CHAPTER VIII

LEVELS OF LIVING: INFLUENCING FACTORS

This Chapter discusses the basic issue of poverty and drought. The issues which emerged from earlier discussion are analysed from available data with the help of these three techniques viz. multiple regression, correlation matrix and step-wise regression. Lastly, this chapter examines, Gini's concentration ratios of per capita expenditure and per household land ownership. Conclusions emerging out of this are presented in Chapter IX.

1. MULTIPLE REGRESSION

Appendix VIII-A presents results of the multiple regression estimates. This estimate considers consumption of daily per capita calories as dependent variable. The independent variables are: per household land owned, size of household, Dependency ratio, Number of milk animals per household, per capita yearly income and per capita stock of debt.

In cases of Botad and Kadi $R^2$ is 0.17 and 0.15 respectively. In two other cases, viz. Dholka and Wav it is 0.26 and 0.24 respectively. Highest, explanation viz. 49 per cent is possible in Wagra taluka of Bharuch district. In all other cases the $R^2$ is between 0.30 and 0.39. Low value of $R^2$ is to be expected as most of the variables are defined in such a way that possibility of
multicollinearity is minimised. Since the explanatory variables are in per capita or per household terms a commonness of movement of quantities implicitly within such variables is removed. Secondly, the number of observations in each taluka is also around 100. This large sample size also leads to larger degree of variations. Since the purpose of this estimate is not to mechanically boost up $R^2$, all variables which could be a priori reasoned to influence consumption of calories are included.

Only in Lunawada size of land negatively influences level of calorie consumption. However, its influence is not established as it is not significant. In case of all developed talukas this variable is significant, irrespective of the pattern of rainfall. Since development is not defined only in terms of agricultural development importance of land in influencing levels of living is to be explained in terms of other indicators like non-agricultural employment. In second and third groups of development it is significant only when rainfall has a higher mean and lower variability. Thus higher order of development leads to a higher a role only in lower level of development. In such situations a better rainfall condition is an a priori requirement for a significant and positive influence of land size.

Size of household is, in general, negatively and significantly related with consumption level. Kadi and Dholka are two exceptions where both are significant
and positive. Both these talukas have favourable rainfall typology and are urban areas. As such, larger size of households is not becoming detrimental to their consumption levels. In these talukas employment outside agriculture is generally high because of which size of household does not become a drag. The negative sign implies existence of surplus labour in these households where cropping intensity is also low as seen earlier.

Dependency ratio is not significant wherever it is negative. It may be rememner here that this ratio is taken as number of working persons per household. Thus, as the size of household increases, with a given number of working persons the ratio becomes smaller. Thus a positive relation is to be expected since the ratio will become large as number of workers increase with a given size of household. In short, as the number of workers increases there is an addition to consumption of calories as is to be expected. In all the four cases where it is significant the size of co-efficient is also large.

Ownership of milch animals per household is not decisive in influencing levels of living either way in all cases except in Lunawada. In that case it is positively influencing consumption. A possible explanation lies in the fact that the Panchmahals district does not have a strong dairy activity. Because of general backwardness of this taluka, marketing channels of milk products are not established. Milk, thus remains
an item to be consumed at home and hence the positive and significant relationship is obtained. However, the converse of this remains to be established.

Per capita income (worked out from reported income) influence consumption positively wherever it is significant. In Kadi, Mandvi and Wav it is not significant, in all other cases it is significant. It does not show any consistency either with rainfall or with level of development. The reasons why income is influencing various typologies are to be found into peculiar structural relations obtaining in such micro-regions. As such, at a disaggregated level, large number of issues like saving and consumption behaviours, pattern of consumption from home grown output etc. play vital role.

Lastly per capita indebtedness shows a negative and significant relationship only in case of Dholka. However, it may be added here that this co-efficient has negative though not significant relationship with consumption of calories in cases of Kadi, Jodia, Wav and Limdi talukas. Two of these talukas having negative relationship are in LH type, two in HL type and one in LL type. In case of development level also no trend emerges. Implications of debt are discussed in Chapter VIII. This variable would be discussed in more detail in light of the estimates of step-wise regression.

A few interesting issues, emerging out of this exercise are discussed now.
(1) First point that emerges is regarding size of land and the role it plays in general in influencing levels of living. It is interesting to note that the coefficient is significant and positive in developed areas. In non-developed regions land as a variable is not found to be significant, except in case of Lunawada, where climate is better as mentioned earlier. Thus, larger size of land adds to the levels of living in the drought prone areas, which when juxtaposed with the preference for food-crops in such areas, underlines the importance of this behaviour.

(2) Size of household as well as dependency ratios are almost always negatively related with levels of living. In all cases, size of household is significantly related, not so in case of dependency ratio. This outcome on the one hand, underlines the fact that control on size of household will lead to improvement in levels of living. On the other hand, it also brings out the fact that neither the development effort, nor better rainfall or irrigation conditions can compensate for the losses in levels of living caused by big-sized families.

(3) Milch animals are integral part of agriculture in India. In policy approach, they are given a place as it is thought that 'Operation-Flood' can revolutionise the rural scene by adding to income and employment. This, variable, unfortunately, is significant, only in case of Lunawada. As such no conclusion or generalisation is possible.
(4) In very few cases does per capita income or per capita debt become significant. Per capita income is positively related with consumption. In case of Dholka, per capita debt is negatively related with consumption. In case of these two variables also no generalisation emerges.

For the purpose of comparing the implications of independent variables their respective elasticities are worked out and reported in the same Appendix-VIII-A. The elasticity is defined around mean of each respective variable. Thus $e = \frac{X}{Y}$. It is obvious that whenever the co-efficient has a negative sign the elasticity is negative. Elasticity will also be high when size of co-efficient is large. Whenever mean of the variable is very small with respect to consumption mean, the size of elasticity too will be very diminutive and vice versa.

Elasticity of per household land is high in case of developed talukas. It is also high for HL typology when level of development is given. Elasticity of size of household is low in cases of Mandvi and Nav only. It is also low for LH typology in its respective level of development, exception being Dholka. Dependency ratio has a very high elasticity in case of least developed talukas. Number of milch animals has in general a low elasticity in all respect, though, it is relatively high for developed areas. Per capita income in general has low elasticity, though as a group it is high for developed
talukas as against lesser developed areas. Rainfall pattern does not seem to play any important role in this regard. In case of per capita debt a high elasticity is observed in case of Wagra alone. In other cases it is very small.

Consumption elasticity, in case of LH typology is high for all variables except per capita debt, which also becomes high when level of development is low. One more exception is Jodia where elasticity of dependency ratio is low.

2. CO-RELATION MATRIX

Appendix VIII-3 gives a co-relation matrix between the variables discussed above. This matrix shows interrelationship between the stated variables. The first line in each case gives size of co-efficient with respect to the dependent variable. Each successive line shows such relationship with earlier independent variable. Thus, for example, each third line in the eleven sets shows relationship of second independent variable, viz. size of household with the rest of independent variables.

Perusal of these sets show that size of co-efficients is generally low, signifying their independence from each other. Household size and dependency ratio or income and debt also show such independence.

In all cases land and debt are negatively related. Land is positively related with consumption. This perhaps helps in explaining the system of giving land as inheritance and also the social importance of
land in society. In drought-prone areas desire to continue progeny, importance of male children and subdivision of land are likely to have their root in this system. However, negative relationship of size of household with both consumption and land ownership has not generated a rational and compensating behaviour. Size of households in these areas should be limited so as to add to levels of living. Reason behind such preference for higher family size lies not so much in the economic factors as in psychological factors. It has been observed that during years of severe droughts both mortality rate and infant mortality rate increases. This tends to create a feeling of insecurity which leads to preferring larger number of children.

Relationship between income and debt is interesting, only Arjar, Wagra and Lunawada have a positive relation. In case of all other typologies there is a negative relationship. It is to be observed that debt has negative relationship with land in all cases. Thus both are observed to move in opposite directions. As size of land increases per capita debt declines; which underlines the role of consumptive loan. This behaviour is independent of rainfall typology as well as level of development. The outcome of this is larger land and larger incomes reduce debt. This sets the condition for implication of debt for consumption.

If size of land and per capita income are large debt has no negative impact. It perhaps in boosting up the
level of consumption. But as the asset base mainly in terms of land in these areas and purchasing power collapse or as their base becomes narrower, debt becomes a short term remedy which comes down in adverse way beyond a point.

Another important point of observation is the relationship between land and milch animals owned. In all typologies one observes an inverse relationship between the two. Higher land size is not leading to more investment in milch animals. If milch animals are considered in integral part of family, such that employment and income generated from it will be complementary, that argument is likely to be a suspect. It also supports an earlier argument about animal ownership in general. Ownership of animals does not lead to increase in consumption during normal times. As an asset it faces a steep fall in value during serious droughts. 1/ If the animals are not sold out during crisis the depressed disposable income starts being partly utilised for the minimum level of maintenance of animals too. Such sharing leads to fall in levels of living of the affected population. 2/ Thus dairying becomes a marginally income augmenting activity.

In case of this exercise two variants are considered. The first variant does not include marketed surplus and also defines debt as that amount contracted during the

1/ Jodha N.S. Ibid (1977)
2/ Rohit Shukla, (1979), Ibid.
year of survey.

Process involved in estimating step-wise regression is an iterative one. To start with, all specified variables are considered. A variable which has the least significance statistically is dropped and the process is repeated again. This process is continued till the variables become significant, Appendix VIII-C and VIII-D give this information.

**STEPWISE REGRESSION: VARIANT-I**

Size of land holding is positively related in all cases, excepting where it does not become significant. In HH typologies it consistently fails to achieve significance. In all HL typologies land positively add to consumption of calories.

Size of household has a consistently negative relation with levels of living. All co-efficients are significant. The question that children add more to household income in cash or kind by starting to earn at early age does not hold good here. It is generally believed that high rate of drop-out leads to more contribution in consumption basket than withdrawal (eating less because of age) does not hold good here either. All the co-efficients are quite sizeable and have inverse relationship, disregarding the rainfall typologies.

Dependency ratio in this formulation is number of workers per household. Thus, as size of household expands the ratio becomes smaller. The positive relation
observed in the cases thus show that as the size of household contracts, level of living is improved. In this way, it supports the argument concerning size of household discussed above.

Ownership of milch animals does not create any important impact on most of the typologies. As could be expected, it has a positive impact but number of such typologies is very restricted.

Family income appears as a significant important variable in most of the typologies. The relationship fails to establish any trend in terms of, either, development category or $\$\$\$\$ rainfall category. Income, as expected is always positively related to levels of living.

Two typologies, both HL, have a negative relationship. Both are fairly developed and nearer also to urban centres. This inverse relationship underlines the fact that fresh credit contracted in these regions have brought down the levels of living in these areas. It supports the earlier discussion that credit mechanism in the present form undermines the capacity of households to generate higher levels of living.

Ideally, this variable should also be significant and negative for HH, LM and LL typologies because the rainfall pattern creates an additional risk and instability exposing the households to recurrent recourse to debt. Mandvi (LM I), Botad (HH I), Lunawada (HH III) and Wagra (HL III) are exceptions to this as seen in Appendix VIII-A, showing multiple regression formulation.
The positive relationship, does not counterweight the evidence of the negative relations. In fact, consumption loan should not fail to add to consumption. Even production loan also should influence it positively.

The positive relations require further scrutiny on two counts:

(a) Age of debt could be assumed to create important impact as cumulative interest will generate an increasing draft on consumption levels of the households.

(b) It was observed during 1974-75 drought that households fail to get any additional credit beyond a point. For the lenders, advancing credit beyond a point becomes increasingly risky. With intimate knowledge, the money lender cum petty trader, operating in these areas, it is easy to stop indulging in additional credit expansions. This, as is argued earlier, forces households to labour on relief works inspite of all the disutilities built-up in their working. This should give rise to a non-homogeneous picture at such a micro level.

**STEPWISE REGRESSION VARIANT-II**

Appendix VII-D gives results of this variant. In this case two changes are introduced. Firstly, one more variable in the form of marketed surplus is introduced. Second, debt in this formulation is redefined. In first variant it was defined as additional debt incurred during the year of survey. In case of Muli taluka no new debt was reported and hence in first variant it was dropped.
Now it is defined as total stock of outstanding debt.

Per capita additional debt had a negative impact in Dholka and Kadi. In case of net debt, all talukas wherever it becomes significant it has a positive relationship. Botad, Anjar, Wagra and Vav are the talukas where net outstanding debt has a positive impact on levels of living. In all 4 typologies, again no systematic pattern emerges. Two belong to developed areas and two to least developed ones. All four types of rainfall categories are also represented. It is also important to note that the typologies appearing in first variant have disappeared. Unless debt plays a role of last resort to maintain a given level of consumption this should not happen. Net debt, if had been also playing an important role as input, would presumably lead to higher output and thus to higher plane in consumption level. The developed talukas with better rainfall and irrigation should be in a position to testify this. But in net debt formulation both Kadi and Dholka disappear.

As second variant shows, no support is found for age of debt argument. Net accumulated debt has a positive influence on levels of living while new debt has a negative influence. In this light, the NL typologies could be assumed to spend more on non-consumption items including investments in agriculture, such that new debt leads to fall in consumption.
Marketed surplus, introduced as an additional explanatory variable, does not alter the outcome in a material way. It becomes significant only in case of Dholka and there too, the size of co-efficient is very small. This additional variable also fails in adding to the size of $R^2$.

3. **GINI RATIOS AND MEASURE OF POVERTY**

A study of poverty also generally looks into aspects of inequality. Inequality, it is argued following Marx leads to a process which under capitalist structure leads to expropriation of surplus value, which again accentuates the forces leading to inequality. Use of labour saving technology, speeding up of production process, increasing size of ratios of capital-wage and surplus value-wage, lead, initially, to cyclical fluctuations and end up in ultimate communism through class conflict and proletariat dictatorship.

On the other hand there is an argument that process of development initially leads to inequality but it also leads to reduction in absolute poverty. A shade of faith in 'trickle down' is implicit in this argument. After the initial rise in inequality, again the process is believed to revert back and then progress towards greater equality.

In the first argument, in context of development, degree of inequality is considered to be increasing and in later case it is considered to be falling after initial rise. Degree of inequality thus becomes an important issue.
In this section, inequality is examined with the help of Gini's concentration ratios. Table 8.1 gives Gini ratios for 5 typologies. These ratios are worked out from data collected while conducting census of all households in sample villages.

**TABLE 8.1**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Taluka</th>
<th>Rainfall and development typologies</th>
<th>Irrigated</th>
<th>Unirrigated</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kadi</td>
<td>HL 1</td>
<td>0.3869</td>
<td>0.4157</td>
</tr>
<tr>
<td>2</td>
<td>Anjar</td>
<td>LH 1</td>
<td>0.3782</td>
<td>0.4317</td>
</tr>
<tr>
<td>3</td>
<td>Dholka</td>
<td>HL 2</td>
<td>0.5610</td>
<td>0.4217</td>
</tr>
<tr>
<td>4</td>
<td>Mandvi</td>
<td>LH 1</td>
<td>0.3033</td>
<td>0.3377</td>
</tr>
<tr>
<td>5</td>
<td>Wav</td>
<td>LH 3</td>
<td>0.1191</td>
<td>0.4195</td>
</tr>
</tbody>
</table>

Source: Calculated from Census of Sample Villages.

These ratios reveal highest concentration of irrigated land in Dholka (HL 2). This is the only case, out of these 5 reported cases where concentration of irrigated land is high and that to substantially. It may be remembered that this Taluka is nearer to urban centre (Ahmedabad) and fairly well irrigated. The area also enjoys better rainfall conditions.
But in Kadi, which also is nearer to urban centres, and also has a similar rainfall typology, the concentration ratios are lower both for irrigated and unirrigated areas. Kadi is more developed than Dholka. Yet it would be rather a bold decision to come to a conclusion that development in later stages leads to fall in inequality. Kadi has not achieved breakthrough similar to Punjab-Haryana, neither is Dholka very far removed from Kadi. 3/

In case of Wav, very low inequality surfaces in irrigated areas. But Wav is least developed; irrigation in this area is also very sparse, leading to very limited number of observations to compare.

In general, unirrigated land has a concentration of around 42 per cent. This is a fairly high amount of concentration.

Table 8.2 below gives the concentration ratios based on data of selected sample households. The ratios are worked out for expenditure and land ownership.
Table 8.2
GINI CONCENTRATION RATIOS OF EXPENDITURE AND LAND OWNERSHIP

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Taluka</th>
<th>Rainfall and Development typology</th>
<th>Gini's Concentration Ratio of Expenditure</th>
<th>Gini's Concentration Ratio of Land Ownership</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Botad</td>
<td>HH I</td>
<td>0.2197</td>
<td>0.3232</td>
</tr>
<tr>
<td>2</td>
<td>Kadi</td>
<td>HL I</td>
<td>0.2515</td>
<td>0.3977</td>
</tr>
<tr>
<td>3</td>
<td>Mandvi</td>
<td>LH I</td>
<td>0.2841</td>
<td>0.3581</td>
</tr>
<tr>
<td>4</td>
<td>Anjar</td>
<td>LL I</td>
<td>0.2383</td>
<td>0.4494</td>
</tr>
<tr>
<td>5</td>
<td>Muli</td>
<td>HH II</td>
<td>0.2763</td>
<td>0.4050</td>
</tr>
<tr>
<td>6</td>
<td>Dholka</td>
<td>HL II</td>
<td>0.3247</td>
<td>0.5409</td>
</tr>
<tr>
<td>7</td>
<td>Jodia</td>
<td>LH II</td>
<td>0.2321</td>
<td>0.3185</td>
</tr>
<tr>
<td>8</td>
<td>Lunawada</td>
<td>HH III</td>
<td>0.2620</td>
<td>0.4394</td>
</tr>
<tr>
<td>9</td>
<td>Wagra</td>
<td>HL III</td>
<td>0.2333</td>
<td>0.4790</td>
</tr>
<tr>
<td>10</td>
<td>Wav</td>
<td>LH III</td>
<td>0.2735</td>
<td>0.4135</td>
</tr>
<tr>
<td>11</td>
<td>Limdi</td>
<td>LL III</td>
<td>0.2797</td>
<td>0.2659</td>
</tr>
</tbody>
</table>


Perusal of this table shows that inequality of land ownership is higher than that in expenditure, excepting the case of Limdi taluka where the reverse situation obtains. This outcome is mainly due to the lowest inequality obtaining in land ownership in this taluka. Disregarding this case, if one compares inequalities between most and least developed talukas, excepting Anjar
taluka more inequality is associated with less development. In these two groups of development it could be clearly seen that comparisons of rainfall typologies across levels of development also yields the same results. Thus Gini in HH1 is lower than that in HH3, HL1 than HL3 and LH1 than LH3. These three pairs show similar rainfall patterns. Thus whatever typology of rainfall obtains, higher level of development leads to lower inequality.

No similar picture emerges when inequality of expenditure is compared. Expenditure data do not show a high degree of inequality. There are two cases of higher inequality with higher development and other two cases of lower inequality with higher development. When level of development is controlled, LH typology in these two groups show higher inequality.

Gini ratios give a summative picture of all households. So far as expenditure inequality is concerned they do not give a clear pattern. Considering this, two more attempts are made: First, using NSS (25th round) data income elasticities of two groups viz. Wage earners and small cultivators class, in five NSS regions of the state are examined. Next Gini ratios for segments of population below poverty level are also calculated.

Table 8.3 below presents measure of income
elasticity for wage earners and small cultivators.

**TABLE 8.3**

INCOME ELASTICITY OF EXPENDITURE OF WAGE EARNERS AND SMALL CULTIVATORS CLASS

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>NSS Region</th>
<th>Income Elasticity of Expenditure</th>
<th>Wage Earner</th>
<th>Small Cultivators</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Eastern</td>
<td>0.38</td>
<td>0.50</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Plains Northern</td>
<td>0.56</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Plains Southern</td>
<td>0.55</td>
<td>0.28</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Dry areas</td>
<td>0.82</td>
<td>0.29</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Saurashtra</td>
<td>0.35</td>
<td>0.22</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Gujarat State</td>
<td>0.51</td>
<td>0.37</td>
<td></td>
</tr>
</tbody>
</table>

Excepting Eastern region of the state, income elasticity of wage earners is always high. When compared at the state level the difference in elasticity for the two is substantial. Most remarkable difference between the two elasticities is observed in case of dry areas. For wage earners it is 0.82 which is highest across the regions and for small cultivators it is 0.29 which is not the lowest across the NSS regions. It is noteworthy that southern plains are well irrigated and in better rainfall situation, yet, the elasticity for
wage earners is almost the same; only a small difference obtains for small cultivators' class between these two regions.

When the differences between the two elasticities are considered, fairly high difference between these two groups are obtained in two areas having drought prone character. In northern plains and dry areas one finds such differences. However, in Saurashtra, a typically drought prone region the difference is observed, though it is not a pronounced one. Thus, in general, drought prone areas do indicate a high level of income elasticity for wage earners' class. In actual drought situation, when their income falls, they are pushed below the poverty line. Impact on small farmers is, as could be expected, relatively less. Higher income elasticity also leaves a little possibility of asset formation.