child schooling, labour supply of mothers and a composite commodity are the four factors that enter into the utility function of a household. An econometric specification is used to analyse the demand for household choice for basic commodities such as child services, leisure, health, nutrition etc. which are considered to be determined by prices, wages, income and environmental variables.

For valuing household production Bivens and Volker (1986), adopted a value added approach within the household. They applied it to the household processing of food into meals. The cost of food (input) is subtracted from estimates of the value of meals (output) to yield value added within the households. It is also revealed that value added was negatively associated with female employment. Household size, household income, age of householder had a positive influence on value added.

An economic account for UK which include capital, but which are based on time rather than money is constructed by Gershuny (1989). Gershuny’s accounts are
input output accounts which show that in the supply of any goods and services which require a number of different production processes which utilizes different amounts of paid and unpaid labour. Rather than giving a market money value for each of these categories of goods, Gershuny translates the money expenditure statistics into time units based on the employment time spent producing these goods and services in the economy. The time statistics can show not only increase in productivity over time, they can also show changes in the way goods and services are produced in terms of their linkages between market and non market sectors. During consideration non market sector household is considered as a single unit, and it failed to consider gender differences within that unit.

The valuation of women’s work and the associate problems are analysed on the basis of the survey related to non market household production carried out in various countries in between 1921 and 1986, Goldschmidt-Clermont (1990). Various methods of measurement used in the survey are on the basis of: the expenditure on material inputs, the market value of output, the value added method of measurement on the basis of the price of equivalent goods and services, market enter prices producing equivalent services and an average of value added per worker in the economy or in that particular sector, (citation in the PhD thesis of Greg Ogle, 2000). The survey makes it clear that household labour can also been valued on the basis of wage imputation to the unpaid household work, on the basis of wages paid to the substitute domestic worker, wages to a specialist domestic worker, the wage applying in a market enterprise for the equivalent task, the average wage for all the workers, the average wage for all the women workers, the minimum wage. The first three categories can be called as the ‘replacement cost approach’ and the last two ‘opportunity cost approach’.

An output based approach to get a better picture of time use is undertaken by Ironmonger (1996). Under this method to estimate Gross Household Product, outputs of child care, meal preparation, cleaning etc are valued independently from the value of any imputed labour input. Even though it is a new beginning in time allocation, it often poses some technical limitations.
Jain (1996) in her paper focused on the issues of valuation of work. The time use survey covers 127 rural households in 6 villages, and the time spent by men, women, and children across abroad range of 42 activities were recorded largely through observations. The study suggested that there is a neglect of house work and its value in the current methodologies used by statistical system. Even economic activity of the kind the majority of woman engaged in their household in the developing countries does not get reflected.

In the same year Adioetomo (1997) applies descriptive univariate analysis to describe women’s characteristics. After that bivariate analysis using chi-square tests of association is undertaken. The basic idea is that they want to see whether there exists any relation between dependent variable (women’s work) and independent variables. The women’s work is divided in the form of three variables (1) working/not working (2) working in the formal sector/working in the informal sector (3) number of hours worked in the previous week. Finally multivariate regression is used to analyse the relationship between family planning and women’s work activities. They found that education plays a strong role in determining whether woman worked in the formal or informal sector.

A clear cut picture of time use pattern between paid and unpaid work is given by Haris and Spyridon (1997). They define paid work as every activity that generates as income and unpaid work is defined as home hold work (which includes home hold duties such as preparation of meals, laying the table doing the dishes, laundry and ironing, shopping, cleaning), child care tasks (such as washing, dressing, feeding, transportation to school, to doctor or to play mates, reading, home work) and other tasks like home keeping, gardening, care for sick etc.

Glick and Sahn (1998) are of the view that the households utility maximization function is subject to prices, budget constraints and the health production function. This maximization process jointly determines health, demand for different types of goods including leisure.

A house hold production model is applied by Malathy (1998) to study married women’s allocation of time to market and non-market work. Apart from this but also
she tries to explore the role of education on time allocation. The sample is collected from the Madras city which consists of 283 working and 422 non-working women. The study reveals that children in all age group influence mother’s labor supply. The strongest effect is when the children are so young. Education of the wife, which is treated as a dummy variable in this model, shows that the effect of education is positive; but not statistically significant. It also reveals as increase in the wage rate of the husband compels him to spend more time in the market work, and as a substitute of this, the wife has to increase her domestic duties by reducing her market commitment. When women are more and more educated, they prefer market work but if they have young children it results in an increase in their domestic work and even the reduction of their leisure at home. When the children get older mothers have more leisure at home. This pattern of time allocation is found mostly in the urban areas, especially where more and more girls are being sent to schools. Thus better educated girls surely prefer more and more work outside home i.e. more and more market work.

On the basis of survey conducted in 1997, among 530 women aged 18-35 in the Trivandrum district of Kerala Panda (1999) found a ‘U’ shaped relationship between household economic status and women’s current employment status. This means that at both end of the class spectrum, more proportion of women are in the paid labour force. Multivariate analysis is adopted and logistic regression is used to model the log-odds of the likelihood of being employed as a function of four independent variables: they are respondents’ characteristics, familial/societal characteristics, household composition and class status. And Logit co-efficient are calculated on the basis of this.

A different classification of time allocation under ten different activities of the people is given by Eglite and Zarina (1999), which make the calculation of time use pattern more systematic. They are:

a) Private needs (care for oneself) such as time spend sleeping, eating, bed rest (involving sickness), and body care.

b) Paid work

c) (Partly) regular studies
d) (Partly) additional studies and self education

e) Household and family care

f) Civil and religious activities

g) Social life and entertainment

h) Sports and physical activities

i) Hobbies, games

j) Mass media

k) Unspecified time use.

An econometric specification of the non-cooperative equilibrium which shows the
spousal objective, household production, technologies and constraint sets etc. is provided
by Aiyagari et.al (2000). They are of the view that the intergenerational pattern of
behavior in a household context often invokes non-cooperative behavior in solving their
models.

By concentrating upon household production and household economy
Ironmonger (2000) put forward three methods of imputing a value for the time use in
household production. The first is the ‘Opportunity Cost’ wage that a person could be
paid for doing an extra hour of work in a market rather than an hour of unpaid
household work. The second is the ‘Specialist Replacement Cost’ which uses the wage
of a specialist paid worker who comes to the household (cleaner, cook etc.) to value
the same tasks performed by the household member. Thirdly, ‘Generalist
Replacement Cost’ method of valuation is used. Under this, the wage rate for a
generalist worker or housekeeper is used for calculating the value of time use.
Ironmonger uses input-output approach for measuring and modelling the industries of
the household economy for Australian households. He is of the view that the total
economic value added by household in household production is known as Gross
Household Product (GHP) and the collective economic activity of the households is
known as household economy.

Omission of overlapping activities lead to the under estimation of economic
contribution of individuals in non-market production. To remove this under
estimation, *Floro and Miles (2001)* on the basis of the sub sample taken from the 1992 National Australian Time use survey proved that the inclusion of overlapping activities in the calculation of time-use provide a more accurate calculation of GNP. Tobit tests were undertaken to examine various factors that are likely to affect the incidence of overlapped activities by individuals. Regression tests were also performed using Tobit model.

OLS regressions of children’s time with mothers, fathers and either parent is calculated by *Sandberg and Hofferth (2001)* in order to calculate the effects of female labour force participation on family structure, parental education etc. Data for the present study of ‘children’s time use with parent’s came from 24-hours time-diaries collected on the basis of two surveys of the American population: the 1997 Child Development Supplement to the panel study of income dynamics and the Time use longitudinal panel study(1975-81).

On the basis of primary data collected from 502 households in Thrissur district of Kerala, *Devi (2002)* analyses the education, employment and job preference of women in Kerala. Out of these 502 households, 374 are from rural areas and 128 are from urban areas of the concerned district. This study examines the inter relationship between gender, work and household relations of women. A multi-stage random sampling technique was used in the selection of the households and direct personal interview method is adopted for data collection. Multiple regression analysis is adopted to analyse the data collected. Here labour force participation is taken as the dependent variable and respondents education, parent’s education, employment status, education and employment of husband, family income, number of children below 5 years of age and the presence of relatives in the household are taken as the independent variables. To examine the influence of woman’s employment within the household, chi-square test is adopted.

A composite index of time pressure is calculated by *Zuzanek and Wenger (2002)*, on the basis of 12 questions asked to the respondents to analyse the changing pattern of working hours of labour, particularly women on the basis of time use data. The composite index of time pressure explains how often they felt rushed at the time of survey, when it is compared with 5 years back, whether they worried about not
spending enough time with family and friends, if they felt stressed because of lack of time, and did not have time for fun anymore.

Through Gendered Social Accounting matrix (SAM) and computable general equilibrium (CGM) model, Fontana (2003) examines the effect of trade on women. This paper distinguishes male and female labour and includes household work and leisure as separate sectors in SAM. Using SAM accounts it is possible to impute value to time which is not explicitly marketed for financial remuneration. Here in the Social Accounting Matrix, social reproduction and leisure is added. Social reproduction includes, services provided within the households for their own consumption, which are economic but not productive. But leisure covers activities which are non-economic but excludes the minimum time needed for sleeping, eating, personal hygiene and medical treatment. The calculation is made in the following manner: firstly, the time spent by household members on social reproduction and leisure is calculated. The output in this sector then derived by valuing labour at its average market wage, i.e. the opportunity cost of each worker’s time is calculated.

To value household work firstly, time allocated to household work is to be accounted and after that, an economic value is assigned to time by Harmoinen (2003). In the present study he considers house work as activities which are performed without pay. Time use is divided into 3 categories such as: (a) work(paid work, breaks during the working day, related education and travel from home to work place), (b) leisure(time used in social activities hobbies and recreation), and (c) basic needs (personal care hygiene, eating and sleep). For an employed person, the value of an hour spent in household work is valued at her market wage i.e. opportunity cost of the household work is calculated. It is found that there are differences in time use with respect to employment status, gender and country.

In her article relating to maternal work participation and time allocation within the household Muthusamy (2003), attempts to identify the magnitude of the effect of maternal work participation on duration of breast feeding. Data for the present study is collected from poor women in Tamil Nadu. To compare rural and urban areas, slums in urban areas and scheduled caste population in rural areas were chosen. The study is restricted to Coimbatore city and rural areas in the districts of Coimbatore. In
Coimbatore city, out of 59 municipal wards, two wards with high female work participation and low literacy were identified. From each ward one slum with highest level of female participation is selected. For the rural sample one taluk (palladam) is selected. Women who were normally engaged in economic activities during the previous year were identified as working women. There were 529 women, 285 in the urban slums and 244 in the rural areas. The time of the mother’s resumption of work after a birth was obtained through survey. After that a ‘life-table approach’ is used to compute the proportion being breast fed at various durations. ‘Cox proportional hazard analysis’ which combines the features of life table and regression is used for analyzing the duration of breast feeding. One of the important areas of concentration of the study is the nature of work performed by the women. In the urban slums the main economic activity for women is construction, or working as domestic servants and in rural areas the main economic activity they performed is agriculture and related activities. The proportion of women working during the full day is higher in rural areas than in urban areas. Most of them leave their children at home to be cared by neighbors or elder siblings.

Stafford and Yeung (2003) examines the intra family resource allocation decisions of couples for the development of children. In order to reduce the complexities of intra family allocation issues more production based approach is taken allowing for the demand side which is shaped by shared preferences and resource indicators. To calculate time allocation pattern, data from Panel study of Income Dynamics (PSID) and the Child Development Supplement (CDS) which is added to the study is also taken into consideration. Under this we can calculate children’s time diaries, and the diary was designed to gather information on a child’s activities over the 24 hours of the assigned day. Children of working mothers spent more time in school and less time sleeping and playing than the children of non working women. Women who have a greater role in family income generally devote less time to their children.

Econometric multivariate analysis is adopted by Stancanelli (2003) to examine father’s time allocation for market and non market work. To make an international comparison of fathers caring time, time use data as well as data on take up rates of children’s leave are considered. The responsiveness of fathers’ child care time to
working time pattern of mother is investigated by means of descriptive analysis and econometric multivariate analysis. Even though unpaid work is mostly done by women, in their households, this paper throw a search light on the time allocation of fathers’ for market and non-market work. From the multivariate analysis it is clear that in couples with children less than 5 years, fathers spend almost an hour per day on childcare and mothers’ 2 ½, and when children grow there is a tendency that fathers spend less time and mothers’ spend more time for their caring. Women spend an average of 4 ½ hours per day doing non-market job, while men only less than two hours for this. Some remarkable cross sectional difference can also been found out from the study i.e. Danish parents spend the smallest amount of time on child care, While Anglo-Saxon and Swedish parents spend the largest time. Even though maternity leave is widespread in OECD countries, paternity leave and parental leave are more recent developments. However its recent take-up rates are low, with the exception of Scandinavian parents, where it reaches almost 100% in public sector.

In the same year *Rangel (2004)* employs the usual econometric steps of estimation and identification to calculate intra household empowerment of women due to the extension of alimony rights in Brazil. And to identify ‘Z’ or as he called the vector of observed community, household or individual characteristics OLS and fixed effect estimation methods are used. The regression results proved that extension of alimony rights results in a) reduction in hours of domestic work b) re-distribution of household resources towards schooling of first born girls. One of the important findings of the paper is that models of family should also take into account the intra-household heterogeneity in preferences also.

*Apps and Rees (2005)* extended the standard model of life cycle to the case of two adult households in which time not spent on market work is not simply ‘leisure’, but time devoted to domestic production and child care. They propose a model in which household choices of saving and consumption over time are driven by decisions on female labour supply which in turn is strongly influenced by the children in the household. They use cross section data to depict the ‘life cycle’. Their construction of life-cycle profile of labour supply, domestic work and child care etc are based on the data collected from time use survey of the 3 countries (Australian Bureau of statistics
time use survey 1997, UK office of National Statistics 2000 Time use survey and German socio-economic panel study 2000). All the three countries show hump shaped profiles of time allocated to domestic production and child care. The profiles of total time allocated to work in the market and at home exhibit an inverted ‘U’ shape and the mere subtraction of hours of work from time constraint we get a ‘U’ shaped profile of leisure for both partners.

A simple model of household time allocation behaviour by focusing on Nash equilibrium (NE) and symmetric Nash Bargaining (NB) is put forward by Boca and Flinn (2005). Here they focus on a model of household formation on the basis of Stone-Geary utility function for spouse ‘i’. They also consider that the household good ‘k’ is produced according to Cobb-Douglas technology. Here it is assumed that, all households posses same preferences and household production structure. The population is in fact heterogeneous in all of the parameters examined here.

Mathematical models are put forward by Nepal, Fakuda and Yai, (2005) to get an exact picture of intra-household activity time allocation. They try to analyse the decision making mechanism of a collective group leading to the allocation of activity time and to explore theoretically the possible micro economic models of intra household activity time allocation, with particular emphasis in household.

Recently, on the basis of the survey which was conducted by the World Bank and the Federal Bureau of Statistics of Pakistan in 1991 as part of the Living Standard Measurement Survey (LSMS) series of Human resource division of the World Bank Guha-Khasnobis and Hazarika (2006) examines the role of woman’s intra household status relative to men in children’s food security (i.e. access to sufficient food for an active and healthy life is very important for a healthy life in Pakistan. The survey covers 4800 households in 300 communities taken equally from both rural and urban areas. The empirical strategy used here is twofold: (a) the relation between women’s status and children’s food security is calculated by means of regressions of 0-5 year old children’s height-for-age, weight-for-height and weight-for-age anthropometric nutritional Z-scores, against a variety of explanatory variables to measure women’s status. Together they try to measure children’s nutritional status. After framing simultaneous equations it can be solved using OLS, (b) household budget are
scrutinized to identify expenditure items to analyse children’s food security. The household spending of milk is positively related to children’s food security. To calculate children’s food security firstly, it is necessary to calculate allocation of household budget shares to adults. An increase in household budget shares to adults reduces children’s food security. Women’s status is positively related to children’s food security and it can be tested with the help of augmented ‘Working-Leser Specification for Engel curves’, which can be estimated by OLS.

Another recent work by Muthusamy (2006) who looks in detail how mother’s time with children on essential and non-essential activities varies among poor women in India according to their work status. The specific question addressed in this paper are that (a) women’s allocation of time on various household activities, (b) women’s time investment for the next generation, (c) difference between working mothers time with children both in the rural and urban areas, (d) whether working mother’s prioritize certain childcare activities, (e) does the effect of work participation on time with children persist even after controlling for other factors. She is of the view that women spent their time mainly on six activities: they are market activity, fetching water and firewood, household activity, childcare, leisure and personal activity. The data suggested that market activities by working women are financed mainly through a reduction in childcare, leisure time, and personal time. Here OLS model is adopted to quantify the net effect of time spent on childcare by women. Here work status and education of mother, number of children and household income are used as explanatory variables. The regression results shows that both in urban and rural areas, working women spend on an average of about two hours less than non working women on all child care activities, in urban areas the difference was slightly greater. The study revealed that women, both in rural and urban areas, spent about two hours on fetching water and firewood. This shows that Indian women in poor households spent significant amount of time on domestic activities.

A systematic classification of market and non market work is provided by Aguiar and Hurst (2007) who tries to measure trends in leisure and allocation of time. They classify market work under two categories such as (a) ‘core market work’ (i.e. time spent on main jobs, second jobs, over time, time spent working at home), (b)
‘total market work’ (i.e. core market work plus time spent on ancillary activities such as time spent at work on breaks or eating a meal). Similarly time spent on non-market activities are classified into three. They are (a) time spent on ‘core non market work’ (i.e. time spent on meal preparation, clean up, laundry, ironing, dusting, vacuuming, indoor household cleaning, indoor design and maintenance) (b) time spent on obtaining goods and services (i.e. shopping of household items, going to bank, post office etc.), and total market time which includes time spent on core non-market work and time spent obtaining goods and services plus time spent on other home production such as home maintenance, outdoor cleaning, vehicle repair, gardening, pet care etc.

Offer and Schneider (2011) suggest that multitasking constitutes an important source of gender inequality. On the basis of a comparative study it is revealed that mothers spend ten more hours a week in multitasking compared to males and they spend more time mainly on housework and child care. This multitasking creates more stress, negative emotions, psychological distress and work family conflict.

2.4 Empirical Studies

The empirical review given below is classified under three heads: International, National and State level studies.

2.4.1 Studies at the International Level

The method of measuring time expenditure through time budget surveys are presented in detail by Szalai (1966), the time budget surveys measures the activities by length of time devoted to them and yield information on how much time a person has (usually excluding work time), how he uses it and how different kinds of people have different consumption pattern. Record of day (24 hour midnight to midnight) is adopted, interviewed 30,000 adults in France, Belgium, Peru, Russia, East & West Germany, and six European countries is undertaken for the time budget study.

An intensive Study on time allocation based on a small geographical area is undertaken by Lee Gramm (1974). On the basis of survey conducted in 1970 from the northern suburbs of Chicago, he collected data from 400 married teachers, substitute, and non working teachers to examine their demand for non market time. A multi
period model of household is reduced to single or one period model. To explain non
market time four produced commodities are considered: meals, clean house, clean
clothes, and a composite commodity including all other commodities, which are
subject to time, budget and assets owned by the households as constraints. While
considering household utility maximization, the role of working wife is examined in
detail. Incorporation of children to the household model is significant, because
children always promote welfare in the household. One interesting finding of his study
is that mother of 2-3 children work more quickly than a single child mother, as it
shows that children increases the efficiency of mother whether she works in the
market or not.

Time use pattern of American and Israeli families is examined by Bloch (1973)
and Gronau (1976). They consider the effect of socio-economic environment differ in
their effect on work at home and leisure and the allocation of time of husbands’ and
wife’s. On the basis of 1964 productive American study, the main determinants of
allocation of time are examined. People were asked how much time they spent
annually in regular and irregular housework and in market work. Leisure is treated as
a residual and background of the respondents are analysed in detail. Husband’s wage,
wife’s wage, non-wage income, number of children, existence of Pre School children
are taken as the determinants of allocation of time between paid and unpaid work, and
their expected signs are also presented. On the basis of the survey conducted by the
Israel institute of Applied Research in Jerusalem, Gronau examined how the Israelis
spend each hour of the preceding day. The survey includes 48 activities classified into
4 groups: work in the market, work at home (home production time), leisure (home
consumption time), physiological needs. They evolved a concave home production
function on the basis of time consumption by the households. Both the studies realized
that married people has less leisure than unmarried, married men work more in the
market than married women. Price of market substitutes for child care decreases as
children grew older, and mother’s outside work increases. One of their important
findings is that married life produce one of the significant effect on household
members’ allocation of time, as specialization and trade within the family increases
family welfare. They also found that time devoted to household production vary inversely with wage rate and positively with number of children.

Israeli married women’s labour force participation rate, the husbands’ and wife’s earnings ratio when both are employed and their relative dispersion and correlation is examined by Gronau (1982). He found that during the last two decades, the labour force participation rate of the Jewish women in Israel increased by more than half, the main cause for this is increase in their education. Two main issues are examined: how the income distribution is affected by sex related wage discrimination and by taxation of married woman’s earnings. He concluded by quoting that married women’s earnings have an egalitarian effect on family income inequality.

With a case study of Norway during 1970’s Gronmo and Lingsom (1982) tries to analyze changes relating to sexual equality in household work. They define household work “is unpaid work carried out in or for the household, by members of the household. This work includes case of children and other household members, maintenance of dwelling and household equipment, purchase of goods and services, and routine housework tasks such as meal preparation, meal clean up, housecleaning and care of clothes, as well as travel in connection with these activities”. In this article, the research strategy explaining those time use determinants related to the area of substantial changes. In household work the women’s time is not only intensive but also variable. So many factors influence her demand for household and market work: productivity factors such as her education and employment which create skill for market work, constraints in terms of resource limitations and commitments, ideology or cultural factors that show her preference towards different activities, changing technology etc. The above said explanatory variables are called as “components of change”. On the basis of Norwegian time budget data from 1971-72 and 1980-81 shows that earlier men are supposed to perform all market work and women confined to household work, due to five reasons things are all changed and they led to the formation of a more symmetric family. They are the woman’s liberation movement, increase in the general level of education, more participation of women in the labour force, reduction in the number of children, acquisition and the use of more household appliances.
An international comparison of women’s time allocation is made by Evenson (1983), and found that women in developing countries spend large time for household duties than women in developed countries. Men in general do little house work in both developed and underdeveloped countries.

In his analysis of time allocation and nutrition data from Laguna, Philippines, Folbre (1984), provides a better explanation for the inequalities in household distribution patterns. One important finding is that men enjoy more leisure than women. It is also found that women’s diet is markedly deficient in calories and protein content than men. Folbre found that this along with all inequitable household distribution rules are arising from structural asymmetries in the economic, social and legal position of men and women which give them unequal bargaining power. She also considers household is a group of maximizing individuals, “in which individual family members co-operate with one another primarily to further their own personal interest”. Each person’s allocation priorities depends upon his/her own “bargaining power” which in turn depends upon individual members contribution to household income and even support from extra-household coalitions struck by members of the same class, race or gender. She also found that parents in developing countries look to their children, particularly sons for old age security (p-305). She presented an alternative approach to household decision making which is based on the following four propositions: (1) Altruism in the family coexists with conflict of interest, (2) Household total income is determined on the basis of bargaining power of individuals with in the household, (3) The relative bargaining power of all members changed in the course of economic development, and (4) Changes in bargaining affect changes in the distribution of goods and leisure time of members and affect the price of goods including children produced in the household.

Women’s labour force growth in 12 industrialised countries during 1960-1980, especially the growth of married women’s labour force participation is examined in detail by Mincer (1985). Family status now found to be producing less influence on work participation rate, but it continues to influence the allocation of time and energy between market and household activities in terms of hours of work, work effort and job choices. Here self employment and home production is excluded and only paid
employment outside is considered. He also realized that as education increases, age at marriage increases, fertility decreases, and baby bust take place (otherwise baby boom). Decrease in family size take place as a result of this. Work histories are also collected from the sample and it is measured by the ratio of years spent working to number of years elapsed since the completion of schooling. This variable is called $RELP$ and it is more closely associated with lifetime labour force participation. One of the important findings is that most of the increase in market employment of women take place in the traditional service sectors, where they requires less training components and more flexible working hours. In spite of equal commitment of time of both men and women in the labour market not result in any changes in the household chores, and now too the sole responsibility of household duties falls on the shoulders of women.

An examination of households’ choices of activities on the basis of their time allocation decisions is undertaken by Montmarquette and Monty (1985). An empirical analysis of the time allocation decision of the parents who are actively involved in labour force is undertaken on the basis of a telephone interview of parents of 1476 fourth graders attending Montreal francophone public elementary schools. The result shows the importance of time opportunity cost variables as the major determinant of household choice of activities, with the mother’s education constitute the most important factor. Time devoted to volunteer work and democratic activities are also included in the model. The log linear probability model proposed by Nerlov and Press (1973, 1976) is used here.

Through a complete life cycle model O’Brien and Hawley (1986), found that to meet consumption today more and more women, especially married women entering the labour force. The consumption theory is often based on the assumption that labour supply decision of the households are unaffected by borrowing limitations. But in the real world the households often faced constraints on borrowing i.e. inability of the families to borrow which create more and more female labour force participation. On the basis of data drawn from the University of Michigan’s Institute for Social Research and Panel study for Income Dynamics, 2299 samples were drawn on the basis of their marital status, whose spouses are present, last year’s presence in the labour force etc. To examine the dependency of labour force participation, the wage
earning of the husband, the household assets, number of years wife attended in schools, number of years since the age of 18 wife has worked, experience, number of children below 5, number of children aged 6-17, race, unemployment rate, region, and others as a constraint (a proxy measure of the severity of borrowing constraint) are taken as the explanatory variables. From the analysis the sign of the coefficient on constraint is positive which shows that due to some constraints on borrowing females work more in the market.

The time allocation and health status of women in the rural areas is examined by Holomboe-Ottesen et al. (1988). Their study mainly focuses upon the seasonal job nature of agriculture and the peak season in agriculture often cause weight loss among women or low weight gain among pregnant women because of heavy work load as well as due to low food availability due to their poverty. This situation is worse when such pregnant women give birth to low weight children, which again create more problems.

The opportunity cost of time for husbands’ and wives and its effect upon intra household distribution of food in rural Philippines is examined by Senauer, Gracia, & Jacinto (1988), they found that if the distribution is not efficient, some members face mal nutrition. Data for the study is collected from a household survey conducted in three rural provinces of the Philippines, first a northern upland, a costal are from the middle, and a river based area from the south. Samples of approximately 800 households are taken, and only economically active section is adopted, elderly excluded because of their economic inactiveness. To remove the problem of heteroscedasticity arise due to averaging, weighted least square method is adopted. The weighting factor used was the square root of the number of survey rounds for the individual. Generalised least square is adopted if the independent variables are completely time invariant. Among the usual explanatory variables used to examine time allocation, pregnancy of wife is also adopted as a dummy variable in the study.

The degree of involvement of women in farm and family work is analysed by Singh et al. (1988). They also try to quantify the impact of new technology in employment and decision making. Their study area covers 21 villages of the Almore district of U.P, out of which 144 families are taken on the basis of random sampling. Their study reveals that even though three-fourth of the work in agriculture is done by
the women folk, majority of decisions relating to economic activities are undertaken by male members of the family.

Chant and Brydon (1989) provided an up-to-date account on the roles & status of women in the contemporary third world. They concentrated on four themes such as the household, production, reproduction and policy and its significance in the rural and urban areas are also undertaken.

Schultz (1990) examined that in Thailand women’s unearned income had produced a positive effect upon her fertility and consumption of leisure than the unearned income of their spouse, such income being taken to measure intra household bargaining power. On the basis of the data collected he rejects the prediction of the unitary model that male and female non labour income has identical effects upon household labour supply. Increased women participation in market activities increase their control over their own labour income, and augment their relative power in the allocation of household resources. The economic development of Thai women is associated more with more and more participation in wage employment than in non wage employment. Also the changes in the literacy level of women may affect both inter and intra sectoral composition of employment independently of income effect.

The concept of ‘unproductive housewife’ and the evolution in the nineteenth century is examined by Folbre (1991) on the basis of the evolution of census categories in England and in the US. The problem of dependency of housewife’s is also examined in detail, and she explains the main reason for this were a ‘melange of theoretical, political and practical concerns’ (p-482) and she also found that ‘the concept of unproductive housewife was a byproduct of a new definition of productive labour that valorised participation In the market and devalorised the non market work central to many women’s life’.

The significance of time and its allocation between four different activities is examined by Solberg and Wong (1992), and they found that among the four activities of market work, household production, pure leisure and work related travel the fourth component i.e. the traveling time which is so significant and had profound influence on all other three activities. They explicitly model the effects of fixed time cost of
working and analyse the two person Gronau type neo classical model of household and its time allocation. The household they are dealing possess a single utility function subject to production technology, income and time constraints. Data from 1977-1978 family time use survey is used and it helps for the calculation of all the variables mentioned in the time use equations of the two earner Gronau model. To gain a detailed information regarding the time allocation pattern a detailed examination of demographic variables, level of income, time devoted to self employment etc are all considered. Irrespective of the theoretical model which assumes husband’s home production time is independent of the changes in fixed costs and travel time, Solberg and Wong found that husbands increase their home production time when there is an increase in fixed cost and decrease home production time when there is an increase in his travel time. Similarly wife’s home production time is significantly affected by the presence of pre-school children, her travel time, and wage rate.

Using Canadian Family Expenditure survey 1986 Phipps and Burton (1992) rejected the unitary models of household behaviour. They find the hypotheses that an additional dollar male and female income is allocated in the same way is rejected for 7 out of 12 broad expenditure classes. The single household income is rejected for restaurant food, home food, women’s clothing, men’s clothing, child care, charitable donations, tobacco and alcohol and the hypothesis is not rejected in the case of housing, children’s clothing, recreation, personal care, and transportation.

The questions relating to whether wives’ relative resources increase husband’s regularity of house work participation and whether the effect of wives’ relative resources in husband’s regularity of housework participation is examined by Sanchez (1993) on the basis of the data collected from four Southeast and East Asian countries at different level of economic development and compared it with countries at an advanced stage of development. Husband’s domestic work is taken as the dependent variable and background controls such as household structure variables, women’s marital power resources (which includes her education, occupation and decision making power within the household) are selected as the independent variables. The logistic regression results show that the wives’ material conditions and relative resources have no consistent, significant effect on husband’s regularity of house work
participation. It is also found that lower wage wives were significantly more likely to receive help from wage earning husbands. The findings also indicate that farm sector couples are more likely to have husband’s regular house work participation than market sector couples. Sudanese and Philippine results supported the theoretical hypothesis that wives with greater educational attainment than their spouses can press for greater husbands’ housework participation. South Korea as an exception reported that more than one half of husbands regularly helped their wives.

The effect of family planning on Indonesian women’s participation in the labor market and their autonomy in the house hold that is how far they are able to make decisions within the house hold and about family matters, their control over resources and their ability to participate in community activities is examined by Adioetomo (1997). To analyze the first problem the 1993 Indonesian Family Life Survey (IFLS) is used for collecting the secondary data and for answering the second question regarding autonomy, in depth interviews were conducted in two provinces namely, West Java and North Sumatra. From the quantitative data collected from the IFLS, it is clear that the husbands gave their wives their total income and the wives are expected to manage the house hold expenses. If the amount is not sufficient she felt compelled to work outside to supplement the husband’s income. This is not the case of each and every one interviewed; some continues their subordination to men.

Dunne (1997) tries to find out whether there exists a balanced domestic and employment lives in the British economy. Even after engaging more paid work women, men have not made a corresponding shift in to women’s traditional realm of domestic work.

On the basis of the survey conducted at Finland, France, Germany, Greece, Italy, Netherlands and Portugal Haris and Spyridon (1997) found a negative attitude towards working mothers in a country due to its cultural restriction. If women spent more and more on household work, they have to leave the labour market. For example in Netherlands, mothers of young children will face much more resistance from her friends and relatives than in Greece or Portugal. The survey also points out that parents in Greece spend more time with children than parents in Portugal, i.e., in Greece and Germany women spend one third of their time in a week on child care; but
it is German fathers and mothers spend highest number of hours for their children. The survey results show that even though with the predominance of male participation in the labour market, female participation also increases compared to the past.

Three recent studies under the framework of: (a) flexible working and the reconciliation of work, and family or a new form of precariousness, (b) reorganization of working time, equal opportunities for men and women & job creation: How they are linked? (c) The future of work in Europe: Gendered pattern of time use is undertaken by the European Commission (1998 a). The aim of the study is to identify both best practice arrangements and the limitations of flexible working, by taking 6 member states: Spain, Greece, UK, Germany, France, and Sweden. The second study is based on the ‘social added value’ which implies providing equal opportunity strategy for men and women, on the basis of different strategies adopted by 14 European enterprises in Italy, Spain, Germany, France, Finland, UK and Netherlands. The third study is in fact a comparative analysis on the basis of various studies on time use carried out in the Scandinavian countries: France, Portugal, Spain and Greece during 1997-1998. The above said three studies reveal that it is quite difficult to measure unpaid work because it is a mental as well physical activity. A basic finding of these studies is that over 41% of Europeans consider as ideal for women to combine a career with household work and childcare, and 37% of women and about 31% of men think that it is ideal for women to stay at home concentrate on young children.

Another recent survey on the theme ‘Equal opportunities for women and men in Europe’ is carried out by European Commission (1998 b). The study reveals that in southern European countries the distribution of domestic work is less equal than in other EU countries. The final result shows that 30% of men and 36.9% of women do almost all household tasks. About 30.9% of men and 25.5% of women consider that they are sharing the household tasks.

The role of women within the household and her spending for household consumption on the background of micro credit programs in Bangladesh is undertaken by Pitt and Kandekar (1998). The study reveals that that the household consumption
expenditure increased by 18 taka for every 100 taka borrowed by women as opposed to an increase of only 11 taka for every 100 taka borrowed by men.

The significance of IT job sector and its influence on the labour force participation of women is examined by Xin Meng (1998). He is of the view that with increasing levels of female employment results in women having greater influence on family decisions. During recent times with significant rise of information technology women has been moved from traditional agricultural work and low paid clerical jobs to high salaried IT job sector. Historically, the production inside the family is basically performed by females and for that they had to devote more and more hours of unpaid work and less and less time is available for them for paid employment. This paper found out that with changing technology more and more Asian women began to participate in the non agricultural sector, especially in the labour intensive textile and garment sector. In spite of all the gender occupational segregation, it is found that over the last two decades female representation in high level occupations has increased. The gender wage differentials to a great extent can be solved, when it is possible for the government to influence the enterprise wage setting in a more diplomatic manner.

The relationship between the distribution of household income and distribution of working time in 6 European countries and in the United States is analysed by Anxo and Flood (1998). They found that the educational level, industrial relation system, wage setting and wage differential, productivity and efficiency aspects, tax and transfer system etc. will create cross National disparities in household earning and disposable income. For each country Simple Regression Model is estimated to find out the relationship between education and earning inequalities.

Recreation demand for household is introduced into the demand function and empirically tested by Mc Connell (1999) on the basis of data collected from households in New Bedford, Massachusetts. Theoretically, often individuals divide their time between labour and leisure based on constant wage, but on the basis of time allocated to work the entire thing changes, wage rate changes etc. Different nature of occupations can be found with no flexibility, some flexibility, and full flexibility and on the basis of this the demand for recreation also changes.
In their recent study for Japan Yamada et.al (1999) found that employed men spent an average of 8 hours per day on paid work and 10 minutes per day on child care, while employed women spent an average of 5 hours on paid employment and 3 hours on the child care. Unemployed women spent an average 6 hours per day on child care and unemployed men 13 minutes. The study is based on the data collected from Japanese Bureau of Statistics for the year 1986.

A rural urban comparison of the working time of Italian families on the basis of their labour force participation is undertaken by Caiumi and Perali (2000). The study tries to infer the value of public household products and the shadow remuneration of public and non public factors utilized in the household production function. Data used in the study is collected from the Italian National Institute of Statistics (ISTAT). A departure from the traditional collective decision making of the household is found here and Nash bargaining model is adopted to examine labour choices of households. An examination of threat point is also made and it differs from the conventional models. The difference is found that this point is not based on breaking a marriage contract rather it is a generic threat to refuse to work in the market. Different behavioural models of rural urban families are analysed in order to design socio economic surveys to gather information for empirical testing. They constructed a model based on the assumption that individual preferences, household technology, and transfer rules are known. The Nash bargaining model applied here describes the behavioural difference in rural and urban families and the shadow price of husband and wife’s labour supplied in household production is calculated where the threat point is not egoistic. The model structure defines the allocation rules of market goods between direct consumption and transformation using the household production technology.

New Zealand’s first time use survey from July 1998- June 1999 was presented by Murphy and Satherley (2000), on the basis of 1990 statistics and describes how paid and unpaid work interrelate over the life cycle of men and women. The survey results show that men who are employed full time spend on an average 8.7 hours per day on paid work while women 8 hours per day on paid work. The survey reveals that women at all ages do more unpaid work than men. The survey identified (a) the actual hours that people spend on paid work, (b) time spend on health activities, (c)
characteristics of people participating in different types of voluntary work, (d) time spend on carrying work and characteristics of the people who are doing it, (e) where people were at different times of the day and week, (e) traveling time per day etc. This time use survey describes how paid and unpaid work interrelates over the life cycle for men and women.

On the basis of the sub sample taken from the 1992 National Australian Time use survey Floro and Miles (2001) examines about time use and overlapping activities. Overlapping activities are those secondary and tertiary activities that are performed in addition to the primary ones. They are of the view that, overlapped work activity reduces the level of discretion if the primary activity is of a non work nature like leisure. This will reduce the level of satisfaction from the primary activity. Thus omission of overlapping activities leads to the under estimation of economic contribution of individuals in non-market production.

Sandberg and Hofferth (2001), found that increased female labour force participation in the United States during 1981-1997 produced significant effects on family structure, parental education etc. For the final analysis, they use estimates derived from in 1997. In 1998, 64% of the U.S. married mothers with pre-school children where in the labour force. They are of the view that with increased maternal education, results in more time that educated mothers spend with their children. Their analysis proved that time with mothers in two parent families generally increased over the period regardless of whether mother is working or not, but time with father only increased significantly in families were mother is working.

In his analysis of work time allocation and the gender division of labour in France and Sweden, Anxo (2002), found that more and more feminization of labour force take place in recent times. Under such circumstances significance of work time allocation over the life cycle is very important both at home and outside home. After marriage there is a tendency that women prefer part-time jobs, in 1998 about 41% of Swedish women worked part-time and 31% in France. In this analysis it is clear that Swedish couples are more egalitarian than France couples, even though in both countries women spend much more time on domestic activities than market work. Swedish women comparatively devote less time on an average to domestic work and
more time to paid work than their French counterparts. On the basis of the time budget surveys (1986, 1998-1999), which was conducted in France and Household market and Non-market activities surveys (1984, 1993) conducted by Department of Economics, University of Goleberg, Sweden made it clear that Swedish women temporarily withdraw from labour market for a longer period when their children are very young, and after maternity leave they re-enter the labour market on a long part time basis and after their children get older they turn to full time jobs. The working time profile of the French women shows that they enter the labour market on full time basis more quickly than the Swedish women.

The relative pay of occupations involving care such as teaching, counseling, providing health care or supervising children is examined by England and Folbre (2002). Care work means occupations in which workers are supposed to provide face to face services that develop human capabilities to the recipients and the human capabilities include physical and mental health, physical, emotional and cognitive skills such as self discipline, empathy, care etc. Midwife’s helps in delivery, a mother prepares lunch for the children are all examples of care work. On the basis of empirical analysis they found that a pay penalty existed in the case of providing care work. They hypothesized that why care work is paid less than we would expect it to given the other characteristics of the work and the worker who do it. Persons who are disabled as well as the elderly members who require care but have no income of their own are not able to pay for care work. When the care work is provided by the paid workers the family members paid less in terms of wages and if the family members work outside for a better remunerative occupation they provide the paid care worker much more. A detailed picture of different occupation is collected from the Dictionary of occupational titles, published by the US Department of Labour, 1977. To examine the care work England created a dummy variable for care work for what is called as ‘nurturant work’ by making a judgment from each occupational title regarding whether a primary task in the job is to provide care. Fixed effect regression models are used to analyse National Longitudinal Survey of youth arranged in a pooled time series cross section with person income as unit of analysis. The cognitive skill demanded by an occupation is measured with a scale created by England.
In the context of the Bangladesh Integrated Nutrition Project Levinson et al. (2002) wanted to find out which women in rural Bangladesh community are most likely to be adversely affected by time constraints and during what seasons, what are its effects on childcare and self care, what recommendations are given by the integrated Nutrition Project for them and how do these women themselves perceive their role with regard to childcare and self care. The study was carried out in 1997 in Shastri thana of Chandpur district of Bangladesh and 108 women were interviewed. The study reveals that the women’s time constraints vary according to the agricultural season. During the peak season they found so many time constraints to fulfill even their daily tasks, and even, less and less time to look after their children and even for sleeping. The amount of time spent on cooking is also limited during this peak season. A whole 63% of women responded that they did not get enough rest and even not enough time for self-care. The most important finding of the study is that the relationship between the socio-economic status and women’s work load and time availability is not linear. Women who seriously face the problem of time constraint is neither at the top nor at the bottom but those close to the bottom, i.e. the richer ones have enough time at home due to assistance from family members and servants and those at the bottom having more time because they have no work to do and little food to cook.

In his analysis relating to women’s employment and its impact on children’s health Glick (2002) reveals that the multiple roles performed by women both at home and in the labour market affect the health and the well being of all family members. In developing countries the economic necessity compels women to shoulder the responsibility of family together with men. Women who spend more time for the market activities gain only less time for breast feeding and prepare nutritious meals for their young children, even the quality of care provided by other members is less than that of mother. The working mother often faces the problem “double day” i.e., whose normal day is followed by substantial work at home.

On the basis of time use data assembled by Statistics Canada in 1992 and 1998 Zuzanek and Wenger (2002), analysed the changes in the working time pattern of women. Their study basically shows that when the gender composition of labour force
began changing, it is expected that new working arrangements would make it easier for women to adjust their paid and unpaid work in a more comfortable way. Their findings show that new work arrangements on a number of occasions contributed to an improved work and family life balance, but may not have been always appropriate to address the needs of women.

By selecting Zambia and Bangladesh as the study area Fontana (2003) examines the effect of trade on women. The study revealed that, since the establishment of garment factories in the 1980’s, more and more female labour force participation has taken place. This is because women’s contribution to agriculture is considered as unpaid family labour on activities carried out within the homestead. In Zambia, women depend primarily on non-staple food crops for their livelihood and; in urban areas they are heavily concentrated in informal sector occupations.

The difference in the life time allocation of individuals working time between home and work place in 8 European countries (Austria, Belgium, Denmark, Finland, Germany, Netherlands, Portugal and U.K.) is examined by Harmoinen (2003). An important source of data is the Multinational time use study, the collection and maintenance of which is done by the Institute of Social an Economic Research at the University of Essex, UK. The non-employed (men and women) spend more time at home than employed. But women do more household work, regardless of employment status. This Masters thesis also takes into consideration the early retirement in the above said countries. The result obtained is that accounting for the value of household in financial incentive calculation make early retirement more attractive. Not only this but also individual characteristics such as one’s own health, life expectancy also influence the retirement behavior of aging.

One of the pioneers who strongly recommended for the creation of a continuous time use survey for America was Ironmonger (2003) He based his analysis on the American time use survey which began to be conducted on a regular monthly basis from 2003 January onwards. Such a monthly survey enables to develop National Time Accounts with the help of which it can be possible to analyse dynamic changes in time use. It can be possible to analyse changes in most social and economic systems in a more accurate manner. With the help of such National Time accounts, (National
Expenditure of Income and Expenditure of Time) it is possible to get a complete perspective of the role of households not only with regard to household productive activities, but also in relation to the leisure activities and interactions between the household and the market.

On the basis of the Brazilian household survey conducted during 1992, 1993 and 1995, Rangel (2004) tries to find out that whether alimony rights in Brazil improve women’s outside options or not. The study shows that the intra household empowerment of woman caused an increase in the female consumption of leisure, and a reallocation of resources towards the schooling of older girls. In those woman headed households, where female are less educated, the above said effects are much stronger. This is because of the lack of better education; they had to do jobs which gain them a low earning, so they are more likely to depend upon alimony, when separated from her partner by law.

The gender difference in time allocation for market work, non market work, child care and leisure over the life cycle is examined by Apps and Rees (2005), in their discussion paper presented at the Australian National University. The study is based on the survey conducted for three countries: Australia, U.K and Germany, and it reveal that before the arrival of the children, the adult members of the households have high labour supplies and plenty of leisure. But with the emergence of children it is clear that there exists large falls in female labour supply. This paper also analyses the effect of tax on female labour force participation.

How much family time is devoted to child care in the United States and the significance of active and passive care is examined by Folbre et.al (2005). They are of the view that majority of time use surveys ask adults about their participation in activities with children and measures of active care often ignores the issue of overlapping activities. Overlap is defined as the density of activities per unit of time, for example it is more stressful for a woman to look after more than one child at the same time and even their leisure is cut short due to such overlapping activities. Active care time is defined as the time in which at least one adult was directly participating in an activity with a child. Regarding active care often all most all time use surveys focus upon parents and neglect the care provided by other adults or other elderly members
of the household. Estimates of the opportunity cost of parental time should be based on the total number of hours that parents spend with their children, since both of them are sacrificing market income and leisure along with that the monetary value of unpaid care work provided by the relatives also deserves special attention.

To examine the labour force participation and children’s time use pattern in Indonesia Hsin (2005) uses logistic regression and to estimate the determinant of total time spent on each activity conditional on labour force participation linear regression is used. To examine the association between gender and sibling composition on children’s time use across schooling, market labour, non-market labour or domestic work and leisure, in Indonesia. If the domestic labour is taken into consideration, it is girls who do more work at home and enjoy less leisure. In this paper one of the major issues discussed is that whether older sisters act to reduce their younger sibling’s workload. Another important finding of the study is that parent’s education is negatively correlated with children’s labour activities and positively correlated with children’s schooling activities. The study also found that nearly 93% of girls and 76% of boys participate in domestic work and the amount of time spent on home work by girls is 1.5 hours per day and boys 0.73 hours.

Link between household wellbeing and non-market time endowment across different family types are examined by Koulovatianos, Schroder and Schmidt (2005). On the basis of survey conducted in Belgium and Germany, they try to text the two important determinant of household wellbeing, such as specialization in home production and child care time cost. They also find that the richer household can deal more easily with decrease in non market time endowments possibly due to their higher comparative ability to outsource home produced goods with market substitutes. Their analysis revealed that households with more educated adults spent more time for children, devote less time for home production, and their home production activities are more good intensive. In particular their analysis supported the specialization in home/market activities is present in two adult household, child care has significant impact on the overall household wellbeing, and living standards affect the time allocation towards outsourcing home produced goods with market substitutes.
Van den Brandt (2006) analyzed the cases of men and women in optics, along with that he analyzed daily work activities, current positions, career history, work-family balance etc. On the basis of two surveys conducted addressing the above mentioned nine themes, individual in depth interview among 17 European countries conducted by NEMO (Network of Excellence on Micro Optics) reveals that women is under represented in optics compared to men. They are of the view that women work more during the day than men both at home and outside home. Within the household 71% of the women are mainly responsible for their family along with market work, for men it was only 22%.

Woman’s position within the household, her decision making, employment and influence over the earnings, spousal discussion of family planning etc are analysed on the basis of 4695 samples of married women aged 15-49 from the 2001 Nepal Demographic and Health Survey by Furuta and Salway (2006). To examine the decision making within the household four areas are examined: kinds of food to be cooked, daily household purchases, their own health care and large household purchases. They found that women’s position within the household has significant influence upon women’s health, more than 80% reported in engaging decision to make food and more than 40% take decision regarding daily household expenses. Financial resources and economic dependence are important factors determining her position within the household. Social and demographic variables such as education, age of wife, number of children they had, place of residence, husband’s education, occupation etc are also analysed to examine her position within the household. Bivariate and multivariate logistic regression models were developed to identify association between the indication of women’s household position and their use of skilled maternal health care as well as between women’s education and use of care.

Aguiar and Hurst (2007) try to measure trends in leisure and allocation of time within the US over the last 40 years. To examine the trends in the allocation of time, five major time use surveys are linked together: they are (a) 1965-1966 America’s use of time, (b) 1975-1976 Time use in economics and social accounts,(c) 1985 Americans’ use of time, (d) 1992-1994 National Human Activity Pattern survey, and (e) 2003 Americans time use survey. The study proved that there was a mean declain
in total work for both men and women during last 40 years and the amount of leisure enjoyed by the average American has increased substantially during this period. A systematic and well developed picture and components of time use is presented by them. The use of time is classified into main 4 categories: time devoted to market work, non market production, child care, and leisure. Total child care time is again divided into (1) primary child care i.e. time spent on the basic needs of children, (2) educational child care i.e. the time spent to develop children’s cognitive skills including reading for children, teaching them, helping in house work, attending meetings in schools and (3) recreational child care which includes taking walks with them, playing games with them, outing with children etc. Their study gives more and more significance to leisure and their 4 measures of leisure are given below: leisure measure one shows the time individuals spent socializing in passive leisure and in active leisure volunteering in pet care and gardening. Leisure measure two gives an idea about the time individuals spent in leisure one + time spent eating, sleeping and in personal activities (excluding own medical care), and leisure measure three includes leisure measure two +time spent in child care. Finally the fourth leisure measure indicates any time not allocated to market or non market work such as time spent in education, religious activities, volunteering, social clubs etc, caring for other adults and own medical care are also included in it.

Bar and Leukhina(2011) with the help of US census and time use survey found that in the last half of the century, married women doubled their work force participation and reduced their time spend on home production. Widespread diffusion of electrical appliances like washing machines, dishwashers etc due to their falling prices and reduction in gender wage gap are the two main factors that resulted in an increase in married women’s work force participation. One of the main time allocation trend noticed is that working wives and stay home wives experienced an increase in leisure time (7-15 per cent increase), where the second category benefit the most. The time spent for home production fell for working and non working females, and male to female leisure time declined among both male earner and two earner couples (25 and 25 per cent declines) and the larger decline experienced among the male earner couples because stay home wives enjoyed strongest increase in leisure.
Aguiar, Hurst and Karabarbounis (2012) on the basis of data gained from US time use survey is used to examine how individuals allocate their time away from market work. Some important findings is that home production is falling in US and leisure is increasing. This depend upon the classification of activities and evidence prove that retired people spend more time on home production and have less expenditure on food consumption relative to non retired people. It also helps to gain a deep picture on gender difference in home production.

Gimenez Nadal et.al (2012) on the basis of time use data from seven industrialized countries (Australia, Canada, Finland, Netherlands, Norway and UK) from 1970’s it is revealed that both men and women spend more time on household production and child care. It is also found that a general decrease in men’s market work coupled with an increase in men’s unpaid work and child care along with an increase in woman’s paid work and child care coupled with decrease in unpaid work. There is also an increase in time devoted to watching television. The increase in leisure inequality in favour of less educated adults is also seen and it is primarily due to difference in paid work.

Kawaguchi et.al (2012) found that any long term change in time use pattern is determined endogenously through changes take place in household technology and changing returns to market work using time diary data from Japan and Korea.

Wolff and Makino (2012) presents an extension of Becker’s theory of time allocation where time block is not explicitly taken into account. Their model tries to build up preferences over continuous time blocks. By using American Time use survey, they found that outdoor recreational activities significantly increase in under daylight saving time while indoor TV watching time decreases. Time use in fact affected by the length of continuous daylight and made two main prediction that (a) time spend on outdoor activities unambiguously increase in response to an extra hour of day light (b) the effect on a constant returns to scale of indoor activity is ambiguous.

2.4.2 Studies at the National Level

In India De Souza (1980) found that, woman is so completely tied down by child care, housework and agricultural labour. He also expressed the view that not only in
India but also over the whole world the woman is denied equal access with men in opportunities for personal growth, education, employment and even in family life.

Indian woman’s participation in petty retail trading of fresh vegetables, fruits and flowers is examined by Lessinger (1986) and realized that such a kind of work forms the integral part of the informal sector of the economy in the large south Indian city of Madras. The study which was conducted in 1971-1973 from a sample size of 249 men and woman who worked side by side as petty traders in eleven of the city’s retail markets. After an interval the situation is again examined in 1985 which reveals that situation remain unchanged. It is also realized in the study that in many of the third world countries women dominate the petty trade in food, in the study area it is found that the women are compelled to work in such petty jobs at a marginal benefit because their husbands are dead, deserted, sick, unemployed or unable to earn. In south India another feature relating to woman’s work participation is that their tradition compels them to remain in agriculture and its seasonal nature puts heavy strain on their shoulders as they had to combine it along with her domestic duties but as with the progress of the nation more and more middle class woman is entering into the labour force. Even poor women remain at home as ‘good wives and mothers’ to demonstrate their chastity and devotion and engage in unpaid domestic work. In the informal sector too they gained jobs as domestic servants, coolies, construction workers or as petty traders on the road side too.

A clear picture of maternal employment and child mortality relation for the northern and southern states of India is separately given by Basu and Basu (1991). The kind of work mother does, hours of actual work, travel time to work place; all produce significant influence upon children. One of the important policy implications that came out of this research paper indicate that a later age entry into the labour force, help women to look after their children in a better manner. Even if mothers are working; child survival can be promoted through better child care facilities. They also present the case of working and non working women and how far they can efficiently manage their time with their children and promote their welfare. They concentrated upon one crucial and adverse consequence of high level of child mortality among
working women. They also try to identify and suggest measures for alleviating the above said problem to a great extent.

Maternal employment, child welfare and family’s economic status is examined by Desai and Jain (1994) on the basis of the time use survey conducted in rural Karnataka. The study is based on a household survey conducted by the Institute of Social Studies Trust in 1989-1991 in 8 villages of Kanakapura Taluk in Karnataka. 292 households are selected as samples and demographic and socio economic conditions of the samples are examined. They found that wage workers and petty traders are most likely to belong to SC and ST, have less education, lower level of family income and consumption. In multivariate regression after controlling for family income, maternal education and caste they found that little relationship between maternal wage work and child’s weight for age. They also found that maternal time with children was not very sensitive to women’s involvement in market work, because women who are not even work outside were also responsible for time consuming domestic work and less time to be spend with children.

Regarding the relationship between maternal and non-domestic work and child welfare Desai and Jain (1994) found two interesting results: (a) decline in mother’s time with children and, (b) an increase in her control over resources. The survey conducted in rural South India proved that when mothers paid work increase, less and less time can be available to be spent with children. But if her outside income increases, she can more effectively control the resources, thus a positive relationship existed. Regardless of the type of maternal employment, most children spent several hours per day in the care of grandmothers.

In her study on urban Indian women Malathy (1994) examines the role of income, wages and education on the time allocation of urban working women in the Madras city. Non market time of the wife depends upon husband’s wage; wife’s wage, non labour income of the household, environmental variables like wife’s education, age, number of children etc are likely to affect the productivity in the home. She found that as wife’s wage increase, her labour market productivity increases, less time left for work at the home, home production activity became less profitable, thus women’s time for home production tends to fall when her wage increases. Thus there arise a
negative correlation between wage rate and hours spent for home production. But on the other hand husband’s wage had a positive effect upon women’s time allocation for home products that is when husband’s wage increases there is less economic necessity for the females to work outside, so they give more importance and more time for home hold duties. An increase in family assets reduces women’s time allocation for home production, this is because some home produced goods and services can be bought by the family because of their economic wellbeing. Expected signs of the important determinants of time allocation are also given. Heckman’s (1974) method of calculating wage rate is adopted here, reservation wage equation and hours of work is calculated from Tobit model, labour force participation from Probit model. To estimate child care equations Maximum likelihood Tobit model is used to estimate child care equations, OLS cannot be applied because some women does not spend no time on child care activities, therefore its value is zero. Primary source of households is the Madras city, which is a metropolitan area, married women in nuclear households within the age group of 20-50 years are taken as samples (244 working and 422 non working) , all husbands in the sample are wage earners, data both on market and non market activities (20 activities are listed) are collected. She also found that education not only increase market work, but also increase efficiency in home production. To represent home technology a dummy variable is adopted.

Time allocation study in relation to fuel usage is conducted in the three villages (Kweerali, Kadola, and Bhainaswara) in the Pavri district of Garhwal Himalayas by Saksena et. al (1995). Since more and more women are engaged in domestic duties the smoke of low grade bio fuel causes so many respiratory problems for women. From each village, four households are selected and the sample size is 75 individuals: 19 woman, 18 men, 29 youth and 9 children. Time allocation survey is conducted to attain or solve the basic objective to estimate the time allocated to various tasks by four population groups: men, woman, youth and children and it also try to estimate the time spent in six important micro environments by these four population groups in different seasons. For preliminary observations, recall based questionnaire was designed and a stop watch was used to measure time spent in cooking. ANOVA was done to understand the effects of attitude and season on time spent by different
population groups. The results shows that neither season nor time of day have significant effect on the time spent in cooking a meal. The village women in the study area spent 10-12 hours daily on domestic activities and 4-6 hours in activities related to collection of fuel and fodder. Collection of fuel and its maintenance difficult during the rainy season, majority remain unemployed and they had to spent a lot of time in the cattle shed relating to milking and cleaning, but their male members gain enough and sufficient leisure time in the market place.

The validity of pooling restriction implied by the common preference model against the bargaining frame work is empirically tested by Pezzin and Schone (1997) and they also examine the intra family distribution of income for the welfare of elderly persons. Their estimated parameter suggests that allocation decision within the intergenerational family is the outcome of bargaining process. The basic regression equation uses the child’s time allocation decision and parental health care utilization as dependent variables. The results show that the intergenerational households do not behave in a way that is consistent with common preference models.

In order to quantify the economic contribution of the women in the national economy, a comprehensive time use survey was conducted by CSO in India during July 1998-June 1999. This survey was the first of its kind in India and even among the developing countries. It was conducted in 18,591 households spread over 6 states namely Haryana, MP, Gujarat, Orissa, TN and Meghalaya. The sampling design adopted in the survey was three stage stratified design. The first, second and third stage were the districts, villages and urban blocks and households. Stratification of districts is done using population density and proportion of tribal population to ensure capturing of variability of the population. In the villages and urban blocks also sub-stratification was adopted to ensure representation of all types of households in the survey. Interviewing method was adopted for collection of data. A reference period of one week is adopted for collecting the data. A new activity classification was developed for the present survey. The survey revealed that 10% of households in rural areas and 9% in urban areas were headed by women. The proportion of women headed households was highest in Meghalaya followed by TamilNadu. The percentage of persons employed was higher in rural areas as compared to urban areas.
in all the states, where unemployed were more in urban areas. About 87% of women reported to have been participated in the household decision making. Female participation in the SNA activities is only 5% in the urban areas and 13% in the rural areas. If the extended-SNA activities are taken together Gujarat scored the highest time for rural females followed by MP. If these extended SNA activities are included in the economic activities, the contribution of women will be higher as compared to men. In India, no payment is made for a number of economic activities performed by family labour. The predominance of females in unpaid activities was visible in all states. It was generally found that females spend about double the time as compared to males in activities relating to child care, care of sick and elderly people etc. Time use survey provides for the first time data on some of the important activities fall in the domain of women’s life. In this time use survey, time spent on traveling is also collected, which shows that time required for traveling from home to work place is higher in urban areas than rural areas.

On the basis of the Indian time use survey 1998-1999, Rajivan (1999) explains the policy implication for gender equity. She was of the view that the externalities in the area of household or domestic work benefit those who do not pay for them; therefore we should be careful on the policy which should be taken for the valuation of unpaid work, regarding concepts and methodology, regarding labour, upgrading options for women etc.

A similar study on the basis of Indian time use survey is put forward by Pandey (2000). He describes about the operational issues such as sampling methodology, estimation procedure, method of data collection, development of questionnaire, data processing and above all the advantages of the time use survey is also pointed out. Regarding the details of sample selection, 6 districts are selected on the basis of geographical diversity; the total sample of 18628 households was distributed among the states in proportion to the total number of households as per 1993-1994 survey of NSSO. After that all the districts in a state is grouped into four strata using the criteria of density and proportion of tribal population. All the villages in the selected districts were grouped into three categories namely large (population above 1200), medium (population between 400-1200) and small (population less than 400). The total rural sample is distributed into
three strata in proportion to the population in the three strata. Regarding the selection of urban samples, all the towns in a selected district were grouped into three categories namely large (population more than 2 lakhs), medium (population between 50,000 -2 lakhs) and small (population less than 50,000). Similarly like the rural sample urban sample is distributed in each stratum in proportion to the population in the three strata. Respondents of certain ages in the selected samples are asked to enumerate various activities performed by them during a specific reference period and after that it is grouped into economic and non-economic activities. To capture the variations in activity pattern, data were collected for three types of days: namely normal day, weekly variant and abnormal day. Persons who are reporting time spent on SNA (System of National Accounts) activities can be treated as employed. Extended SNA activities basically relate to the household maintenance, care of children and other family members and personal services involved in household production. Non-SNA activities are basically those activities intended for self-development. The standard error estimate may be calculated on the basis of sub-sample wise estimates of stratum totals.

On the basis of the study carried out in rural Andhra Pradesh, India Bamji and Thimayamma (2000) reports that women worked in agriculture had greater energy intake than other women but none the less had lower body mass. It is also found out that women in rural India spend more time in collecting water, firewood and essential commodities for their households and they had only less time for income generating activities. This is one of the main causes for abject poverty in rural India. Only women’s time allocation for more income generating activities can solve this to a great extent.

In a study on labour force participation and Time management of women in slums of Coimbatore district, Avinashlingam Institute for Home science (2001) analyse the role played by women in the social and economic upliftment of the family and society. The study also takes into consideration the past time use studies take place in India. Women’s work at home is often undervalued, under this context this study is of utmost importance. They are also of the view that the objectives of time use survey in developed countries may vary from country to country. About 2000 households spreading over 11 divisions categorized by the Slum clearance Board under Coimbatore Corporation Ltd. are selected as the sample to be surveyed. Among these
2000 households, 1000 households are from rural and 1000 from urban areas. Among the three objectives, the time use pattern among slum population is of great importance. In rural areas, working males spent about 11.81 hours on personal care and self maintenance, while working mothers spent about 10.96 hours, in urban areas the corresponding time is about 10.2 hours and 9.56 hours respectively. Female spent 1.86 hours per day on cooking and 0.96 hours on washing clothes and cleaning utensils and cleaning the house, but participation of males was just nominal with 0.01 hours and 0.02 hours respectively.

George et.al (2009) found that women’s lives have changed dramatically overtime. They gained more value and respect, active role in family decision making and more freedom for leisure. But one important finding is that most Indian women are reluctant to change their attitudes about themselves which are deeply rooted in culturally determined gender roles. It is also found that division of labour by gender between paid and unpaid work exists in all most all societies although it differs between place, time and over life cycle. They stressed the need for quantifying the unpaid work of women. Such quantification will surely produce impact upon governmental policy changes especially on the health care and welfare schemes for women. More family friendly initiatives can thus be brought out. On the basis of 200 sample households from Maharashtra, it is found that women typically work 16 hours per day on both paid and unpaid labour. They bear the greatest responsibility for household changes and most women even if they have domestic helper, do their own cooking. They assume full responsibility for tutoring and helping children in school work. The value of unpaid household work of women throughout India is about 612.8 billion US dollars per year depending up on the economic value assigned to tasks women perform daily.

Eswaran et.al (2011) on the basis of NSSO data 2004-05 and Indian Time Use Survey 1998-99 found that in rural India ratio of women’s market work to men’s decline as they move up the caste hierarchy. When family wealth increases, the ratio declines. This is also true in the case with higher castes. All this shows that caste and family status now too influence the market work of woman. Thus time allocation of
married woman to market work is very much influenced by their family’s desire to maintain status.

Binswanger-Mkhize et al. (2012) tries to show that investments to improve the supply and management of water reduce the time spent in water fetching across gender. Such time saved can be more efficiently utilized for productive activities which will increase income. They try to prove that political reservation increase the time spent by women in all productive activities, especially in self employment activities. They pointed out that time spent in fetching water by women represents nearly 22 per cent of their working days and represent a significant and relatively unproductive component of their work time.

2.4.3 Studies at the State Level

On the basis of the data collected from the villages in Kerala and Tamilnadu Mencher (1988), graphically show that maternal employment in family results in increased spending of resources available for child welfare. Therefore it is clear that women’s wage have a high probability of being used for household and child welfare than equivalent income earned by men.

While analyzing the relationship between working women and child mortality Zachariah et al. (1994), found that in Kerala children of working women has a high degree of mortality than the children of non-working women. The study revealed that the main reason for this high degree of mortality is due to the shorter period of breast feeding they can provide to children because of less time within the household and with their children due to their increased market work.

A detailed examination of the determinants and work participation patterns of women in Kerala is examined by Devi (1996). The determinants and pattern of time allocation of Kerala women is examined on the basis of sample selected from Thrissur district. 117 randomly selected households are taken as the sample out of the 622 persons in these households 326 are females and 296 males. Multiple regression models is adopted to examine the determinants of female labour force participation. To examine the determinants of time allocation, paid work outside home, own education, mother’s education, mother’s occupation, husband’s occupation, number of
Chapter 2

Literature Review

children below 15 and presence of relatives in the households are taken as the explanatory variables. The joint effect of the above mentioned variables account for 17% of the variation in the total work performed by woman. Socio-economic status of the household as well as its structure and educational attainment of woman had a profound influence upon her time allocation pattern.

Franke and Chasin (1996) are of the view that about 15 % of the people of Kerala are left out of the benefits of Kerala model. Among the forgotten ones, women are a major component. They select Nadur village in Kerala, for detailed study. The survey results proved that unemployment is the most serious problem faced by Keralities. Household work is mainly carried over by the females. They also examined about the female headed households in the Nadur village.

One of the important finding of the earlier studies reveal that the women’s employment and the presence of preschool children are decisive factors which influence the time allocation between paid and unpaid work. But often the labours of housewives go unnoticed as shadow work, i.e. they are not seen to be part of the economy, Viswanathan (1996).

A special focus on one occupational category i.e. sales girls and their household time use is examined by Patrik (2000). The study concentrated upon sales girls in the urban areas of Ernakulum district of Kerala. He found that sales women as a group form a cheap source of labour for employers. He also found that high rate of unemployment coupled with reduction of employment opportunities in the traditional industries due to technological advancement forced women with medium level of education and poor family background to accept the job of a sales women. The value of the housework of sales women is quantified with the help of opportunity coast approach and their earning shows that it is not negligible and cannot be brushed aside.

The triple role played by women, in their whole life which include: biological reproduction, domestic work and market work are examined by Meenakshi and Ajithkumar (2000). Their analysis is based on the Thalipparampa block of Kannur district. Even in Kerala where the female literacy is highest in India, females are often paid less than men especially in the case of manual labour. In Kerala, rural women do
many income generating activities even within their households such as basket weaving, preparing palm leaves for thatching, maintaining poultry and cattle for selling eggs and milk. Thus their time is better allocated within the family because their work place is their home itself and they can able to look after their children efficiently. More over in the rural areas, the house hold duties are not equally shared by men and women. In addition to their routine work of cooking, cleaning etc the burden of nursing the sick and the aged falls on the shoulders of women. All these unpaid work is voluntary and is not expressed in monetary terms. Women in rural areas have high involvement in the construction of rural houses made of bamboo, thatch etc than modern concrete houses. Here the makings of coconut leaf pleats are solely performed by rural women Folk.

The role of women within and outside the household is examined by Eapen and Kodoth (2002). They found that in the midst of high level of female literacy in Kerala, the women folk face the alongside problems of domestic violence, dowry death etc. This shows that women face inferior position in the household and outside. They are of the view that a member’s bargaining power within the household is mainly influenced by his/her fallback position and also the degree to which his/her claim seem to be legitimate. Regarding the pattern of work practiced by women in Kerala, manufacturing, trade and services are growing areas of female employment. Even within the manufacturing sector the growth of employment was in the food processing industries (such as fish processing, beedi making, garment making), and wood products within which (mat weaving, basket making) are important and non-metallic mineral products (brick making). Eapen also proved that in trade most of the increase in employment was in retail trade, primarily as sales girls. They also found that more and more increase in urban employment opportunities, and even if they are not permanent, it attracts more and more females. The occupational segregation index shows high index of dissimilarity in the distribution of men and women across occupations.

On the basis of the recent pilot time use survey conducted by Central Statistical Organization (CSO) in six Indian states (Haryana, M.P, Gujarat, Orissa, Tamil Nadu, & Meghalaya), Eapen and Thomas (2005) found that women in Kerala in spite of their high literacy, nearly 70-75% of them are classified as outside the labour. Their study also
reveals about the unequal distribution of domestic responsibilities between men and women i.e. on an average woman spend many hours of domestic work than men. In their study it is clear that high proportion of women in Kerala is engaged in economic activities at home such as poultry, cattle rearing, kitchen-garden etc. Thus it generates more income to the family even without entering directly to the labour market.

Susan Mathew (2011) tries to explain the impact of labour force participation of women on the consumption expenditure of their household. Field survey was made from wife working and non working wife households in Kerala. This study revealed that among the variables which positively affect the time saving consumption expenditure of the households, non economic factors have a much significant influence in the working wife households than the other.

Even though, a large number of studies were conducted regarding time-use of women between paid and unpaid work at the international and national level. But in Kerala in spite of high female literacy women across different occupations face the problem of efficient and optimum allocation of time. Only few studies concentrated on this topic at the state level, and they touched the topic only at a micro level. There I found a wide research gap, an intensive macro level study covering the entire state regarding time use of women across different occupations is very necessary to bridge this gap.

2.5 Research Gap

Since the Indian time use survey is carried out in the selected 6 Indian States which suppose to represent the whole country, and Tamil Nadu which is selected from south India is supposed to represent the entire South India. But, the culture and working situation of Kerala is quite distinct from Tamil Nadu, and there I felt a research gap to conduct a time use survey in Kerala. A large research gap is also found while examining previous time allocation studies which left out studies relating to the time use of working woman and occupational differences and similarities in time use and so on. Such a gap became the main thread of this study and an occupation wise comparison of time allocation of working women is undertaken. A time use study of working women across occupations is conducted to satisfy the main objective of the present study.