Comparative Analysis of Prosperity and Indebtedness among Farmers in Punjab: A case study of Highly Developed and Least Developed Districts

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Abstract

Indebtedness among farmers is a regional phenomenon. Poverty and prosperity both in one way or the other are responsible for the debt situation of farmers in Punjab. For this analysis, on the basis of taxonomic methodology, a highly developed district i.e district SBS Nagar and least developed district i.e. district Gurdaspur has been chosen for the survey. A proportionate random sampling has been done on the basis of agricultural census 2004-05. The prosperity level of a farmer is judged on the basis of land he owns. A strong positive relationship has been found between prosperity and debt situation of farmers. Data reveals that marginal and small farmers are heavily burdened in district Gurdaspur as compare to district SBS Nagar. While for other categories of farmers burden of debt is more on farmers of SBS Nagar. In case of incidence of debt, it is higher for semi-medium, medium and large farmers of district Gurdaspur and for marginal and small farmers higher incidence is observed in district SBS Nagar in comparison with district Gurdaspur.

Keywords: indebtedness, prosperity, highly developed, least developed etc

Introduction

Agricultural development is important for the economic stability and growth. It contributes significantly to export earnings and is an important source of raw materials for many industries. Its revival is being taken on precedence through various interventions at different levels, because of its potential in reducing poverty and food insecurity. The global experience of growth and poverty reduction shows that GDP growth originating in agriculture is at least twice as effective in reducing poverty as GDP growth originating outside agriculture. Agriculture is and will continue to be the engine of growth and development. The Commission on Farmers Welfare stated that agriculture in India has been in an advanced stage of crisis. The most extreme manifestation of the crisis is in the fatal path adopted by farmers in different parts of the country. This brings out that something is terribly wrong in the countryside.

As crisis is deep rooted and its engulfing peasant towards poverty so, it’s posing a threat to prosperity of the individual, of the state and of the nation as well. The share of institutional credit, which was little over 7 per cent in 1951, increased manifold to over 68 per cent in 2010, reflecting a remarkable decline in the share of non institutional credit from around 93 per cent to about 30 per cent during the same period. On the other hand, the latest NSSO survey reveals that the share of non-institutional credit has taken a reverse swing which is a cause of concern and it gave rise to indebtedness among farmers. As we all know, demand for credit cannot be delinked from production. If we want to increase production then availability of credit is the necessary and
basic condition of it. Thus, it should be recognized that borrowing is not a sign of weakness, but an important need of the cultivator to meet his expense and it is only if his repaying capacity is exhausted then he should be called indebted, or in debt trap.

Importance of study

Economic development is necessary for developing and under developed countries because it can solve the problems of general poverty, unemployment, backwardness and low standard of living through it. So every economy always tries to achieve the goal of economic development. After Green Revolution consumption level in rural area, particularly among farmers increased considerably. Cost of cultivation under HYV agriculture continued to increase while productivity per hectare stagnated in case of major crops, as a result the majority of cultivators are cash strapped. In addition to it, financial position of rural families is upset either due to crop failure or sudden increase in consumption expenditure on social ceremonies such as marriage, birth or death. This is reflected in huge debt burden on farmers. The high debt burden on small and marginal farmers has destroyed many and they have had to either sell or mortgage their land. This has ultimately triggered instances of suicide by many farmers. Thus, we intend to study indebtedness which is one of the causes of distress situation of farmers in Punjab state. This humble effort has been made to bring forefront the situation of farmers in both developed and least developed district by making comparison of these two districts and to check the association of prosperity and debt in both the districts.

Objectives

1) How far incidence and burden of debt has changed overtime
2) To find the relationship between prosperity and debt situation of farmers.

Hypotheses

1) Small and marginal farmers are heavily burdened by debt as compare to other categories of farmers.
2) There is a positive relationship between farm size and debt. Thus, as the land size increases farm debt also increases.

Data Sources and Research Methodology

Quantitative indicators are essential for identification of points of departure for more intensive qualitative investigations. The Agriculture Development Index is a statistical tool designed to measure the level of development of agriculture across different regional entities. And the composite development index formulated with the help of agricultural indicators and rural development indicators gives us the level of development of each district. In the present study, method of taxonomy has been applied to study the level of development of 20 districts of
Punjab by making use of the following indicators which are directly related to agriculture and rural development. These are as follows:

1. Equality of holdings among different farm categories
2. Ratio of Net Sown Area per Gross Cropped Area
3. Cropping Intensity
4. Ratio of Net Irrigated Area to Net Sown Area
5. Number of Tube wells per 1000 hec
6. Gross Irrigated Area per Gross Cropped Area
7. Number of Tractors per 1000 hec
8. Fertilizer (NPK) Consumption per unit of Gross Cropped Area
9. Per Capita electricity consumption in agriculture sector
10. Number of Commercial Banks per lakh of population
11. Member of Co-operative Societies per 1000 of population
12. Literacy Rate
13. Number of Medical Institutions per lakh of population
14. Number of Veterinary Hospitals per thousand of livestock
15. Number of Beds per lakh of population
16. Percentage of Area under non food crops out of Total (GCA)
17. Number of Post offices per lakh of population
18. Percentage of villages linked with roads

All the above indicators are chosen in such a way as to cover all the major aspects of agricultural and rural development. The DDI is a composite index assembled from 18 variables related to 13 different indicators, which cover a wide range of issues such as land use pattern, natural resources, infrastructure, equality of land holdings etc. The relationship amongst the variables has been studied taking into account their measurability and coverage.

Several attempts have been made to develop better indices to macro-economic variables. Bennet (1951) constructed the index of development to focus attention on international disparities. Adelman et al (1967) refined Bennet’s analysis by incorporating additional variables. Dasgupta (1971) considered some of the indicators for classifying the various districts of India on a ranking basis and used discriminant analysis. Rao (1973) used a multivariate factor analysis approach for measuring economic distance between the states in India. Although these indices vary in their method of construction and scope, some of them enable us only to compare the levels of development of different regions. The taxonomic method enables us to construct such an index.
Taxonomic Methodology

The taxonomic method, which was designed by a group of Polish mathematicians in 1952, enables the determination of homogeneous units in an n-dimensional space without having to employ statistical tools such as regression and variance. It was recommended in 1968 to the United Nation’s Educational Scientific and Cultural Organization (U.N.E.S.C.O) as a tool for ranking, classifying and comparing countries by levels of development. More recently, the method has been applied successfully to measure the levels of development of developing and developed countries. This method is chosen because it is suited for ranking, comparing and classifying regions of a country by levels of development, standard of living, status or any other such aspect. Also an excellent thing about this method is that it is free from choice of weights as weights are built within the system itself. Briefly stated, the steps involved in this method are given below:

Step 1. The data of ‘n’ regions for ‘m’ variables is represented as a matrix of order n x m. Xij, where i=1, 2...n and j=1, 2...m:

\[
\begin{bmatrix}
X_{11} & X_{12} & \cdots & X_{1m} \\
X_{21} & X_{22} & \cdots & X_{2m} \\
\vdots & \vdots & \ddots & \vdots \\
X_{n1} & X_{n2} & \cdots & X_{nm}
\end{bmatrix}
\]

Step 2. The elements of Xij are standardized using the formula

\[
s_j = \frac{(X_{ij} - \bar{X}_j)}{SD}
\]

To give the standardized data matrix, i=1,2,...,n, j=2,...,m. The standardized value can be represented as

\[
\begin{bmatrix}
z_{11} & z_{12} & \cdots & z_{1m} \\
z_{21} & z_{22} & \cdots & z_{2m} \\
\vdots & \vdots & \ddots & \vdots \\
z_{n1} & z_{n2} & \cdots & z_{nm}
\end{bmatrix}
\]

Distance Matrix: The elements of Dij of the distance matrix are defined as

\[
D_{ij} = \sqrt{\sum_{k=1}^{m} (z_{ik} - z_{jk})^2}
\]

Where Di=0 and Dij = Dji.

Dij is the square root of the sum of squares of the elements of jth row to the corresponding elements of the jth row. The matrix is given by
In each row there will be one point with the shortest or minimum distance \( (C_i) \) at the corresponding point with row, that is

\[
C_i = \min(D_{ij}) \quad \text{And} \quad C_i \neq 0
\]

**Step 3.** The pattern of the development is obtained by following formula

\[
C_{i0} = \frac{1}{m} \sum_{k=1}^{m} (z_{ik} - z_{0k})^2
\]

Where \( C_{i0} \) denotes pattern of development \( (i=1, 2 \ldots n) \) and \( z_{0k} \) is the highest or the best-standardized value.

**Step 4.** The measure of development is given by \( 1-D_i \), Where \( D_i = C_{i0}/C_0 \)

\[
\begin{align*}
C_0 & = \frac{1}{n} \sum_{i,j} C_{ij} \\
\frac{1}{n} & = \sum_{i,j} \frac{C_{ij}}{n} \\
S_{0} & = \sqrt{\frac{\sum (C_{i0} - C_0)^2}{n}}
\end{align*}
\]

As the measure of development is always non-negative & lies between 0 & 1. The closer the measure of development to “1”, the more developed is the region and the closer to “0”, the less developed is the region. The above mathematical representation of the taxonomic method may be explained as follows:

As we applied Taxonomic Methodology so problem of weight age to the variables have been resolved automatically. The selection of the variables is based on relevance, extensive literature review, availability and reliability of data, their measurability and relevance to the phenomenon observed. The relationship amongst the variables has been studied taking into account their measurability and coverage. In the process of selection, correlation and sensitivity analyses have been used. The Composite Development Index in respect of the areas and districts in Punjab are appended. As the latest data at block level was available for the year 2008-09, so the results are based on the values of these variables for the year 2008-09.
Table 1: Composite Development Index

<table>
<thead>
<tr>
<th>Districts</th>
<th>Index Value</th>
<th>Rank</th>
<th>Stage of Development</th>
<th>District</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAJHA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gurdaspur</td>
<td>0.00421</td>
<td>20</td>
<td>Highly Developed</td>
<td>SBS Nagar</td>
</tr>
<tr>
<td>Amritsar</td>
<td>0.249792</td>
<td>7</td>
<td></td>
<td>Kapurthala</td>
</tr>
<tr>
<td>Tarantaran</td>
<td>0.179793</td>
<td>15</td>
<td></td>
<td>Ludhiana</td>
</tr>
<tr>
<td>DOABA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kapurthala</td>
<td>0.431838</td>
<td>2</td>
<td></td>
<td>Moga</td>
</tr>
<tr>
<td>Jalandhar</td>
<td>0.430281</td>
<td>3</td>
<td>Developed</td>
<td>Fatehab Sahib</td>
</tr>
<tr>
<td>SBS Nagar</td>
<td>0.537254</td>
<td>1</td>
<td></td>
<td>Amritsar</td>
</tr>
<tr>
<td>Hoshiarpur</td>
<td>0.245702</td>
<td>8</td>
<td></td>
<td>Hoshiarpur</td>
</tr>
<tr>
<td>MALWA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rupnagar</td>
<td>0.230687</td>
<td>12</td>
<td></td>
<td>Faridkot</td>
</tr>
<tr>
<td>SAS Nagar</td>
<td>0.111913</td>
<td>19</td>
<td>Developing</td>
<td>Sangrur</td>
</tr>
<tr>
<td>Ludhiana</td>
<td>0.292116</td>
<td>4</td>
<td></td>
<td>Bathinda</td>
</tr>
<tr>
<td>Firozpur</td>
<td>0.14094</td>
<td>17</td>
<td></td>
<td>Rupnagar</td>
</tr>
<tr>
<td>Faridkot</td>
<td>0.240248</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muktsar</td>
<td>0.142023</td>
<td>16</td>
<td></td>
<td>Patiala</td>
</tr>
<tr>
<td>Moga</td>
<td>0.279666</td>
<td>5</td>
<td>Backward</td>
<td>Barnala</td>
</tr>
<tr>
<td>Bathinda</td>
<td>0.231529</td>
<td>11</td>
<td></td>
<td>Tarantaran</td>
</tr>
<tr>
<td>Mansa</td>
<td>0.19098</td>
<td>18</td>
<td></td>
<td>Muktsar</td>
</tr>
<tr>
<td>Sangrur</td>
<td>0.235483</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patiala</td>
<td>0.226327</td>
<td>13</td>
<td></td>
<td>Firozpur</td>
</tr>
<tr>
<td>Fatehab Sahib</td>
<td>0.273495</td>
<td>6</td>
<td>Very Backward</td>
<td>Mansa</td>
</tr>
<tr>
<td>Barnala</td>
<td>0.223748</td>
<td>14</td>
<td></td>
<td>SBS Nagar</td>
</tr>
</tbody>
</table>

Source: Author’s own calculations

Thus, a highly developed district i.e. SBS Nagar and least developed district i.e Gurdaspur has been chosen on the basis of above calculated development index values.

Information about Surveyed Districts

Nawanshahr District is surrounded by four districts. The west border of the district touches Jalandhar, east border touches with RoopNagar (Ropar) district, the northern border of the district meets with district Hoshiarpur and in south it touches with Ludhiana (known as the Manchester of India) and Kapurthala District. Nawanshahr district, located in the eastern part of the Punjab State, forms a part of the Bist-Doab region. The landscape of Gurdaspur district has varied topography comprising the hilly tract and undulating plan. The district is divided into three parts by nature, i.e. sub- mountainous, kandi and plain. Gurdaspur is comparatively the least developed district among all the districts in Punjab. This is attributed to its dissected and undulating topography, small size of landholdings, and relative isolation of some of its parts.

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Analysis and Interpretation

Farm household according to farm size shows that incidence of debt is more on large farmers as compare to all other categories. Incidence of indebtedness is defined as percentage of households that are in debt. Table 2 clearly shows that as the land size increases incidence of debt also increases along with. But burden of debt is more on all those farmers who are having less than 10 acres of land especially marginal and small ones.

Table 2: Category wise proportion of indebted farm households

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Indebted</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marginal</td>
<td>76</td>
<td>42</td>
<td>55.26</td>
</tr>
<tr>
<td>Small</td>
<td>81</td>
<td>46</td>
<td>56.79</td>
</tr>
<tr>
<td>Semi-medium</td>
<td>84</td>
<td>60</td>
<td>71.43</td>
</tr>
<tr>
<td>Medium</td>
<td>57</td>
<td>50</td>
<td>87.72</td>
</tr>
<tr>
<td>Large</td>
<td>2</td>
<td>2</td>
<td>100.00</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>200</td>
<td></td>
</tr>
</tbody>
</table>

Source: Field Survey, 2012

The burden of debt increases with the increase in size of land holding. This proves our hypotheses that there is a positive relationship between land and debt. As more land gives them opportunity to take more loan against land and with the help of that they invest that money in productive purposes and increase their earnings so very efficiently and cautiously they invest their money and as a result it increases their prosperity levels. Table 3 clearly shows this relationship which is as follows:

Table 3: Category-wise average outstanding debt (₹)

<table>
<thead>
<tr>
<th>Farm Size</th>
<th>Average Debt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marginal</td>
<td>106891.55</td>
</tr>
<tr>
<td>Small</td>
<td>146976.04</td>
</tr>
<tr>
<td>Semi-medium</td>
<td>185847.25</td>
</tr>
<tr>
<td>Medium</td>
<td>381719.58</td>
</tr>
<tr>
<td>Large</td>
<td>636750.00</td>
</tr>
</tbody>
</table>

Source: Field Survey, 2012

Thus, data reveals that average debt on marginal farmers is estimated to be 106891.55 in case of small farmers its 146976.04, semi-medium amounts to 185847.25 averages debt of medium farmers is 381719.58 and the highest average debt is in the case of large farmer’s i.e. 636750.00. Thus a very strong relationship is there between size of land holding and burden of debt. In comparison between both the districts we observed that marginal and small farmers are heavily burdened in district Gurdaspur as compare to district SBS Nagar. While for other categories of farmer’s burden of debt is more on farmers of SBS Nagar. In case of incidence of
debt, it is higher in case of semi-medium, medium and large farmers of district Gurdaspur and for marginal and small farmer’s higher incidence observed in district SBS Nagar in comparison with district Gurdaspur.

Table 4: District-wise comparison of Average Debt (Category Wise) (*)

<table>
<thead>
<tr>
<th>SBS Nagar No. of Farmers Indebted</th>
<th>Total Debt</th>
<th>Average Debt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marginal</td>
<td>21</td>
<td>2070735</td>
</tr>
<tr>
<td>Small</td>
<td>24</td>
<td>2853903</td>
</tr>
<tr>
<td>Semi-medium</td>
<td>38</td>
<td>5654135</td>
</tr>
<tr>
<td>Medium</td>
<td>33</td>
<td>9554614</td>
</tr>
<tr>
<td>Large</td>
<td>1</td>
<td>963000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gurdaspur No. of Farmers Indebted</th>
<th>Total Debt</th>
<th>Average Debt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marginal</td>
<td>21</td>
<td>2418710</td>
</tr>
<tr>
<td>Small</td>
<td>22</td>
<td>3906995</td>
</tr>
<tr>
<td>Semi-medium</td>
<td>22</td>
<td>5496700</td>
</tr>
<tr>
<td>Medium</td>
<td>20</td>
<td>9531365</td>
</tr>
<tr>
<td>Large</td>
<td>1</td>
<td>310500</td>
</tr>
</tbody>
</table>

Source: Field Survey, 2012

Now, there is some pattern of relationship which we observed, clearly incidence of debt is higher in district SBS Nagar for all the categories. In opposite to it burden of debt is higher for all categories except large ones in district Gurdaspur. Thus, in some way or the other prosperity and poverty both are responsible for the indebtedness of a farmer. This shows that other than size of land holding the other characteristics of farm households also matters in determining the debt levels of farmers.

In district SBS Nagar out of all 150 sampled households 117 found to be indebted, it means 78% farmers in this district are indebted and the burden of debt is higher on medium farmers as compare to all other categories as they operated larger area as compare to all. And in case of district Gurdaspur 83 out of 150 sampled households found to be indebted, it means 53.33% of farmers are indebted. Thus incidence of debt is more in district SBS Nagar as compare to district Gurdaspur. If we see category-wise then 72.41% of marginal farmers, 68.57% of small farmers, 77.55% of semi-medium, 91.67% of medium and 100% of large farmers found to be indebted in SBS Nagar. In district Gurdaspur 44.68% of marginal, 47.83% of small, 62.86% of semi-medium, 80.95% of medium and 100% of large farmers estimated to be indebted. Thus, incidence of debt increases along with farm size. Incidence on each category of farmers is more in developed district as compare to the farmers of each category in least developed district. But burden of debt is more in case of least developed district as compare to the developed one. The reason behind this is that farmers in SBS Nagar takes that much loan which they can repay easily but in district Gurdaspur farmers take huge amount of money on credit and use it for other unproductive purposes. This is the main reason behind their heavy burden of debt and also in that area there is lack of information regarding credit facilities and sadly in one particular village (Got Pokhar) farmers don’t even know about cooperatives as there is no proper building of PACS in that village. The mill owner holds everything and exploits the farmers of that village. This situation needs to be controlled by the Government at soon as possible where ever this kind of situation prevails in the whole country.
Agro industrial development is one of the pre-requisites to bring back the prosperity levels of this particular state. In addition to it if this done then lot of opportunities will be open for the largest unemployed youth in Punjab in particular and in India in general. This will help in improving the living standards of the people as well.

Efficient and cheaper technology must be introduced so that even small and marginal category of farmers can avail the benefits of applying advanced technology on their fields. As technology can have a potential to increase yields of the farm and subsequently their incomes so it must be approachable and affordable to small and medium farmers as well so that they can have better incomes from agriculture even.

Additional benefits other than lower rate of interest must be there for those farmers who repay their debt on time.

Conclusion

Debt is allied to prosperity and poverty alike, while its existence is due to poverty, its volume is due to prosperity and the link between them is the money-lender, exploiting him when he is prosperous and enslaving him when he is poor. To be prosper is a skill and those having industrious traits are only out of debt. Punjab’s land is divided into small holdings and it doesn’t matters really whether farmer is holding small and large tracks of land for better living. Those who utilize their resources cautiously are only benefitted and farmers holding small proportion of land must have other sources for survival.

References


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