



# Processes of Diversification of Rural Economy— A Pioneer Approach Dealt for Doctoral Research on Kangra Farms

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**Abstract**— Thesis advocates rural diversification for solving the problems of rural unemployment, poverty, and hunger. The study was undertaken in Kangra valley of Himachal Pradesh. Two developed blocks form the developed category and two backward blocks form the backward category were selected on the basis of infrastructural as well as agrarian related variables for the study. Two stages stratified random sampling with stratification, on the basis of index of crop acreage diversification using Entropy index, at second stage was employed for the selection of villages and households. Both primary as well as secondary data was used in this study. Commensurate with the objectives of the study, data were analyzed using suitable statistical techniques. The results have shown that diversification of crops, measured by Herfindhal and Entropy indices, were higher in more-diversified farms. In the overall farm analysis, crop diversification is higher under developed agriculture than in backward agriculture whereas reverse is observed for income diversification. This clearly shows that income diversification is no guarantee for increasing total household income. The extent of income diversification is higher in less-diversified farms than in more-diversified farms of developed category. In contrast, diversification of income is higher in more-diversified farms of backward category. A pioneer work has been done to examine the impact of diversification on income, consumption and poverty. In this context, the household income was highly diversified in backward category but the level of total household income was significantly lower as compared to developed category, where low level of diversification is associated with high level of income, pointing towards the prevalence of distress diversification. So far as the relationship between the extent of diversification and poverty is concerned, there was systematic relation with crop diversification, but it was not found to be systematic with income diversification. The thesis has identified and analyzed the problem of rural diversification and suggested solution to accelerate the process of diversification in Kangra valley of Himachal Pradesh. Specifically, the policy should be that emphasis on diversification of rural economy shall yield no dividend unless efforts are made to improve the productivity of the existing resources and attending to problems like marketing, credit facilities and technical know-how.



**Keywords**— Rural diversification, Extent, diversification indices, More-diversified farms, Less-diversified farms, Determinants, Income, Consumption, Poverty, Constraints

## Preparatory work done before undertaking research work on thesis problem:

- I was intellectually involved on the problem of rural diversification during my MSc thesis and became well versed first with the Dimensions and Determinants of Diversification, second with the statistical tools to be used and finally with the

knowledge on the problem area, i.e. Kangra district.

- Involvement in seminars and discussions on the problem of rural diversification and critical study of the literature was the part of the preparatory work.
- Frequent visits and observations of the problems of rural areas of Kangra district during my stay at

Himachal Pradesh Agricultural University, Palampur had created a strong background to undertake research on the specified area.

Specifically, my preparation for research work was confined to regular academic courses of the university and my personal interest and efforts in studying the literature on rural diversification.

#### **When and how the research problem was identified:**

The problem of processes of diversification of rural economy was identified when I was stuck with an idea of researching the relationship between the magnitude of farm diversification and the level of household income, consumption and poverty. The idea came to my mind when I understood during my discussion with the farmers that there must be relationship between the diversification and income, consumption and poverty for diversification to be meaningful. Further analysis proved that there was lack of literature on this relationship. Then, I thought of researching deep into the problem of rural diversification.

#### **Brief description and objectives:**

Diversification of rural economy is considered essential for solving the problem of rural unemployment, poverty, and hunger. Not only that, in a backward agrarian economy, diversification of agriculture is also thought of as a strategy to minimize risk to cover crop failures where the immediate goal is not to make profits but to stabilize income for survival. Also, diversified agriculture is more resilient to unforeseen shocks and stresses and in the words Conway (1911) tends to be more enduring and sustainable. It is; therefore, no wonder that rural diversification has attracted the attention of scholars and policy makers in the recent past. The concept of diversification is interpreted differently by different scholars; it means shifting from subsistence farming to commercial farming to some and, to others it implies shift from low value food/ non-food crops to high value food/ non-food crops and still others it means switching over from local to high yielding varieties, the integration of animal husbandry, fisheries, horticulture, etc. The diversification of agriculture is considered essential to take advantage of complementary and supplementary relations and, as a result to reap the maximum returns. In addition, it is also required to maximize the resource use efficiency through multi-dimensional use of limited land, time, and use of output of one enterprise as an input to others and intensive use of family labour to maximize the profit. For this, economists and researchers both in the country and abroad have strongly advocated for evolving an integrated system approach to the problem of rural diversification for rapid, balanced and egalitarian growth of the economy.

With this background in view the investigation was carried out with the following objectives:

1. To examine the magnitude of diversification in farm sector of Kangra district.
2. To examine the empirical relationship between the magnitude of diversification and socio-economic factors such as family size, land tenure, education, and distance from the town / market and so on.
3. To examine the impact of diversification on income, consumption and poverty.
4. To find out the factors (constraints) inhibiting the process of rural diversification.

Consistent with the above objectives, the following hypotheses were proposed to be tested empirically:

- a. The level of diversification and agricultural development are positively related. A highly diversified agricultural category tends to be more diversified. In other words, agricultural development acts as a stimulus in broadening the income and employment base of rural poor.
- b. There is a positive relationship between the extent of diversification and experience/education of rural households.
- c. There is no clear relationship between farm size and extent of diversification.
- d. Rural diversification has significant impact on income, consumption and incidence of poverty.
- e. Extent of diversification and family size are positively related.
- f. Land tenure has negative effect on the extent of diversification.
- g. Diversification tends to be more pronounced in those areas which are nearer to town/markets.

#### **Methodology:**

The study was undertaken in Kangra district of Himachal Pradesh. Two developed blocks which form the developed category and two backward blocks which form the backward category were selected on the basis of ranking of infra-structural variables such as the number of educational institutions, basic health care units, the number of banks, the number of post offices and the number of fair price shops as well as agrarian related variables like the percentage of net irrigated area, cropping intensity, fertilizer consumption and seed distribution. Two stages stratified random sampling technique with stratification, on the basis of index of crop acreage diversification using Entropy index, at second stage was employed for the selection of villages and households. Both primary and secondary data was used in this study. Commensurate with the objectives of the study, data were analyzed using

suitable statistical techniques. Tabular analysis was carried out to work out averages, percentages so as to represent the socio-economic features of sample households. The magnitude of diversification was quantified using Herfindhal and Entropy indices. The effect of different factors on the magnitude of diversification was estimated using multiple linear regression models. Further to study the effect of diversification on income and consumption, the diversification indices of crop acreage and income were compared to household income, per capita income, household consumption and per capita consumption. Further income/ consumption were regressed on diversification indices along with socio-economic factors using multiple linear regression models. To find out the relationship between the extents of diversification on poverty, for heavy work poverty line was calculated to be Rs. 24375 per annum for a five member family below which a family is declared as a family below poverty line. Regarding factors (constraints), constraints in the diversification of rural economy were simply worked out by the farmers perception in terms of the percentage of household showing each problem were tabulated and then Chi-square test was applied to know the significance of the difference in the constraints faced by the sample households in diversifying to different enterprises, both crop and non-crop related.

#### Procedure developed for the research problem:

- Ranking of variables, infra-structural as well as agricultural, in different blocks of Kangra district were made in ascending order for the selection of blocks for the developed and backward category.
- Literature on the relationship between extent of diversification and household income, consumption and poverty was analyzed.
- For the first time, new method of classification of households on the basis of index of crop acreage diversification using Entropy index was introduced
- Chi-square test was used to identify whether there is similarity in the problems of more-diversified farms and less-diversified farms.

#### Research papers published from the dissertation:

- Mahajan Girish (2003),” Dimensions and Determinants of Diversification on Kangra Farms of Himachal Pradesh-An Empirical Analysis,” *Bangladesh Journal of Agricultural Economics*, Vol. XXVI (182), PP:1-22
- Mahajan, Girish (2004),” Crop Diversification: An Empirical Analysis of Kangra Farms of Himachal Pradesh,” *Agricultural Economics Research Review*, Vol. 17(2), pp:199-217

- Mahajan Girish (2005),” Indicators of Development: A Block Level Study in Kangra District of Himachal Pradesh,” *The Asian Economic Review*, Vol. 47(1), pp:137-144
- Mahajan Girish (2009),” Diversification of Rural Economy: Effect on Income Consumption and Poverty,” *The Asian Economic Review*, Vol.(51(2), pp:270-289
- Mahajan Girish (2013),” Income Diversification in Hill Farms- An Empirical Analysis,” *Journal of Renewable Agriculture*, Vol. 1(5), pp:91-101
- Mahajan Girish (December,2013-February,2014),” Constraints in Diversification of Rural Economy,” *American Journal of Research in Formal, Applied and Natural Sciences*, Vol. 5(1), pp:54-64
- Mahajan Girish (2014),” Dimensions, Effects, Determinants and Constraints of Rural Diversification: Empirical Evidences on Kangra Farms,” *Journal of Renewable Agriculture* (Accepted for publication)
- Mahajan Girish (2018),” Diversification of Rural Economy- A Review of Issues,” *Amity Journal of Agribusiness*, Vol.2 (2): 30-39

#### Book Chapter:

**Rural Diversification and Agricultural Development-Empirical Evidences on Kangra Farms.** In: *Climate Change Dimensions and Mitigation Strategies for Agricultural Sustainability (Volume II)* edited by Suborna Roy Choudhury and Chandan Kumar Panda @ New Delhi Publishers, New Delhi: 2022, (pp 221-249). ISBN: 978-93-93878-50-2, DOI: 10.30954/ndp-climatev2.15

#### Principal Results:

The findings indicated that Nurpur and Panchrukhi were the most developed blocks, form the developed category, in terms of infra-structure as well as agricultural development point of view while, Lamba –gaon and Nagrota –surian, form the backward category, were the least developed blocks. Diversification of crops measured by Herfindhal and Entropy indices was higher in developed category as compared to backward category; again, diversification in developed category was cereals plus horticulture plus dairy based. In comparison, the extent of diversification was low in backward category primarily because of rain fed agriculture and small size of holding where the cropping pattern being dominated by cereals. Between pattern of farm diversification which were made on the basis of index of crop acreage diversification using Entropy index, more-diversified

farms having Entropy index value  $>0.6393$  and less-diversified farms having Entropy index value  $< 0.6393$ , crop diversification was higher in more-diversified farms. Statistical evidence in relation to the determinants of crop diversification revealed that both the economic factors like farm size, tractor and bullock density, extent of tenancy, farm income and non-farm income and the social factors such as family size, age and education of the head of the family, distance from town/ metalled road were the significant determinants of crop diversification suggesting that a proper mix of both the economic and non-economic factors were essential to promote agricultural production in developed category. In contrast, economic variables like number of fragments of holdings, extent of tenancy, net farm income and off-farm income had significant impact on agricultural production in backward category. As for as income diversification is concerned, it was higher in backward category as compared to developed category in the overall farm situation. But, the level of total household income in backward category was significantly lower (Rs.78408/ farm) as compared to developed category (Rs. 138074/farm). This shows that income diversification stands no guarantee for increasing total household income. With regard to the classification of farm diversification, the extent of income diversification was higher in less diversified farms ( $EI > 0.6393$ ) than in more-diversified farms ( $EI < 0.6393$ ). In comparison, the diversification of income was higher in more-diversified farms of backward category. The regression results for the determinants of income diversification revealed that both the economic variables like the size of operational holdings and tractor density as well as social variables such as family size and educational status of the head of the family were the important determinants for explaining the process of income diversification in developed category, while family size and dichotomous bullock were significant variables in backward category. Alternatively, the proportion of off-farm income of the total household income was also taken as a measure of rural diversification. The analysis suggested that proper mix of both the economic factors such as the number of fragments of holding, size of operational holdings, tractor density, extent of tenancy and social factors like family size, age and educational status of the head of family were found to be significant for explaining the process of off-farm income diversification in both the developed as well as in the backward category. **A pioneer work has been done to examine the impact of diversification on income, consumption and poverty.** In this context, household income was highly diversified in backward category but the level of total household income in backward category was significantly lower as compared to developed category where low level of diversification

was associated with high level of income thus, pointing towards the prevalence of distress diversification. To further concretize the relationship between the level of household income and consumption expenditure and the extent of diversification, some regression equations were estimated with household income and consumption expenditure as dependent variables and the extent of income and crop diversification along with some other socio-economic variables like family size, education, number of sources of income etc. as independent variables. The statistical results in this regards showed, while the diversification of crops had significant and positive effect on income in the developed and backward categories, the diversification of income was found to have significant affect on consumption and not on income only in backward category and did not have any affect in developed category. This *inter alia*, implies high productivity of various crops under cultivation. In general, the findings showed that high level of diversification stands no guarantee for higher level of income and farmers in order to meet their both ends diversify to various sources of income. So for as the relationship between the extent of diversification and poverty is concerned, there was systematic relationship with crop diversification, but it was not found to be systematic with income diversification. For example, between two different categories of households, the incidence of poverty was higher in backward category (around 5%) where the extent of diversification of household income was more as compared to developed category where the incidence of poverty was low (around 2%). Regarding constraints in introducing new agricultural crops like vegetables, horticulture, pulses, oilseeds, lack of timely availability of inputs, lack of availability of labour, lack of marketing facilities, price fluctuation, lack of irrigation water and lack of capital were found to be the important constraints. For diversifying to agricultural related enterprises like poultry, bee-keeping, mushroom cultivation, fishing and rabbitary the lack of technical know-how, high initial investment, lack of credit facilities coupled with non availability of quality inputs were the important constraints. For diversifying to non –agricultural enterprises like starting flour mill, crusher and buying productive assets like thresher the lack of credit facilities and very high initial investment were reported to be the important constraints. For buying assets threshers, the seasonal demand for their services was also an important factor discouraging the household to buy them. Yet another important factor is that in a particular village in a particular season, limited number of threshers can do business on economically viable basis. The thesis has identified and analyzed the problem of rural diversification



and suggested solution to accelerate the process of diversification in Kangra valley of Himachal Pradesh. Specifically, the policy should be that emphasis on diversification of rural economy shall yield no dividend unless efforts are made to improve the productivity of existing resources and also attended to problems like technical know-how, marketing and credit facilities.

#### Original contribution to the solution of the research problem:

Diversification of agriculture is considered to have large potentialities of increasing income and employment and providing strength through reduced instabilities particular under the situation of risk and capital constraints. One of the objectives of the study is to analyze the relationship between the magnitude of farm diversification and the level of household income, consumption and the extent of poverty. In the literature of non –farm diversification, the level of wages is taken to be clinching evidence on the nature of diversification. It is argued that a situation where an increase in rural work force employed in rural non-farm sector is accompanied by stagnant or low wages represent distress diversification. We here take a slightly different position and define the distress diversification as a situation where high degree of diversification especially income was associated with low level of household income. The micro evidence at our disposal indicated that high degree of diversification especially income was associated with low level of household income. All other findings of the thesis give a unique policy to accelerate the process of rural diversification for the development of rural sector.

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