Chapter-5

FACTORS DETERMINING RURAL INDEBTEDNESS IN NAGALAND

5.1 INTRODUCTION

The issues of farmers’ indebtedness become a matter of intense debate whenever the agriculture sector faces distress. Currently, the Indian agriculture is at such juncture and it has become a matter of great concern. Though the government of India declared a whooping Rs.60000 crore loan waiver scheme in its Budget-2008 for indebted farmers in the country, it is not the permanent solution of the problem. In fact, the root cause of the current crisis is not indebtedness alone-indebtedness is just a symptom. The underlying causes are stagnation in agriculture, increasing production and marketing risk, institutional vacuum and lack of alternative livelihood opportunities. Broadly, there are several factors responsible on account of which an Indian agriculturist increase debt and remain indebted forever. It is his social status which compels him to borrow more and more. In fact volume of debt does not matter but it is the purpose of debt that matters a lot. From the various studies conducted by experts is the evidence that debt is being used not for productive purposes rather it is used for unproductive purpose like marriage, or other social obligations (Gurmeet Singh, 2008).

The mere existence of rural indebtedness, however small its incidence, is evidence of the existence of a demand for credit in the rural sector. Indeed the point needs no emphasis because farmers like any other producers need credit (Tilakaratna, 1963). Debt follows credit, and though there are other factors, this is the key to the problem. It explains why, in 1873, five out of the seven most heavily mortgaged districts of Punjab were ‘among the most prosperous and wealthy’, and why mortgage debt is now increasing fastest in the
richer districts (Darling, 1977). The following section examines the factors that determine rural indebtedness in Nagaland by use of various regression models.

5.2 ANALYSIS OF FACTORS DETERMINING RURAL INDEBTEDNESS IN NAGALAND

The amount of debt at a point is determined by several factors, both economic and non-economic. The important economic factors have been identified and included for statistical analysis. It is assumed that indebtedness depends upon family size, income of the household, educational level, size of landholdings etc. In an attempt to examine the extent to which these independent variables determine indebtedness a few models outlined earlier have been estimated with the help of regression equations. The estimated results thus obtained will be examined in the light of the results which we have obtained earlier through tabular analysis of the primary data and conclusions will be derived.

As we have seen in the preceding chapter that over 50 per cent of the farmers in the state are small and marginal farmers, i.e., farmers possessing land of size ranging from 0 to 5 hectares. Rural households in the state are poor and about 43 per cent of them are under debt. On an average, a household has a debt burden of Rs. 17,042 while that for a person, it is Rs. 3127. Higher per capita debt in the recent years is due to increased access to the institutional credit in rural areas through various agencies.

One interesting finding is that an average household borrows mostly from institutional sources (about 65 per cent). Generally, people borrow from commercial and other banks (41.27 per cent). Under non-institutional sources, friends and relatives emerged as an important source. As far as professional moneylenders is considered, their share in credit delivery in rural areas is insignificant as in Naga society the system of professional money lending is nearly absent and it also does not encourage the growth and development of such a system in the society.
As regards to the use of credit, it was found that on an average a household utilized 62 per cent of loan amount for non-productive purposes and of this, about 30 per cent went for meeting domestic consumption expenditure alone. But, loans borrowed for repayment purpose is not utilized properly. A major portion of the loans earmarked for repayment purpose goes for unproductive uses and as a result loans mount up and accumulating debt turns into burden for an average family. Another very important finding is that households use a significant amount of loan money for meeting expenditure on education of their children.

While analyzing the burden of debt in the state in the light of these findings, several regression models have been used to identify the weightage of certain explanatory variables which would help in explaining the various determinants of debt. Generally, it has been found that per capita debt is an important determinant to indicate the intensity of debt, which however, is largely influenced by the way the debt is used and from where it has been acquired. By using regression models we would be able to find to what extent various factors influence per capita debt, sources and purposes of debt in the state. For the purpose of this first, models with a single explanatory variable are tried and then more variables are incorporated to see their combined effect on the dependent variable. This would be done to judge the acceptance level of most of the explanatory variables for explaining the emergence of debt. Tostandardize different units, the weighted average of all independent variables has been estimated.

**5.2.1 PER CAPITA DEBT**

In an attempt to analyze the burden of debt, we will make an in-depth study of debts of various nature. Among them per capita debt is an important indicator of the burden of indebtedness. It reflects the debt burden of a family, though the real burden would indeed be determined by the reasons for the debt as well as the source of the debt.

Per capita debt however, is determined by several factors among which, important ones are the – family size, income of the household and literacy level of the head of the family. It
is assumed that as family grows, debt also tends to rise. A number of regression functions have been fitted to find the extent of their influence on per capita debt. The estimated results of the regression analysis are as follows:

The first model uses literacy rate of the head of the family as the independent variable to explain the per capita debt. Education level of the head of the family is very important factor determining the burden of debt. It is generally believed that education level and per head debt has inverse relationship. Higher the literacy level of the head of the family (who is the decision maker), lower is the debt particularly for unproductive purposes. However, it may not be true in case one has very high income and the debt is taken from institutional source. In an underdeveloped country like India where most of the rural people are illiterate tend to find themselves in the grip of unscrupulous moneylenders only because of their sheer ignorance. Thus, we have tried the following model:

\[ D_b = a - bLit \]  

Where, 

\( D_b \) = Debt per capita \\
\( Lit \) = Literacy rate of the head of the household

The results of the estimated equation is as follows

\[ D_b = -0.423 - 0.042Lit \] 

\( t = (-5.9) \quad (-0.196) \) 

\( R^2 = 0.042 \) 

\( F = 0.039 \)

In this model, the coefficient of multiple determination \( (R^2) \) is 0.042, along with low value for F indicating poor functional relationship of the model. As expected the statistical
insignificance of the coefficient of the independent variable compels us to discard this model for explaining the burden of indebtedness in Nagaland. It was found that out of 300 sample households; only 111 households belonging to all categories have some level of education. Thus only 37 per cent of total sample were found to be literate. Most of them (about 24 per cent) have studied up to middle level and about 12 per cent have completed their studies up to higher secondary. Only 2 per cent of the sample households have completed graduation. Therefore though literacy rate may not affect per capita debt in a direct manner in Nagaland nevertheless it is indeed an important determinant of debt in the general case and its impact may be evident only in the long run.

Another model was developed to examine whether income of the family influenced per capita debt in the rural Nagaland. The common experience in most parts of the country is that rural debt is incurred mostly by the poorer section and debt is undertaken by the rich mostly for productive purposes. The simple logic behind this is that if there is sufficient income from all sources the necessity to incur debt may not be too severe. Therefore to examine the explanatory power of the level of family income the next model specified is given below.

\[ D_b = a + b \ln \] ........................ (2)

Where,

\[ D_b = \text{Debt per capita} \]
\[ \ln = \text{Income of the household} \]

The results of the estimated equation is as follows

\[ D_b = 0.232 + 0.358 \ln \]
\[ t = (2.047) \quad (1.796) \]
\[ R^2 = 0.128 \]
In model-(2), the coefficient of multiple determination \( (R^2) \) is 0.128, once again revealing the poor functional relationship of the model. However, the response of debt to the level of family income is different for debtors belonging to different income groups. Though for the rich households higher income may prevent going in for more debt the same may not be true for lower income groups. It is seen from our earlier analysis for the poor households in the state that a slight increase in income leads to more increase in consumption as much of their needs still remains to be satisfied. Therefore, their marginal propensity to consume is higher when there is little increase in income. The increase in consumption outweighed the increase in income and borrowings became necessary. It was also observed that 'Demonstration Effect' played an important role in consumption behaviour of the poor family when their income increased. Rural households spent much of their increased income on new items of consumption which they could not buy earlier for lack of purchasing power. Spending on food items was not as high as it was on electronic items. Moreover, rural households spent more on merry making and on medical. Thus, debt per head increased, when family’s income increased.

In the next model we have combined two independent variables to find the combined effect of family size and literacy rate on debt. The model thus specified is as follows:

\[
D_b = a + b Fm - c Lit
\]

Where,

- \( D_b \) = Debt per capita
- \( Fm \) = Family size
- \( Lit \) = Literacy rate of the head of the household

The results of the estimated equation is as follows
$D_b = -0.252 + 0.332Fm - 0.011Lit$

$t = (-0.587) (1.594) (0.052)$

$R^2 = 0.109$

$F = 1.290$

The results of the model indicate that the function is unacceptable on statistical grounds due to the lower power of the explanatory variable as well as poor functional relationship of the model. However, the model appears to be quite sound on theoretical grounds.

A similar model was tried to find the influence of family size and income of the household together, on per capita debt. The model is as follows:

$D_b = a + bFm + cIn \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \]
though the statistical insignificance of the coefficients compels us to reject the model. The change of sign before the coefficient in the present model indicates the presence of multicollinearity which is not surprising in the present case in view of the socio economic nature of the independent variables.

The next model shown as under incorporates literacy level of the head of the household along with family size and income as explanatory variables in an attempt to examine whether their combined effect influences per capita debt in any manner.

\[ D_b = a + bFm - cLit + dIn \]

Where,
- \( D_b \) = Debt per capita
- \( Fm \) = Family size
- \( Lit \) = Literacy rate of the head of the household
- \( In \) = Income of the household

The results of the estimated equation is as follows

\[ D_b = -0.439 + 0.333Fm - 0.038Lit + 0.357In \]

\( t = \) \((-1.046) \quad (1.680) \quad (0.191) \quad (1.820)\)

\( R^2 = 0.236 \)

\( F = 2.059 \)

Though the explanatory power of the model as judged by the value of \( R^2 \) improves marginally in comparison to the models where the independent variables have been used individually yet its lower value and the statistical insignificance compels us to reject the model. Similar is the case with the statistical significance of the independent coefficient. The estimates of regression coefficients suggest that the variations in the per capita debt are explained to a
large extent by family size and income of the household. The regression coefficient for education level is negative and statistically non-significant. The model indicates that debt of a household increases as size of family increases. When there is an increase in family size, expenditure on domestic consumption and family maintenance, education, medical, etc also increase. This increases the debt burden of a household. Increase in income of a household improves its standard of living and the household becomes more confident with regard to repayment of loans. In fact, higher income levels increase households' repayment capacity. Therefore at higher income levels more loans were taken as reflected in the positive relationship between income and debt. The negative coefficient for educational level/literacy rate suggests that debt is higher at lower educational level as stated in the earlier model. Educational level of the head of the family, who is generally the decision maker, is a strong determinant of debt burden. An educated person may make analysis of the pros and cons of further borrowing after undertaking right calculations in regard to future repayment capacity, which a person with lower educational level may not do. For instance, it was seen that generally farmers take loans for investing in their farms but seldom they do this. In most cases, debt mainly used for unproductive purposes such as high domestic consumption, social ceremonies and merry making, expenditure on purchase of unnecessary things, and expenditure on items of intoxication, which is very common in the state. As a result farmers are left with very less money to be spent on agricultural activities which could have generated more incomes and increased their capacity to repay the already accumulated earlier loans. The extent of outstanding loan is high in case of those weaker section households, which diverted the loans for use in marriage and social ceremonies and for construction of dwelling houses (Sukhpal Singh, 1996).

**5.2.2 DEBT FROM NON-INSTITUTIONAL SOURCES**

Debt from non-institutional sources is very common and more prominent in India. These are the debt taken from sources like landlords, money-lenders, relatives and friends, doctors and lawyers, and traders. It is an easy and readily available source of credit for rural households in the country. Owing to low educational level of rural households, particularly
the farm households in the country, it is a common phenomenon to borrow money from
these sources at the time of need. Landlords easily provide loans to their tenants who work
on their farms, which is also apparent in Nagaland. Though money lenders are the most
important source of credit for rural people in India, it has less significance in the state as
revealed from our findings. The most prominent source of non-institutional loans that emerged
from the study is ‘relatives and friends’. Though rural people here borrow mostly from
institutional sources, nevertheless, non-institutional sources also play important role
particularly in the lives of agricultural labourers and marginal farmers who mainly borrow
from these sources. It is therefore necessary to see the impact of non-institutional loans in
the lives of rural households in the state. To see how important this source among the rural
households in Nagaland is, the following models have been used.

The first model takes literacy level of the head of the family into consideration and attempts
to see if in any way, it affects the borrowing pattern of a family as far as non-institutional
sources are concerned. Borrowing habits largely depends on the educational level. It is
seen that in rural India where most of the farmers are not literate, depend on non-institutional
loans for their credit requirement. An illiterate person hesitates to go to banks or any other
institutional agency providing credit and if he goes also he does not like to undergo the
complex procedures. Moreover, his financial standing does not permit him to pledge certain
security for availing loans. He gets money in need from moneylenders or relatives or friends
who live nearby. It is also true that illiterate people mostly go to non-institutional sources
and end up paying only heavy interests, principal amount only accumulates. Thus, there is
an important link between literacy rate and borrowing habits of the people.

\[ D_{NI} = a - bLit \]  

\[ \text{Debt from Non-Institutional sources} \]

\[ \text{Literacy rate of the head of the household} \]
The results of the estimated equation is as follows

\[ D_{\text{NI}} = 0.159 - 0.155\text{Lit} \]
\[ t = (8.241) \quad (-0.737) \]
\[ R^2 = 0.024 \]
\[ F = 0.543 \]

The coefficient of multiple determination \((R^2)\) in this model is only 0.024, which indicates poor explanatory power of the model. Though the negative sign before the coefficient of literacy rate indicates that higher the literacy rate lower the borrowing from non-institutional source. This implies that educated debtors know the fallacy of borrowing from such sources and thereby may resort more to debts from institutional sources. However, in view of statistical insignificance of the coefficient and the poor explanatory power of the model we are not able to accept this model also.

In the next model, family size is included as the explanatory variable to find how it affected credit borrowing from non-institutional sources. As is the common experience among the poverty stricken rural people, that inspite of knowing to bear the burden of debts from non-institutional sources yet under acute financial pressure for the purpose of maintaining the family they are compelled to resort to such borrowings. Thus the model that we specify for this purpose is therefore as follows:

\[ D_{\text{NI}} = a + bF_m \]

Where,
\[ D_{\text{NI}} = \text{Debt from Non-Institutional sources} \]
\[ F_m = \text{Family size} \]

The results of the estimated equation is as follows
\[ D_{NI} = 0.528 + 0.179Fm \]
\[ t = (0.459) \quad (0.851) \]
\[ R^2 = 0.032 \]
\[ F = 0.725 \]

The value of \( R^2 \) in this model compels us to reject this model as well. Though the theoretical explanation holds good as is evident from the sign before the coefficient of the independent variable, yet the poor statistical significance of the coefficient implies that debt from non-institutional source is not a common phenomenon in Nagaland as in other parts of the country. Such a finding is also supported by our model of per capita debt.

The next model that we have adopted is with income of the household as an explanatory variable for non-institutional borrowings.

\[ \hat{D} = \hat{a} + b\ln(\hat{I}) \]  

Where,

\[ D_{NI} = \text{Debt from Non-Institutional sources} \]
\[ \ln = \text{Income of the household} \]

The results of the estimated equation is as follows

\[ D_{NI} = 0.329 - 0.108\ln(\hat{I}) \]
\[ t = (5.003) \quad (-0.508) \]
\[ R^2 = 0.012 \]
\[ F = 0.258 \]

The coefficient of multiple determination \( R^2 \) in this model declines even further indicating extremely poor functional relationship of the model. Negative sign of the coefficient of the
independent variable is as per our hypothesis though the statistical insignificance of the coefficient does not allow us to accept the model. This may imply that income is not a determinant of non-institutional debt in Nagaland.

In the following model, family size and income of the family were included to examine the influence on borrowing behaviour of the rural households from non-institutional sources.

\[ D_{ni} = a + bFm + cIn \]

Where,
- \( D_{ni} \) = Debt from Non-Institutional sources
- \( Fm \) = Family size
- \( In \) = Income of the household

The results of the estimated equation is as follows

\[ D_{ni} = 0.673 + 0.180Fm - 0.110In \]

\[ t = (0.559) (0.843) (-0.515) \]

\[ R^2 = 0.044 \]

\[ F = 0.483 \]

There does not appear to be much of an improvement in the explanatory power of the model as is evident from the value of coefficient of multiple determination \( (R^2) \), nor has there been any improvement in the statistical significance or improvement in the value of the coefficient of the independent variables of household income or family size. Consequently, we are unable to accept this model for explaining non-institutional debt.

In the model below, another factor i.e., literacy level of the head of the family is included besides family size and income of the family to see the affect on debt availed from non-institutional sources.
\[ D_{NI} = a + bFm + cIn - dLit \]  \hspace{1cm} (10)

Where,

- \( D_{NI} \) = Debt from Non-Institutional sources
- \( Fm \) = Family size
- \( Lit \) = Literacy rate of the head of the household
- \( In \) = Income of the household

The results of the estimated equation is as follows:

\[ D_{NI} = 0.888 + 0.158Fm - 0.120In - 0.139Lit \]

\[ t = (0.700) \quad (0.720) \quad (-0.553) \quad (-0.633) \]

\[ R^2 = 0.063 \]

\[ F = 0.446 \]

Again on similar grounds we are compelled to reject this model too.

To find the importance of non-institutional sources in total rural credit and see the extent of their usage for various purposes in the state, models-(11) to (16) were used.

First, we have adopted the model to examine the extent to which debt from non-institutional sources is for the purpose of investment in the agricultural sector, which is one of their main occupations. In other words, we are going to examine whether debt from such sources is for productive purposes. Consequently, the model that we have specified is as follows:

\[ D_{NI} = a + bAg \]  \hspace{1cm} (11)

Where,

- \( D_{NI} \) = Debt from Non-Institutional sources
Ag = Capital & current expenditure in agriculture

The results of the estimated equation is as follows

$$D_{\text{NI}} = 297.53 + 1.846\text{Ag}$$
$$t = (1.459) \quad (1.045)$$
$$R^2 = 0.135$$
$$F = 1.092$$

This model with weak coefficient of multiple determination ($R^2$) and low value for $F$ indicates poor functional relationship of the model. The coefficient of the independent variable is also statistically not significant and therefore we reject this model for explaining the debt burden in Nagaland. Households in the state borrow money and did not use the same for productive purpose as is evident from the present model. This conclusion further substantiates our earlier findings where we have found that very little debt is for productive purposes. Loans have been used mostly for consumption expenditure. It was found from the study that only about 15 per cent of credit was used for agricultural purposes indicating that farmers misused borrowed money thereby increasing their debt burden.

Let us now try another model as under where we have used expenditure for education purpose as an explanatory variable and see if it explains the debt burden in the state.

$$D_{\text{NI}} = a + b\text{Ed} \quad \text{.................................} \quad (12)$$

Where,

$$D_{\text{NI}} = \text{Debt from Non-Institutional sources}$$
$$\text{Ed} = \text{Expenditure on education}$$

The results of the estimated equation is as follows
In this model, the coefficient of multiple determination ($R^2$) is 0.447 indicating that the model explains forty four percent of the relationship. The independent variable i.e., expenditure on education is also statistically significant. The model can therefore be accepted. It is evident that households in Nagaland spend much of the borrowed money on productive purpose such as for meeting expenditure on education. This is a healthy sign in the sense that in the long run education is the only way to come out of vicious circle of poverty and misery. “Education, in the present day context, is perhaps the single most important means for individuals to improve personal endowments, build capability levels, overcome constraints and, in the process, enlarge their available set of opportunities and choices for a sustained improvement in well-being” (NHDR, 2001). According to Sen, education helps to improve efficiency of labour, create entitlement about rights and this becomes a vehicle to the reduction of poverty. People used both institutional as well as non-institutional loans for educating their children. Though poor, rural households do not hesitate to spend for education. Another very important factor which influences the enrollment rate in the state is the scholarship that every student receives from the government being a scheduled tribe state. Rural people send their children for higher education by taking loans at the time of admission and try to pay back later when scholarship amount is received.

Next we have used a composite model and used the explanatory variables such as debt for consumption, for marriage and other social ceremonies and for educational purposes in an attempt to examine the relative weightage of the independent variables.

\[ D_{ni} = a + b\text{Conspn} + c\text{Mrg} + d\text{Ed} \]  

(13)
Where,
\[ D_{NI} = \text{Debt from Non-Institutional sources} \]
\[ \text{Conspn} = \text{Consumption expenditure} \]
\[ \text{Mrg} = \text{Marriage \& other ceremonies} \]
\[ \text{Ed} = \text{Expenditure on education} \]

The results of the estimated equation is as follows

\[ D_{NI} = -0.047 + 0.493 \text{Conspn} + 2.939 \text{Mrg} + 2.623 \text{Ed} \]

\[ t = (-0.047) \quad (0.456) \quad (1.577) \quad (3.795) \]

\[ R^2 = 0.866 \]
\[ F = 0.625 \]

In this model, though the coefficient of multiple determination (\(R^2\)) is as high as 0.866, the low value of F indicates poor functional relationship of the model. The statistical insignificance of the coefficient of the independent variables of consumption expenditure and social ceremonies, inspite of the statistical significance of expenditure on education, compels us to reject this model.

We next adopted a model in which we combined consumption expenditure, expenditure for social ceremonies and repayment of earlier debts as determinants of non-institutional debt.

\[ D_{NI} = a + b\text{Conspn} + c\text{Mrg} + d\text{Rypmt} \]

(14)

Where,
\[ D_{NI} = \text{Debt from Non-Institutional sources} \]
\[ \text{Conspn} = \text{Consumption expenditure} \]
\[ \text{Mrg} = \text{Marriage \& other ceremonies} \]
Rypmt = Repayment of earlier debt

The results of the estimated equation is as follows

\[ D_{NI} = 0.1352 + 0.297\text{Conspn} + 0.410\text{Mrg} + 0.261\text{Rypmt} \]

\[ t = (0.053) (2.462) (2.778) (2.324) \]

\[ R^2 = 0.500 \]

\[ F = 3.888 \]

In this model, the coefficient of multiple determination \( (R^2) \) improves considerably and the model explains fifty percent of the relationship. All the independent variables are not only statistically significant but are also theoretically sound. Social ceremonies appear to be the strongest determinant of non-institutional debt. This is somewhat in keeping with the all-India pattern. The reason is rather clear as no institutional loans are given for such purposes though the social system compels the rural people whether in Nagaland or in any other part of the country to spend on such occasions. This is followed by debt for consumption expenditure which in our case explains thirty percent of the debt incurred from non-institutional sources. Therefore though family members may not directly be a factor determining debt from such sources, its strength is indirectly captured by consumption expenditure which increases along with an increase in family size. Repayment of earlier debt which is a perennial problem under Indian situation also explains twenty-six percent of the debt. It is therefore evident that this model can be accepted for our purpose of explaining non-institutional debt. It was found from the study that about 48 per cent of total loans were used together for consumption expenditure, social ceremonies and repayment of earlier debt.

The model indicates that though non-institutional sources has lesser share in the total debt taken by rural households in the state, most of the important expenditures such as domestic consumption expenditure, expenditure for marriage and other social ceremonies and repayment of earlier debt are met generally by non-institutional sources only. This is because
households find it very convenient to take loans from relatives and friends, *marwaris* /traders etc at easy terms and quickly. Moreover, institutional sources do not provide loans for any of these purposes. But using loans for paying back the earlier debts and meeting the expenditures of marriage and other social ceremonies and for domestic consumption is not desirable irrespective of the source from where it has been taken.

Model (15) below uses capital and current expenditure in agriculture and education as explanatory variables to see if rural households in Nagaland avail loans for these purposes from non-institutional sources. Here, education does not refer to educational level or literacy rate but means loans that households have taken for spending on their children's education. Expenditure for education purpose is taken as productive expenditure in the present study.

\[ D_{ni} = a + bAg + cEd \]  

Where,

- \( D_{ni} \) = Debt from Non-Institutional sources
- \( Ag \) = Capital & current expenditure in agriculture
- \( Ed \) = Expenditure on education

The results of the estimated equation is as follows

\[ D_{ni} = 0.207 - 0.070Ag + 0.773Ed \]

\( t = (1.182) \quad (-0.105) \quad (2.164) \)

\( R^2 = 0.507 \)

\( F = 2.570 \)

The coefficient of multiple determination \( (R^2) \) in this model is 0.507 and is also significant as indicated by the value of \( F \). The coefficient for education spending is significant and statistically sound as well. This is a healthy trend as it would help in the long run in increasing the efficiency and skill of farmers and thereby increase productivity and agricultural output. It
has been observed that in Nagaland, people spend a significant amount for the purpose of providing good education to their children. Most of the Naga youth come from villages to towns in the state for higher education and then move to other better destinations like Delhi, Pune and Bangalore. Most of the required money is met from non-institutional sources, mainly from relatives and friends. Many of the farmers interviewed were not aware of educational loans that are now amply available from institutional sources. Moreover, only large farmers and households belonging to 'other' category could avail loans from institutional sources. They have required collateral to pledge for availing loans from institutional sources. Households, majority of whom are not literate and economically poor go for easy and quick mode i.e., non-institutional sources.

A composite model can be acceptable only when all the variables taken together explain satisfactorily the behavior of the dependent variable. We therefore incorporate some more independent variables that we have identified from our earlier discussion and incorporate them in the next model. One such variable is the debt incurred for the purpose of repayment of earlier debt which is another form of unproductive debt.

\[ D_{\text{NI}} = a + b\text{Conspn} + c\text{Mrg} + d\text{Rypmt} + e\text{Ed} \] (16)

Where,

- \( D_{\text{NI}} \) = Debt from Non-Institutional sources
- Conspn = Consumption expenditure
- Mrg = Marriage & other ceremonies
- Rypmt = Repayment of earlier debt
- Ed = Expenditure on education

The results of the estimated equation is as follows

\[ D_{\text{NI}} = -47.199 + 0.441\text{Conspn} + 0.780\text{Mrg} + 3.826\text{Rypmt} + 2.842\text{Ed} \]
In this model, the coefficient of multiple determination ($R^2$) is as high as 0.947 indicating that the model explains ninety four percent of the relationship along with high value of F. The model therefore can be accepted. All the independent variables are statistically significant and theoretically sound. This model explains satisfactorily the relationship of the various explanatory variables and non-institutional debt in the state. It clearly shows that non-institutional debt in the state are mostly used for non-productive purposes such as domestic consumption, marriage and other social ceremonies, and repayment of earlier debt. Only good use to which money has been put is spending for education by the rural households. In case of non-institutional debt, repayment is better as compared to institutional debt. This is probably because of minimal chance of evading payment to these sources. In institutional debt, people get concessions and subsidy which lure them to borrow more and not return the same back. Education as stated earlier also depicts a good relationship with the dependent variable. It shows that people spend a good part of their borrowed money for this purpose. Out of 38 per cent of productive spending of loan amount (taken from both institutional and non-institutional sources), about 12 per cent goes for education purpose. The model therefore substantiates our earlier findings.

5.2.3 DEBT FROM INSTITUTIONAL SOURCES

Another important source of credit is institutional source, such as banks, government, NGO’s etc, which provide a major part of the rural credit in India. This source is gaining ground recently due to extensive measures taken by the government to encourage rural credit delivery by institutional sources.

We therefore examined the major determinants of the institutional debt and studied whether they are similar to that of the non-institutional debt or they are characterized by different set
of determinants. We adopted the following models mentioned below. The first model tries to find the relationship between family size and debt from institutional sources.

\[ D_{\text{Inst}} = a + bFm \]  

(17)

Where,

\[ D_{\text{Inst}} \] = Debt from Institutional sources
\[ Fm \] = Family size

The results of the estimated equation is as follows

\[ D_{\text{Inst}} = -0.299 + 0.293Fm \]
\[ t = (-0.756) \quad (1.435) \]
\[ R^2 = 0.086 \]
\[ F = 2.060 \]

The coefficient of multiple determination \((R^2)\) in this model is 0.086 implying poor explanatory power of the variable. Therefore though the sign of the independent variable is theoretically satisfactory yet the model cannot be accepted for our purpose.

The next model uses family size and income of the household together to examine their strength as determinants of institutional debt.

\[ D_{\text{Inst}} = a + bFm + cIn \]  

(18)

Where,

\[ D_{\text{Inst}} \] = Debt from Institutional sources
\[ Fm \] = Family size
\[ In \] = Income of the household
The results of the estimated equation is as follows

\[ D_{\text{Inst}} = -0.485 + 0.288Fm + 0.398In \]
\[ t = (-1.281) \quad (1.518) \quad (2.098) \]
\[ R^2 = 0.244 \]
\[ F = 3.391 \]

The coefficient of multiple determination \((R^2)\) in this model is 0.244. Explanatory variables viz., family size and income of the family are positive and statistically significant. As family size increases debt also increases. When the members in the family increase, expenditure also increases. It is found that rural households in Nagaland are dependent more on institutional sources than on non-institutional sources. One of the reasons for this could be almost insignificant presence of professional moneylenders in the state. Moreover, people here are subsidy oriented and always seek subsidy and they are not interested in paying back the outstanding loan amount. Repayment culture is yet to be developed. In such situations, institutional sources are preferable to non-institutional sources where there is much scope for non repayment of loan amount due to their soft attitude in regard to payment compliance. It has been observed that many of the borrowers did not pay loans in time and in due course a very small lump sum amount is demanded back by the banks and other institutional sources as a part of their recovery process. In case this amount is also not recovered, then there is no resort but to fully wave off the debt. Thus for banks it becomes a non-performing asset, but for the debtors an easy source of finance.

It was found in the present study that only 7 per cent of total loans have been used for repayment purpose. Only about 38 per cent of loans have been utilized for productive purposes and rest went for non-productive uses. Of this, only about 15 per cent was used for agricultural purposes. Thus in such situations, new income seldom generate which may be used for repaying the loans.
When income of a household rises, his standard of living also improves and the household is now in better position as regards to repayment of loans. Higher income levels increases households' repayment capacity. Households borrow more at the present condition as also evident from the positive relationship between income and institutional debt. Higher income levels provide sound financial standing and assured security for institutional loans. In such a situation, households whose income rise tends to avail more loans thinking that repayment is not a problem now. He is in a much better position to put up collateral: from the point of view of banks, they are good credit risks (Raj Ray, 2000). Darling's study in 1930 in Punjab also brought out the fact that if prosperity has increased in the state, so also the debt. The main factor according to him, in the increase in debt in Punjab peasantry was the expansion of credit which followed the rise in the value of land.

The model-19 below shows the relationship among literacy rate, family size and income of the family with debt from institutional sources. These are the important determinants which may influence debt of a household significantly. As already stated literacy rate of the head of the family largely determines the extent of loan taken by a household. Generally it is common that persons with higher level of education tend to borrow more from institutional sources as compared to the people with lower level of education. Thus, institutional debt and literacy rate have direct relationship. When the numbers of family members increase, debt of the household also rises, irrespective of the source of debt. This is because of rise in domestic expenditure and hence additional financial burden on the family. Income levels also influence debt of a family. At higher levels of income, debt from institutional sources tends to rise and vice versa. The reason is that now the financial position of the household is better than the earlier situation and as a result of increase in income, a household is able to pledge security easily. Moreover, repaying capacity of the household also rises. Let us see if these factors had affected extent of debt in the state.

\[ D_{\text{Inst}} = a + b\text{Lit} + c\text{Fm} + d\text{In} \]  

(19)
Where,

\[ D_{\text{inst}} = \text{Debt from Institutional sources} \]
\[ \text{Lit} = \text{Literacy rate of the head of the household} \]
\[ Fm = \text{Family size} \]
\[ In = \text{Income of the household} \]

The results of the estimated equation is as follows

\[ D_{\text{inst}} = -0.5286 + 0.079\text{Lit} + 0.300Fm + 0.404In \]
\[ t = (-1.316) \quad (0.400) \quad (2.532) \quad (2.08) \]
\[ R^2 = 0.250 \]
\[ F = 2.233 \]

The coefficient of multiple determination \( (R^2) \) in this model is 0.250 reflecting very weak explanatory power of the variable. Therefore, inspite of the statistical significance of the coefficient of the independent variables, the model cannot be accepted for our purpose.

It needs to be mentioned in this connection that the factors that we have selected such as literacy rate, family size, and family income are the ones that help in moulding the attitude towards debt and may thus have no direct and immediate bearing on the source of borrowing. However, their indirect influence in incurring debt cannot be denied. The factors mentioned above therefore though may not have direct influence does have indirect influence in determining the extent of borrowing whether it be from institutional or non-institutional sources.

The models (20) to (29) use those factors which are related to purpose of debt. We have tried to find if these factors are significant enough to explain debt burden in the state, either independently or in association with other factors. Model (20) tries to see relationship between institutional debt and consumption expenditure incurred by rural households in the state.
\[ D_{\text{inst}} = a + b \text{Conspn} \]  

(20)

Where,

\[ D_{\text{inst}} = \text{Debt from Institutional sources} \]

\[ \text{Conspn} = \text{Consumption expenditure} \]

The results of the estimated equation is as follows

\[ D_{\text{inst}} = 82.63 + 1.769 \text{Conspn} \]

\[ t = (0.496) \quad (1.821) \]

\[ R^2 = 0.269 \]

\[ F = 3.317 \]

In this model, the coefficient of multiple determination \((R^2)\) is 0.269 and also the low value for \(F\) indicates poor functional relationship of the model. As expected the statistical insignificance of the coefficient of the independent variable compels us to reject this model for explaining the debt burden in Nagaland. This is because institutional loans are not granted to meet the day to day consumption expenditure.

We have also included repayment of earlier debt as an important factor to explain indebtedness and tried to test if it is significant in explaining debt burden in the state.

\[ D_{\text{inst}} = a + b \text{Rypmt} \]  

(21)

Where,

\[ D_{\text{inst}} = \text{Debt from Institutional sources} \]

\[ \text{Rypmt} = \text{Repayment of earlier debt} \]

The results of the estimated equation is as follows

\[ D_{\text{inst}} = 268.132 - 0.359 \text{Rypmt} \]
In this model, the coefficient of multiple determination ($R^2$) is 0.001 and value for F is 0.013. The low values show very poor functional relationship of the model. The statistical insignificance of the coefficient of the independent variable does not explain the debt burden in Nagaland. Therefore the model is not accepted.

The most important purpose of institutional source of borrowing is for productive purposes, particularly agricultural purposes since farmers constitute the bulk of our sample size. The next model is therefore as follows:

$$D_{\text{Inst}} = a + bAg$$

Where,

$$D_{\text{Inst}} = \text{Debt from Institutional sources}$$
$$Ag = \text{Current & capital expenditure in agriculture}$$

The results of the estimated equation is as follows

$$D_{\text{Inst}} = 239.057 + 1.450Ag$$
$$t = (1.371) (0.957)$$
$$R^2 = 0.116$$
$$F = 0.917$$

The poor coefficient of multiple determination ($R^2$) along with low value for F indicates poor functional relationship of this model. The coefficient of the independent variable is also statistically not significant. Thus, the model cannot be accepted. Cultivators in the state
have not used the borrowed amount for the development of their farms. Of 38 per cent of the amount used for productive purpose, only 15 per cent was used for agricultural purpose. Rather it was found that nowadays people are more interested in spending on non-farm business where profits are higher and gestation period is also less. We have found that more and more people, particularly the women section of the society, is coming up with petty shops nearby villages to add to the family’s income. It is a clear indication of the diversion of loans from agricultural use to non-agricultural use.

Since education is an important determinant of non-institutional debt, we wanted to equally determine borrowing from institutional sources and examine whether it explains institutional debt in the state. Therefore the model below uses expenditure on education as an explanatory variable to explain its significance in influencing total debt in the state.

\[ D_{\text{inst}} = a + bEd \quad (23) \]

Where,

- \( D_{\text{inst}} \) = Debt from Institutional sources
- \( Ed \) = Expenditure on education

The results of the estimated equation is as follows

\[ D_{\text{inst}} = 133.75 + 2.061Ed \]

\[ t = (1.70) \quad (2.215) \]

\( R^2 = 0.353 \)

\( F = 4.904 \)

Though the model explains only thirty five per cent of the relationship among the dependent and independent variable as the coefficient of multiple determination \( (R^2) \) is 0.353, yet the explanatory variable is statistically significant to explain the debt burden in the state. This model can be accepted. As seen earlier households spend much of their income for education
purpose. As such they take loans for meeting this purpose. Nowadays, educational loans are also available for higher studies. But in rural areas in the state, we find that people are not aware of such loans and as such they take institutional loans for some other purpose and spend that on education. However, this is rather a productive use of loan money as it will help to increase efficiency and skill in the long run. Generally, rural workers are unskilled and because of this they are low paid. So, the positive relationship between the explanatory variable and dependent variable in the present model well explains the debt burden in the state.

The next model includes expenditure on marriage and other social ceremonies, which is an important determinant of debt burden.

\[ D_{\text{Inst}} = a + b \text{Mrg} \]  

Where,

- \( D_{\text{Inst}} \) = Debt from Institutional sources
- \( Mrg \) = Marriage & other ceremonies

The results of the estimated equation is as follows

\[ D_{\text{Inst}} = 25.35 + 3.787 \text{Mrg} \]

- \( t = (0.274) \) (3.985)
- \( R^2 = 0.665 \)
- \( F = 15.188 \)

The coefficient of multiple determinations \((R^2)\) in this model is 0.665 which means that the model explains sixty seven percent of the relationship between the institutional debt and expenditure on marriage and other social ceremonies. The independent variables are also statistically significant. The model is accepted for explaining the debt burden in the state. People in Nagaland who have more or less good income source spend much on celebrations
of all kind. Though there are a number of occasions when people are engaged in merriment, but during Christmas all are in high spirit. People during this time do not compromise and spend at their most even by borrowing from different sources including institutional sources.

Among the poverty stricken people expenses to meet medical expenditure constitute an important source of debt since medical expenses are hardly compromised by anybody. In an attempt to examine its relative weightage of such expenses in Naga society the next model that we adopt is as follows.

\[ D_{\text{Inst}} = a + b \text{Med} \]  

(25)

Where,

\[ D_{\text{Inst}} \] = Debt from Institutional sources

\[ \text{Med} \] = Expenditure on medical

The results of the estimated equation is as follows

\[ D_{\text{Inst}} = 26.497 + 1.304 \text{Med} \]

\[ t = (3.108) \quad (3.098) \]

\[ R^2 = 0.578 \]

\[ F = 9.599 \]

In this model, the coefficient of multiple determination \( (R^2) \) is 0.578 which indicates that the model explains fifty eight percent of the relationship. The independent variable is also statistically significant. This model can therefore be accepted for our purpose. It was found that quite a good amount of loan money is used for medical purposes by the people in the state like the people of other states. About 14 per cent of loan amount goes in this direction which is the second highest after domestic consumption expenditure. Major disease/ailment patterns seen among the population of the region are gastroenterology-based conditions,
water-borne diseases, typhoid, diarrhea, jaundice, worm infestations etc. The prevalence of infectious diseases is not only high but the increasing incidence of lifestyle-related systemic diseases contributes to creation of double burden of disease. As per the Department of Health and Family Welfare, Government of Nagaland (2002), the prevalence of infectious diseases is significantly higher in Nagaland than in the rest of India. Infectious diseases are closely linked to sanitation and water facilities. According to the National Family Health Survey of India (1998–99), only 24.8 percent of the households in Nagaland have flush toilets and 49.5 percent have pit toilets. Nearly one-fourth of the population has no sanitation facility. Non-communicable diseases have increased in the last two decades with diabetes, hypertension, cancer and coronary heart diseases leading the group. AIDS has attained epidemic proportions. Nagaland is one of the six high (AIDS) prevalent states in the country with a prevalence rate of over 1.25 percent. The epidemic has spread across all districts of Nagaland, with Tuensang, Kohima and Dimapur being the most affected. Mortality and morbidity due to these factors continue to cause concern to the health authorities and the philanthropic organizations operating in the region. The second National Family Health Survey (1998-99) examined certain aspects of people’s lifestyle, which can have detrimental effects on health. Though the results need to be interpreted with caution due to the possibility of under-reporting, they show wide prevalence of use of paan masala, tobacco and alcohol in the State. Fifty percent of men and 27 percent of women reported that they smoked, 27 percent men and 15 percent women used alcoholic drinks, and 45 percent men and 31 percent women chewed paan masala/tobacco (NHDR, 2004). The consumption of these injurious products is not only common among middle-aged adults but also among younger section of the populace. It is therefore clear that people need to spend much towards medical bills and for this poor households have to borrow money from different sources. It is quite obvious that institutional loans are not available for this use and loans that are availed for farm development is diverted towards this direction. As a result, loans accumulated remains un-serviced along with interests which makes households more poor and indebted.

In view of the non acceptance of most of the explanatory variables for explaining the emergence of debt we next use some other factors in combination such as consumption
expenditure, expenditure for marriage, medical expenses and repayment of debt in the subsequent models. The models therefore attempt to find the relative strength of the various factors such as consumption expenditure, expenditure on marriage & other ceremonies and expenditure for medical, expenditure on education, expenditure on agriculture and repayment of earlier debt as the determinants of debt from institutional sources.

In the next model we have used both expenditure on medical expenses and social ceremonies in the same model since both these variables appeared to be significant determinants of institutional debts taken individually.

\[ D_{inst} = a + b_{Med} + c_{Mrg} \]  

Where,

- \( D_{inst} \) = Debt from Institutional sources
- \( Med \) = Expenditure on medical
- \( Mrg \) = Marriage & other ceremonies

The results of the estimated equation is as follows

\[ D_{inst} = 8402.044 - 0.351Med + 4.319Mrg \]

\[ t = (0.410) \quad (2.158) \quad (2.799) \]

\[ R^2 = 0.683 \]

\[ F = 4.308 \]

The explanatory power of the model improves in comparison to the earlier models though marginally. The model explains sixty eight per cent of the relationship among the dependent and independent variables as the coefficient of multiple determination \((R^2)\) is 0.683. The explanatory variables are also statistically significant.
Model (27) attempts to examine the extent of debt from institutional sources used for education purpose and expenditure on agriculture by the rural households in the state.

\[ D_{\text{inst}} = a + bAg + cEd \]  

Where,
\[
\begin{align*}
D_{\text{inst}} &= \text{Debt from Institutional sources} \\
Ag &= \text{Capital & current expenditure in agriculture} \\
Ed &= \text{Expenditure on education}
\end{align*}
\]

The results of the estimated equation is as follows

\[ D_{\text{inst}} = 0.1667 - 0.109\text{Ag} + 0.728\text{Ed} \]

\[ t = (-0.149) \quad (0.996) \]

\[ R^2 = 0.402 \]

\[ F = 2.680 \]

The coefficient of multiple determination (\(R^2\)) in this model improves considerably and stands at 0.402 and it is statistically significant also. However, statistical insignificance of the explanatory variables compels us to reject this model as well.

The model shows that households did not use institutional loans for agricultural purpose. Though loans have been availed for productive uses, but farmers utilized loan money in the non-productive direction. The value of coefficient of education indicates that with 1 per cent increase in the expenditure on education by a family, debt from institutional sources increased by 0.72 per cent. This is a good indication and explains that non-institutional sources (Model 12) have much bearing on debt used for educational purpose. As stated earlier, people in Nagaland spend quite a good amount for the purpose of childrens’ education. Though non-institutional sources, mainly relatives and friends are very popular for taking
loans for this purpose, institutional sources are also used for education. However, only large farmers and households belonging to ‘Other’ category could avail loans from institutional sources because of their better financial standing and good knowledge about banking facilities available in the state.

Another model with following variables has been used to explain the debt burden in the state.

\[
D_{\text{inst}} = a + b\text{Conspn} + c\text{Mrg} + d\text{Med} + e\text{Rypmt} \quad \ldots \quad (28)
\]

Where,

\[D_{\text{inst}} = \text{Debt from Institutional sources}\]
\[\text{Conspn} = \text{Consumption expenditure}\]
\[\text{Mrg} = \text{Marriage & other ceremonies}\]
\[\text{Med} = \text{Expenditure on Medical}\]
\[\text{Rypmt} = \text{Repayment of earlier debt}\]

The results of the estimated equation is as follows

\[
D_{\text{inst}} = 0.339 - 0.510\text{Conspn} + 2.014\text{Mrg} - 1.621\text{Med} - 0.167\text{Rypmt}
\]

\[t = (0.676) (-0.170) (0.659) (-0.573) (-0.082)\]

\[R^2 = 0.624\]
\[F = 3.415\]

The coefficient of multiple determination (\(R^2\)) in this model is 0.624 yet the model cannot be accepted in view of the statistical insignificance of the independent variables.

In the final model we include all the variables in a single equation of the following type.
\[ D_{\text{Inst}} = a + b\text{Med} + c\text{Mrg} + d\text{Conspn} + e\text{Rypmt} + f\text{Ed} \] (29)

Where,

\[ D_{\text{Inst}} = \text{Debt from Institutional sources} \]
\[ \text{Conspn} = \text{Consumption expenditure} \]
\[ \text{Mrg} = \text{Marriage \& other ceremonies} \]
\[ \text{Rypmt} = \text{Repayment of earlier debt} \]
\[ \text{Ed} = \text{Expenditure on education} \]
\[ \text{Med} = \text{Expenditure on medical} \]

The results of the estimated equation is as follows

\[ D_{\text{Inst}} = 3399.13 -10.565\text{Med} + 15.176\text{Mrg} -2.69\text{Conspn} -1.567\text{Rypmt} + 0.325\text{Ed} \]

\[ t = (0.676) \quad (-0.573) \quad (0.659) \quad (0.170) \quad (-0.082) \quad (0.362) \]

\[ R^2 = 0.624 \]
\[ F = 0.415 \]

In this model, though the coefficient of multiple determination \((R^2)\) is 0.624, the low value for \(F\) indicates poor significance of the relationship. All the coefficients of the independent variables are statistically insignificant and most of them have also changed their signs too. This indicates the presence of multicollinearity which is not surprising in such socio economic variables. However, we cannot accept the model for our purpose.

On the basis of the above analysis we have accepted some models for the purpose of our study. We can accept model-12 which explains forty four percent of the relationship and the independent variable is also statistically significant. In model-14, all the independent variables are statistically significant and theoretically sound. Therefore it can be accepted for explaining the debt burden in the state. With improvement in coefficient of multiple determination \((R^2)\) in the model-15 along with statistically significant independent variable,
we accept the model. In model-16, the coefficient of multiple determination ($R^2$) is quite high explaining ninety four percent of the relationship along with high value of $F$ and also all variables are statistically significant and theoretically sound; we therefore, accept this model. On similar ground, we accept the model-18. Model -23 however, has 0.353 as the coefficient of multiple determination ($R^2$) but statistically significance of explanatory variable makes us to accept the model for explaining the debt burden in the state. In model-24 the independent variables are statistically significant and thus, it is accepted for explaining the debt burden in the state. Similarly we accept model-25 for our purpose. Model-26 explains sixty eight per cent of the relationship among the dependent and independent variables as the coefficient of multiple determination ($R^2$) is 0.683. The explanatory variables are also statistically significant. This model is also accepted for our analysis.
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