Chapter-VII
MAIN FINDINGS AND CONCLUSION

The main findings drawn in the study are through tabular and econometric analyses. The econometric analysis is done by employing both bi-variate and multi-variate regression techniques. The net marketed surplus is treated as dependent variable while production, farm consumption, retention, price, and profit margin are considered as independent variables in the regression equations. The net marketed surplus is referred to as marketed surplus while analyzing its behavioural relationship with size class and other price and non-price factors, through tabular as well as regression analyses.

In view of our objective of examining the marketed(able) surplus magnitude with respect to size class, the tabular analysis finds that Gross Marketed Surplus (GMS) in actual quantity as well as percentage of gross output follows a linear positive relationship with the size holdings. Similarly the Net Marketed Surplus (NMS) relates positively with size class showing a marginal deceleration in case of the largest size group. This implies that the level of both GMS and NMS vary directly with the increase in size class, indicating thereby a linear positive relationship between marketed surplus and size class.

For larger two size groups (Size class-III & IV) both GMS and NMS as proportion of output are found almost equal. However, there is a considerable gap between them in case of smaller two groups (Size class-I & II). This indicates that farmers belonging to smaller two groups are involved in distress sales. Such unfortunate condition is not simply because of their poverty but due to their extreme degree of vicious circle
of poverty. These small and poor farmers always borrow money basically for consumption needs with oral agreement of selling their produce right after the harvest to the moneylender, at a price much below than the prevailing market price. Later they have to repurchase the same produce at higher price for meeting their family consumption needs. In absence of any non-agricultural sources of income they have to rely upon borrowed money to repurchase the same produce, which ultimately put them in a vicious circle of distress sales. However, despite the extremity of distress sales the smallest group shows positive NMS which is uncommon to their counterparts in other regions of the country.

The pattern of marketed surplus per hectare reveals that smaller two groups fall below the average level and it is the smallest group which shows almost zero level of marketed surplus. The pattern depicts a positive association between marketed surplus per hectare and size class. The behavioural pattern of per capita and per household marketed surplus with respect to size class also establishes a throughout linear positive relationship.

An analysis of the marketable surplus as a proportion of output reveals that marketable surplus rises sharply in accordance with the increase in size class. Thus marketable surplus follows a throughout positive relationship with size group for all the size classes. It is reflected that the largest group possesses maximum extent of disposal capacity among other groups, and the group’s marketable surplus in terms of both actual quantity as well as percentage of output is much higher than its marketed surplus. This may be due to their better economic condition and thereby capacity to wait for better prices during mid and lean seasons. The same positive linear relationship is also observed in case of the per cent share of the group in total marketable surplus of all the groups, as well as in per capita and per household marketable surpluses.
The basic explanatory factors for distress condition of smaller two groups regarding marketable and marketed surplus are their small holding sizes, financial scarcity and the consequent distress sales. However larger two groups are able to show a better disposal capacity due to their large size of holdings and relatively better economic condition. This is however not due to any efficiency through application of modern farming methods or commercial line of cultivation arises in explaining the betterment of larger two groups. Since the study observes a limited application of seed-fertilizer-irrigation technology by these farmers with almost any tendency for commercial cultivation.

An examination of the behavioural pattern of consumption with respect to size class presents that farm consumption as a proportion of output follows downward tendency with a rise in size class, indicating an inverse relationship between consumption and size class. The basic factors causing such negative association between size-group and consumption may be the family size and output level pertaining to the respective groups.

The analysis reveals that consumption per capita and per household in absolute quantity relate positively with the holding sizes. Farmers belonging to the first two groups consume far below their satisfactory level in terms of both per capita as well as per household consumption. As a result, any increase in their output level may not have immediate positive impact on marketed surplus rather it may lead to increase their consumption first and then marketed surplus, as their marginal propensity to consume is quite high. This finding satisfies our second hypothesis that though production is directly related to marketed surplus, this need not always be true for small farmers.
The significant finding of our study is that consumption as a proportion of output has a throughout negative association with the net level of marketed surplus according to size class. Thus there exists an inverse relationship between farm consumption and marketed surplus. Further, through the application of multiple regression model it is found that the relationship between consumption and marketed surplus is statistically significant judged by t-value, and F-statistic at 1 per cent level of significance. The regression coefficient of consumption is found to be negative and significant. Hence our hypothesis of inverse relationship between consumption and marketed surplus is confirmed here. Therefore, consumption at source is a significant determinant of marketed surplus of paddy in Barak Valley. These findings are in accordance to our basic objective of the estimation of farmer's consumption level of paddy and its behavioural relationship with marketed surplus according to size class of holdings.

From the analysis of population pattern according to size class it is revealed that the size of family or the number of family members at farm household does not have much impact upon the level of farm consumption. Further, it is revealed that dependency ratio of farm population declines with the increase in size class showing negative relationship, which is also true in case of consumption and size class. This implies that consumption has positive association with dependency load. Hence, it is not the family size but the dependent population at farm household which is the significant determinant of the level of farm consumption. Moreover, it is the ratio of minors to the dependency load than the old and disabled, which works as a crucial determinant of paddy consumption at farm level. The findings thus do not confirm our hypothesis of direct relationship between family size and consumption.
In the light of our objective of identifying the relative strength of the factors determining consumption level, the study realizes that dependent population at farm has the maximum influence on consumption. Among the dependents it is the component of minors than the old and disabled which has relatively better strength in determining consumption. The family size does not have significant impact upon consumption level. This is due to the fact that dependent population in the family consume at source without making any net contribution to output. Therefore, even if the family size is small but with higher dependency load on lower strength of work force, proportional farm consumption would be higher.

Our tabular analysis on output pattern reveals that net marketed surplus increases with respect to an increase in the level of production according to size class. Besides, the estimated multiple regression equation explains that production relates positively with marketed surplus. The positive coefficient of production is also found statistically significant performing t-statistic and F-statistic at 1 per cent significance level. It thus satisfies our hypothesis of positive relationship between output and marketed surplus, substantiating the fact that output is the significant determinant of marketed surplus.

It is found that per capita productivity of the farmers rises sharply in accordance with the increase in size holdings. The rate of increase is marginal for smaller two groups and quite high for larger groups. Regarding per household productivity the same positive relationship is also observed. The study assumes per hectare productivity as the reliable measure of farmer's efficiency rather than per capita and per household productivities. However, the per hectare productivity reflects a fluctuating behaviour with respect to size groups. The smaller two groups are found to be in better position in terms of productivity per hectare compared to larger groups. This is of course not because of the
application of modern farm technology but due to their direct engagement and commitment of hard labour in farming activities. The relatively lower productivity per hectare in case of larger two groups reflects their apathetic attitude, and disinterest of hired labourers as their cultivation is mostly based on hired workers. Conversely, the small farmers without depending upon hired labourers take personal interest in cultivation with much more hard work. This may be an important reason why they achieve the highest level of per hectare productivity with relatively less cost combination. All these imply that productive efficiency of the farmers is not influenced by size holdings rather by some other existing factors like personal interest in cultivation with practical engagement of farmers in the field, keeping other factors remain constant.

It has been traced that productivity per capita relates positively with marketed surplus per capita in accordance of size class. Similarly, per household productivity is directly related to marketed surplus per household according to size group. The production share of the group to total production of all the groups also relates positively with marketed surplus throughout the size class. However, no such positive association between per hectare productivity and marketed surplus per hectare is observed according to size groups.

The study observes that adoption of modern farm practices among the farmers increases with the increase in size class. However, the farmer's efficiency does not increase along with the increasing adoption of modern farm practices. Because, there is no such positive relationship observed between the proportion of farmers under modern farm practices and the productivity per hectare according to holding sizes. The reason being the absence of irrigation support, poor extension services, lack of technical
knowledge among the farmers, frequent floods and droughts, land situation and many other such factors.

Crop rotation in the valley is found very seldom the case which is due to the unfavourable agro-climatic condition, poor methods of production and of course the pessimistic attitude of the farmers. The application pattern of fertilizers shows that per hectare use of fertilizers has a linear positive relationship with the size class, both in volume and in value terms. Though the aggregate consumption of chemical fertilizers is quite appreciable, majority of the farmers use low priced poor quality fertilizers which do not increase productivity. On the other side, the application of pesticides and insecticides in aggregate is not that much appreciable relative to large scale damage of the crops in each and every year due to pests and insects in the field. This is reportedly due to high purchase cost of pesticides and insecticides which even many of the large farmers cannot afford.

The study depicts a negative association between retention for consumption and marketed surplus throughout the size class both by tabular as well as regression analyses. The same negative relationship is also found to exist between retention for seed requirement and marketed surplus. In this case, the multiple regression estimation is performed by putting various kinds of retention as independent variables in order to examine the marketed surplus. This is statistically significant judged by t-value and F-statistic at 5 per cent significance level. The coefficient value indicates that there is a strong negative association between marketed surplus and retention for seed requirement. The negative impact of retention for domestic consumption on marketed surplus is lower compared to the retention for seed requirement. Therefore, our hypothesis of contradiction between retention and marketed surplus is
confirmed in cases of retention for domestic consumption as well as retention for seed requirement.

However, the analysis reveals a positive association between marketed surplus and retention for future sale according to size class. It is also found that the regression coefficient of retention for sale is positive and significant at 5 per cent probability level. Hence, there exists a positive relationship between marketed surplus and retention for future sale according to size class. This result is exceptional to our previous finding of inverse relationship between retention and marketed surplus. The reason being that as the size class increases the capacity of the farmers to retain the produce for future sale also increases due to their better economic condition. Similarly, we find that marketed surplus increases with respect to size class. Increasing retention capacity for sales motive as well as marketed surplus along with the increase in size class, in turn, becomes responsible for constituting such positive association between retention for sale purpose and marketed surplus.

As regards profit margin the study observes that per quintal margin in case of the smallest group is not only the lowest but it appears to be a negative figure as well. The negativity in profit margin arises in case of the second group also, implying losses incurred by the first two groups. It is realized that the profit margin received by the farmer-sellers has positive association with size class. The margin level has been put as an independent variable in simple regression equation in order to estimate marketed surplus. The estimated equation explains that the coefficient of profit margin is positive and reliable as it is found to be significant judged by the value of t-statistic. Thus it practically validates our hypothesis that marketed surplus relates positively with profit margin. Hence profit is the significant determinant of marketed surplus and
higher profit implies better mobilization of marketed surplus in the study area.

The highest margin received by the largest group and negative margins for the first two groups are also revealed in terms of per hectare and per household margins. However, the aggregate level of margin received by the farmers of all size groups is not much remunerative which discourages even the large farmers to produce more for market sales. It is the ongoing system of agricultural marketing in the valley which is perhaps the responsible factor for such deplorable condition of profit margins particularly in case of the small and marginal farmers. The prevailing agricultural marketing system in the Barak Valley is largely influenced by the middlemen due to whom the producer’s share in consumer rupee is very negligent.

From the study of storage facility it is revealed that not even a single farmer under study reported to avail the facility of scientific storage from the part of the government. Barring some rich farmers all other farmers store their produce in a fragile storage made of bamboo and plastered with clay, wherein the crop may either be damaged easily or eaten up by the rats and insects. Some farmers possessing sound economic conditions have made their storage cemented (pucca) which though not scientific is more secured from getting easily damaged.

Since the agro-climatic condition of the Barak Valley is unstable and not equally conducive for every year and since maximum farmers are poor in nature, irrigation facility from the government is assumed to be an important means of infrastructure in raising agricultural productivity. But our present study finds no such facility available to the farmers under consideration, which restraints agricultural productivity even after adoption of modern farm practices.
It is noticed that only a small proportion of farmers under study fall under credit arrangement (institutional and non-institutional), confirming that maximum farmers are still not covered under credit facilities. Nor even they are encouraged to avail such facilities for production purposes. The study observes that there is no direct and positive relationship between the use of credit money in production and the size class. Such a result reflects the lack of commercial attitude of the farmers, since credit money is required to reorganize the farm practices even by large farmers in the area, if they want to carry on their production in commercial line.

As the farm size increases the proportion of farmers under credit arrangement gets declined. A relatively higher proportion of farmers belonging to smaller two groups are found indebted because of their poor economic condition who mostly indulge in non-institutional sources of credit, especially from money lenders at a very high interest rate. Consequently, they are in the cobweb of distress sales which deepens their vicious circle of poverty due to which their level of net marketed surplus is very negligent. There is however a tendency of farmers belonging to larger two groups to avail the credit money from institutional sources relatively at a low rate of interest. This may be due to their relatively better economic status and perhaps their level of education. Because, the institutional loans are subject to security in the form of borrower's property, and complexity for which the uneducated and poor farmers scare of taking such loans. As a result, there exists a direct relationship between the farmers with institutional credit and the size-class, while an inverse relationship is revealed between the farmers with non-institutional credit and the size-class.
An analysis of the sales behaviour of the farmers reveals that majority of them dispose off their produce to the village traders (bepanies), rice millers, etc. instead of bringing to the market centers. The study reveals that market arrival of the produce declines with the increase in size-holdings. As against this there is an increasing relationship between village level sales and size class. It is seen that small and marginal farmers of the first two groups dispose off their produce mostly in the market centers. This is however not mainly with the objective of receiving better prices from the market, but because the amount they sell is very negligent for which they do not get customer at their door level. Further, the sale of paddy (without converting into rice) in market places is not customary in the study area. However, even in the market centers they cannot sell rice to the ultimate consumers at remunerative prices because of the operation of middlemen. It has been observed that almost all the prevailing agricultural markets in the valley are fully or partially occupied by the middlemen due to whom the farmer-sellers are always exploited. It is because of this reason the price spread for paddy (rice) is very high and producer's share in consumer rupee is quite low which discourages the farmers to produce for market sales. But these small and poor farmers have no option rather to sell their produce to the middlemen in the market at lower prices on account of their immediate cash requirements.

A considerable number of farmers belonging to larger two groups do not sell customarily in the market centers, rather they dispose off their produce to either bepanies or rice millers. Reportedly most of them sell paddy only instead of converting into rice. They are not interested in selling their produce in the market centers. Because, they think that the costs of converting process and transportation to the market will be almost equal to the better prices they would have received from selling in the market places. Thus they remain satisfied with the prices slightly
better than the harvest price in absence of proper bargaining. Besides, maximum of them do not have proper access to information regarding the market condition and actual prices prevailing in the market, and there is neither standard system of paddy sales in the marts or mandies, nor any uniform units of measurement being used across the valley.

For the valley as a whole irrespective of the farm-sizes, the physically interrupted communication system viz. katcha or muddy roads, poor means of transportation, less accessibility of farmers to market information and inadequate market infrastructure have been the crucial factors responsible for small volume of market arrivals. However, the marketing costs of the produce are appeared to be very small and not so far responsible for negligent quantity of market arrivals either in case of smaller or larger size groups.

The study also realizes that higher prices lead to higher level of net marketed surplus discerning the positive relationship between price and marketed surplus according to different seasons as well as size class. The level of net marketed surplus increases from post-harvest season to mid-season and further to lean-season with respect to a rise in the seasonal price level. Similarly, it is found that marketed surplus increases with the rise in prices throughout the size groups.

The estimation of marketed surplus with respect to price change is performed both by bi-variate and multi-variate regression techniques. It is found that the variation in marketed surplus explained by the price factor is statistically significant in both the estimations. Because, the regression coefficient of price is positive and reliable judged by the values of t-statistic and F-statistic at 1 per cent significance level. This positive response of marketed surplus to its price change confirms our hypothesis that marketed surplus is an increasing function of price.
Thus price is the significant factor determining marketed surplus in Barak Valley of South Assam.

The study reveals that repurchase takes place mostly in case of small and marginal farmers, while for large farmers it is said to be almost nil. As the size class increases the proportion of repurchase declines and vice-versa. Interestingly the presence of a small proportion of repurchase by large farmers is not because of distress sales but for replacing the superior food over inferior one. Some rich farmers belonging to larger two groups produce some inferior quality of paddy due to land situation which they do not retain for self-consumption, rather dispose off in order to purchase superior quality of paddy (rice) for home consumption.

An interpretation of the land input pattern reveals that there is an inverse relationship between the proportion of area devoted for paddy cultivation and size-class. However, a direct relationship is found to exist between land available for cultivation and size-class. As per our previous finding it is revealed that marketed surplus as a proportion of output has positive relationship with the holding sizes. These results imply that the level of marketed surplus is not affected by the proportion of area devoted but by area available for cultivation. Therefore, it is not the proportion of area brought under cultivation but the area available under the crop that plays important part in determining marketed surplus of paddy.

An extension of our analysis to the farmer’s literacy reveals that there exists a positive relationship between the proportion of literate farmers and marketed surplus according to size class. It is also realized that though the proportion of higher educated farmers are quite negligible in the study area, it has direct association with marketed surplus. This
nature of finding confirms our hypothesis that literacy level of the farmers relates positively with marketed surplus.

Moreover, farmer’s literacy can raise the level of awareness about the various attributes of agriculture right from availing of credit facilities, scientific method of cultivation, price and market condition which are extremely crucial for generating marketed surplus. In this context, market awareness of the farmers is considered to be an important factor influencing the level of marketed surplus. The tabular analysis reveals that the proportion of farmers aware about the market prices and market condition relates positively with marketed surplus in accordance of size class. Hence, we can generalize that market awareness of the farmers has positive impact upon the level of marketed surplus.

Thus in view of our objective of the estimation of farm consumption level of paddy it is found that proportional consumption of output at farm level has an inverse relationship with size group of holdings. The consumption level also relates negatively and significantly with marketed surplus of paddy according to size groups. Hence, our hypothesis of negative relationship between consumption and marketed surplus is confirmed.

However, the hypothesis of positive relationship between family size and consumption is not satisfied here. This is because of the reason that some dependent population in the family including minors, old and disabled consume at source without making any net contribution to output. Due to this factor even a small size of family with higher dependency load shows higher proportional consumption of output and vice versa. In view of our second objective of the identification of relative strength of the factors determining consumption, the study reveals that it is not the family size rather dependency load in the family which has
much impact upon the consumption level. And among the dependents the component of minors is relatively stronger while determining the level of farm consumption.

In the light of our objective of examining the magnitudes of marketable and marketed surplus it is revealed that both marketable as well as marketed surplus as proportions of output relate linearly and positively with the size class. Moreover, our analysis in line with the objective of identifying the factors determining marketed surplus and their relative weightage reveals that farm consumption, production, retention, prices, and profit margin of the farmers are the significant determinants of marketed surplus in the area. Out of these, price is found to be the most effective variable on marketed surplus, followed by retention which has relatively better strength in determining marketed surplus than production and consumption. Next to retention it is the level of production that affects marketed surplus more than farm consumption. The level of farm consumption is found to be the least effective factor determining marketed surplus in the area. In addition to these, profit margin has been identified as the crucial factor determining marketed surplus in the Barak Valley of South Assam.

With these findings our hypotheses of the direct and positive relationship between output and marketed surplus as well as price and marketed surplus are satisfied. The hypothesis of positive association between farmer's literacy and marketed surplus is also confirmed by the study. However, since literacy ratio of the farmers does not vary widely from size-class to size-class as marketed surplus varies, we can deduce that farmer's literacy has no significant impact upon marketed surplus.

The new and uncommon findings of the study are that it is not the family size of the farm household rather the dependency load in the family,
which is found an important determinant of consumption. Furthermore, it is the proportion of minor to dependency load rather than the old and disabled, which has relatively higher strength in determining marketed surplus. The levels of retention for domestic consumption and seed requirement have significant influence upon marketed surplus. Though farmer's literacy relates positively with marketed surplus it does not play important role in determining the level of marketed surplus. The reason being that though literacy is an important factor, but the effect of literacy may not be evident during the short period. However, it is observed that market awareness of the farmers guided by literacy factor plays crucial part while determining marketed surplus. Besides, profit margin of the farmer-sellers has been found to be the significant determinant of marketed surplus in the Barak Valley of South Assam.