A STUDY ON EXPLORING THE RELATIONSHIP BETWEEN EMPLOYMENT, POVERTY AND INCOME INEQUALITY IN PUNJAB

A Thesis

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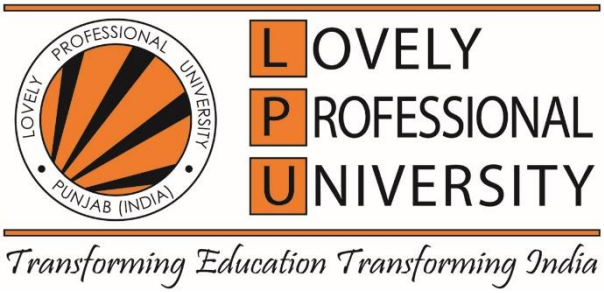
By

SHILPI KAPOOR

Registration No. 11512766

Supervised By

DR. TAWHEED NABI



LOVELY PROFESSIONAL UNIVERSITY
PUNJAB
2020

DECLARATION

I, Shilpi Kapoor, certify that this Thesis entitled **"A Study on Exploring the Relationship between Employment, Poverty and Income Inequality in Punjab"** is the result of research work done by me in Lovely Professional University where this research work was carried out. The work presented herein is genuine work done originally by me for possible award of Doctor of Philosophy in Economics of Lovely Professional University.

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Name of Doctoral Candidate: Shilpi Kapoor

Signature of Doctoral Candidate: **Date:**

Registration No. 11512766

CERTIFICATE

This is to certify that the thesis entitled **"A STUDY ON EXPLORING THE RELATIONSHIP BETWEEN EMPLOYMENT, POVERTY AND INCOME INEQUALITY IN PUNJAB"** is being submitted by Ms. Shilpi Kapoor in partial fulfillment for the award of Ph.D. in Economics to Lovely Professional University, Punjab is a record of bonafide work carried out by her under my guidance and supervision.

The results embodied in this thesis have not been submitted to any other University or Institute for the award of any degree or diploma.

Dr. Tawheed Nabi **Date:**

Assistant Professor

Mittal School of Business

Lovely Professional University

ABSTRACT

Employment, poverty and income inequality has been the critical issues of any economy and also matter of concern for worldwide. According to the World Development Indicators provided by World Bank, the number of poor (at $1.90 a day 2011 PPP) were 734.5 million in 2015 in the World and 382.5 million in 2009 in India. In case of income distribution, the income share held by the lowest 10 per cent was 3.5 per cent and share of income held by highest 10 per cent was 30.0 per cent in 2009 in India (World Bank[1]). The Workforce Participation Rate of combined rural and urban areas of working age group 15-64 was 66.87 per cent in World and 54.19 per cent in India in 2019. However, the gross domestic annual growth rate was 3.1 per cent in World and 7.2 per cent in India in 2017 and 3.0 per cent in World and 6.8 per cent in India in 2018. According to Jha (2019)[2], the consumer expenditure report which got leaked revealed the 3.7 per cent decline in the MPCE with higher decline in the rural areas with 8.8 per cent in contrast to rise of 2 per cent in the urban areas. Furthermore, there was decline of 6.2 million level of employment between 2011-12 and 2017-18 in India (Kannan & Raveendran, 2019)[3]. This highlights the status of employment, poverty, income inequality and growth at the global level and in India. The issues of poverty and income inequality has been looked with the status of labour market.

Economic growth, poverty and income inequality are interrelated. Employment serves as a link between the poverty and income inequality. The lower income class in the society which generally includes the casual workers and self-employed had to work more with low paid jobs as compared to the higher income class in the society who work less and are paid more and some of them even prefer leisure instead of work. This causes the increase in the gap between the income of the lowest and the highest income group. Alongside, when the employment increases there is reduction in poverty in the country. This occurs because some households living below the threshold level move above the threshold level while others remain below the threshold poverty line. They generally include the casual workers and self-employed who are poor. Thus, there is existence of

[1]World Bank. *World Development Indicators*. Retrieved from https://datacatalog.worldbank.org/dataset/world-development-indicators.

[2] Jha, S. (2019). Consumer spending falls after 4 decades. *Business Standard*, 14 November.

[3] Kannan, K P., & Raveendran, G. (2019). From jobless to job-loss growth: Gainers and losers during 2012–18. *Economic & Political Weekly*, *54*(44), 38-44.

working poor in the economy. Thus, increase in employment reduces the poverty but increases the income inequality in the country. On the whole, there exists a triangular base between employment, poverty and income inequality where growth is the ultimate target which is to be achieved.

Labour is one of the crucial factors for the progress of economic growth of a country. The skill formation of labour enhances the generation of employment opportunities. Such job creation perceives the proceeding of employment-oriented growth. Many theoretical models of development such as Rosenstein-Rodan (1943[4], 1944[5]), Lewis (1954)[6], Solow (1956)[7], Kuznets (1955[8], 1963[9]), Leibenstein (1960)[10] and Nurkse (1962)[11] have discussed about solving these issues. Various studies have been able to identify inequality and poverty as the major problems which are inter woven and eating an economy of a country. The indirect channel to combat these problems is the employment.

Punjab is a state in which there is mounting annoyance due to unemployment of youth. The unemployment rate during 2017-18 was 7.8 per cent in Punjab (PLFS, 2019)[12]. There is increase in the demographic dividend of Punjab each year but due to insufficient availability of jobs there is rise in number of unemployed people. After 1990s, there was acceleration in growth and the problem of poverty was widely questioned. Global economy started affecting the state of Punjab as well as its labour market. There was reduction in poverty with the large span of growth years in Punjab.

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[4] Rosenstein-Rodan, P. N. (1943). Problems of industrialisation of eastern and south-eastern Europe. *The Economic Journal, 53*(210/211), 202-211.

[5] Rosenstein-Rodan, P. N. (1944). The international development of economically backward areas. *International Affairs, 20*(2), 157-165.

[6] Lewis, W. A. (1954). Economic development with unlimited supplies of labour. *The Manchester School*, *22*(2), 139-191.

[7] Solow, R. M. (1956). A contribution to the theory of economic growth. *The Quarterly Journal of Economics*, *70*(1), 65-94.

[8] Kuznets, S. (1955). Economic growth and income inequality. *The American Economic Review*, 1-28.

[9] Kuznets, S. (1963). Quantitative aspects of the economic growth of nations: VIII. Distribution of income by size. *Economic Development and Cultural Change*, *11*(2, Part 2), 1-80.

[10] Leibenstein, H. (1960). *Economic backwardness and economic growth.* John Wiley and Sons, Inc. pp. 94-110.

[11] Nurkse, R. (1961). Problems of capital formation in underdeveloped countries. New York: Oxford University Press. p. 163.

[12] GOI. (2019). Annual Report: Periodic Labour Force Survey. Ministry of Statistics and Programme Implementation, National Statistical Office, New Delhi.

But still there exists poverty which needs attention by the policymakers in Punjab. The other important consideration of the policymakers has been the income inequality over the years in Punjab. The distribution of the gain from growth has been disproportional among the different level of income groups. Although there is increase in employment and wages, but it increased the income inequality in Punjab. A large part of agricultural products are being exported by the Punjab state to other parts of the country and the labour force of the state (especially youth) migrate to the other countries to a greater extent. The labour who migrate make remittances to their families increasing their income levels but those who are employed within the state are not able to move to high income strata due to low paid jobs. The people with high paid jobs prefer leisure to work. This widens the gap of inequalities in income in Punjab. As pointed by Kuznets curve, at high rates of economic growth inequality diminishes, the problem of increasing income inequality becomes a serious concern.

Therefore, the generation of employment is necessary for reduction in poverty and income inequality in Punjab. The policymakers have focussed on economic growth to improve conditions of employment, poverty and income inequality in Punjab. But no focus has been placed on their triangular relationship which will help solving the jointly determined problem. This is because each one of them is interrelated. This will help in serving for the betterment and well-being of the people in Punjab.

Against this background, some questions which arouse the curiosity are listed. What are the factors which determine the employment? What are the factors which critically distinguish between poor and non-poor? What are the factors which cause the shift in the lower income classes and higher income classes of the population? The final question examined is how the triangular relationship between the employment, poverty and income inequality is formed in Punjab? More specifically, examining how the standard of living varies across the households in regular employment, casual employment and self-employment. Various studies have been able to identify inequality and poverty as the major problems which are inter woven and eating an economy of a country. The indirect channel to combat these problems is the employment.

There are numerous studies available on studying the trends of employment, poverty and income inequality in states of India. Some of the studies have highlighted the poverty reduction whereas some of the other studies have expressed their

disappointment on the increasing income inequality. It is believed that there has been refinement in the standard of living of the people in the state and those who were on the better footing initially, could now experience growth at a faster rate during the period of reforms. On the contrary, there was no improvement in some of the deprived population. In addition, there is increase in the income inequality with the rapid post-reform growth in GDP and it is not supplemented with the faster reduction in poverty. It has been found with that improvement in the level of living with the distribution has not been done properly and there exist certain districts which continue to be poor despite there has been overall growth in the state. Therefore, depending exclusively on the aggregates of states may not reveal accurate extent of unevenness which prevails and such issues at the district level has been scarcely discussed in the studies. After reviewing the earlier researchers' work, it is found that there is a urgent need to understand the overall trends and patterns of employment, poverty and income inequality in various districts of Punjab which has not been addressed in the various papers as this phenomenon has been unsettled as well as puzzling in Punjab. Various studies on determinants of employment, poverty and income inequality have been done but such quantitative assessment of variables have not been done with respect to the Punjab. The study will involve the in-depth analysis and exploring the relationship of employment, poverty and income inequality in Punjab. Such quantitative assessment of this triangular relationship has not yet been done for the Punjab. This study aims to identify the mentioned research questions through the objectives framed on this research gap.

Objectives of the Study

- To analyze the trends and patterns of employment, poverty and income inequality in Punjab.
- To investigate the various determinants of employment, poverty and income inequality in Punjab.
- To study the relation between employment, poverty and income inequality in Punjab.

Hypothesis of the Study

- There is no significant trends of employment, poverty and income inequality in Punjab.
- There is no significant impact of the socioeconomic factors on employment, poverty and income inequality in Punjab.
- There is no significant relation between employment, poverty and income inequality in Punjab.

The main source of data for this study is unit level data collected by NSSO on situation of Employment-Unemployment and level and pattern of Consumption Expenditure. Although the recent PLFS of 2017-18 has been made available by the Government of India but it has not been considered for this study due to comparability issues of survey methodology, the survey design and the mechanism of the collection of data with the previous NSS rounds (Jajoria & Jatav, 2020)[13]. Furthermore, data on consumption expenditure has not been released by the government and the report was rejected (Kannan, 2020)[14]. Keeping in mind all the above facts of the issues of data and the need of this study, the rounds 2004-05 and 2011-12 have been taken for the study. The findings of the study reveal that LFPR of Punjab was 40.05 per cent showing 5759 persons employed out of the total number of persons surveyed in 2011-12. District Mansa has the highest LFPR of 50.43 per cent and district Tarn Taran was found to have lowest LFPR of 33.12 per cent. There is marginal increase in the growth rate of self-employed between 2004-05 to 2011-12. There was some increase in the growth rate among the regular employed as compared to the self-employed. However, there was large increase in the growth rate of casual workers which was 3.07 per cent. In addition, there was decline in the others employed whose growth rate was found to be negative. Furthermore, a large proportion of the population is found to be not working due to which the growth rate for this proportion of population (2.44 per cent) is higher than the working population (0.99 per cent). Although there is increase in the growth rate of workers but there is marginal decline in the WPR of workers during 2004-05 and 2011-12. However, in

[13] Jajoria, D., & Jatav, M. (2020). Is periodic labour force survey, 2017-18 comparable with employment-unemployment survey, 2011-12? *Economic & Political Weekly, 55*(3), 12-16.

[14] Kannan, K. P. (2020). A low growth, no employment and no hope for budget for 'aspirational India'. *Economic & Political Weekly, 55*(9), 27-31.

Punjab the average MPCE of urban others group is highest (₹ 4511) showing a better standard of living in comparison of the various categories of employment status in urban areas. In contrast, in the rural areas, the average MPCE of rural others is highest (₹ 2894) showing a better standard of living in comparison of the various categories of employment status. The average MPCE of all categories of employment is highest in district Patiala. However, it has high growth and high level of MPCE. In addition, the districts with low growth rate in rural and urban areas tend to converge to the districts with high growth resulting in the improvement in the standard of living in terms of MPCE.

It has been found that there are differences in mean consumption expenditure of various categories of employment due to which there is poverty and income inequality in the various districts as the standard of living of different household types has found to be different. The estimates of poverty reveal that the poverty rate of Punjab was 21.5 per cent during 2004-05 but declined to 8.23 per cent during 2011-12 in Punjab. During 2011-12, district Barnala had the highest poverty rate of 17.53 per cent. There was decline in poverty in northern and south west region of Punjab from high to moderate and low in many districts of Punjab during the period 2004-05 to 2011-12. In the south east part of Punjab, the poverty declined from moderate to low during the same period.

The estimates of income inequality reveal that the Gini coefficient of Punjab was 0.32 during 2004-05 and 0.30 during 2011-12. District Jalandhar had the highest Gini coefficient of 0.38 during 2011-12. During the same period, there was high inequality which was greater than 0.32 in districts Faridkot, Moga, Bathinda, Patiala, SAS Nagar and Jalandhar. There was moderate level of poverty in three districts Tarn Taran, Jalandhar and Barnala in which Barnala and Tarn Taran had low income inequality. The variations in the standard of living of the different categories of employment stresses on the identifying the factors affecting employment, poverty and income inequality in Punjab.

To identify the factors affecting employment, logit model of regression has been used in the study. The different variables which affect employment positively were gender, urban casual employed, education from private institute, middle education, secondary education and higher education. Furthermore, urban sector, age of household head, rural self-employed in agriculture and rural self-employed in non-agriculture, rural

casual employed in agriculture and rural casual employed in non-agriculture, household related with SC caste and technical education have negative significant effect on employment.

The findings of applying logit model for determining the factors affecting poverty reveal the variables household related with Sikhs religion, land cultivated, secondary education have positive significant effect on poverty. However, higher secondary education was having positive but not significant effect on poverty. Variables which were found to have negative significant effect on poverty were urban sector, casual employed, SC, OBC, not literate, below primary and primary education and middle education.

The factors affecting income inequality were identified by applying the truncated tobit model of regression. The results of the regression reveal that the variables urban sector, Sikhs religion, regular earner, whether owns land, land cultivated, gender and age have positive significant effect on income inequality. The variables self-employed, regular employed, casual employed, SC, OBC, not literate, below primary and primary education, middle education, secondary education and higher secondary education were found to have negative significant effect on income inequality. However, Hindus religion had positive but not significant effect on income inequality. ST caste had negative but not significant effect on income inequality.

The working poor in case of Punjab was identified which shows that casual labour in rural and urban areas were more prone to be poor with low standard of living. Further, it was found that there exist negative significant impact of poverty and income inequality on employment, negative significant effect of employment and income inequality on poverty and negative significant effect of employment and poverty on income inequality without the effect of other control variables. To study the relationship between employment, poverty and income inequality in Punjab the simultaneous three stage least square model of regression was used considering the effect of other control variables. It was found that there has been negative significant effect of poverty and income inequality on employment. However, being illiterate has the positive significant effect on employment. Age has the negative non-significant and household size has the positive non-significant effect on employment. The analysis of simultaneous model further reveals that including the effect of other variables, it has been found that income inequality and employment have the negative significant effect on poverty. However,

household size has the positive non-significant and scheduled caste scheduled tribe has the negative non-significant effect on poverty. The model further gives the negative and significant effect of poverty, employment and scheduled caste scheduled tribe on income inequality. However, agricultural land and schooling year has the positive non-significant effect on income inequality. Thus, there exists a strong triangular relationship between employment, poverty and income inequality with or without the other variables in the analysis.

The findings of the study is able to provide some the suggestions to the government for the policy perspectives to solve the issues discussed in the study. The government should attack on the conservative attitude towards females which restrict them from entering the labour force. Educated youth unemployment is also one of the major concerns in Punjab. As the education level of the labour force is improving with time, the educated labour force looks for the work which is compatible with their skills and education. A suitable policy is required for the skilled workers to get high tech jobs. Suitable policy measures should be taken by the government to strictly restrict the child labour in Punjab and providing the education to the children. There should be sufficient wages to the labour in the casual jobs in Punjab. The government should aim at improving the standard of living of the people in Punjab providing the necessary food items at fair price shops. The selection of the target group for the benefits received from the government should be done in impartial way and there should be non-interference of the political hand in it. More of secondary and higher secondary education should be provided along with skill development for decent jobs. The government should provide more regular jobs instead of casual work and policies be formulated to increase the per capita income of the state. There is need to consider the local causes of poverty and inequality in those districts. Different policies should be implemented in proper manner such as MNREGA, National Food for Work Programme, Twenty Point Programme, Self-employment to the educated unemployed youth, Pradhan Mantri Kaushal Vikas Yojana and Jawahar Rozgar Yojana which were initiated by the government from various aspects of increasing employment and reducing poverty and income inequality in Punjab.

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Shilpi Kapoor

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LIST OF ABBREVIATIONS

3SLS	Three Stage Least Square
AEC	Adult Literacy Centres
ANOVA	Analysis of Variance
ARDL	Autoregressive distributed Lag
ASI	Annual Survey of Industries
CDS	Current daily status
CPIAL	Consumer Price Index for Agricultural Labourers
CPIIW	Consumer Price Index for Industrial Workers
CSO	Central Statistical Organisation
CWS	Current weekly status
EGC	Education Guarantee Scheme
FGT index	Foster-Greer-Thorbecke index
GDP	Gross domestic product
GOI	Government of India
GSDP	Gross state domestic product
HCR	Head count ratio
HIES	Household Integrated Economic Survey
HSD	Honest Significance Test
IHDS	India Human Development Survey
ILFS	Integrated Labour Force Survey
Kcal	Kilocalorie
LFPR	Labour force participation rate
MMRP	Modified Mixed Recall Period
MOSPI	Ministry of Statistics and Programme Implementation
MPCE	Monthly per capita consumption expenditure
MRP	Mixed Recall Period
NAS	National Accounts Statistics
NFEC	Non-formal Education Courses
NFHS	National Family Health Survey

NITI Aayog	National Institution of Transforming India
NSS	National Sample Survey
NSSO	National Sample Survey Organisation
OBC	Other backward caste
OLS	Ordinary least square method
PCI	Per capita income
PGR	Poverty gap ratio
PLFS	Periodic Labour Force Survey
PPP	Purchasing power parity
SC	Scheduled caste
SLID	Statistics Canada's Survey of Labour and Income Dynamics
SPGR	Squared poverty gap ratio
ST	Scheduled tribe
TLC	Total Literacy Campaign
URP	Uniform Recall Period
UPS	Usual Principal Status
WDI	World Development Indicators
WPR	Worker population ratio
ZHBS	Zanzibar Household Budget Survey

CHAPTER I

INTRODUCTION

1.1 Introduction

Employment, poverty and income inequality are the critical issues of any economy at the global level. There was 14 per cent (787.5 million) undernourished population during 1995-97 which increased marginally to 14.4 per cent (940.5 million) during 2004-06 and then declined to 10.7 per cent (809.9 million) during 2016-18 in the World. In contrast, there were 20.8 per cent (204.4 million) undernourished during 1995-97 but increased to 22.1 per cent (253.9 million) during 2004-06 and declined sharply to 14.5 per cent (194.4 million) during 2016-18 in India (SOFI-FAO, 2019)[15]. However, the annual growth rate of population was 1.1 per cent in the World and 1.0 per cent in India in 2018 (World Bank)[16]. Furthermore, there was 5624.9 million population in 1996, 6541.9 million in 2005 and 7547.9 million in 2017 in the World. In contrast, it was 982.4 million in 1996, 1147.6 million in 2005 and 1338.7 in 2017 in India (SOFI-FAO, 2019)[17]. According to the World Development Indicators, the number of poor at $1.90 a day (2011 PPP) were 734.5 million in 2015 in the World and 382.5 million in 2009 in India. The income share held by the lowest 10 per cent was 3.5 per cent and share of income held by the highest 10 per cent was 30.0 per cent in 2009 in India. The Workforce Participation Rate of the working age group 15-64 in combined urban and rural areas was 66.87 per cent in World whereas 54.19 per cent in India in 2019. However, the gross domestic annual growth rate was 3.1 per cent in World in contrast to 7.2 per cent in India in 2017 and 3.0 per cent in World as compared to 6.8 per cent in India in 2018. According to Jha (2019)[18], the consumer expenditure report which got leaked revealed the 3.7 per cent decline in the MPCE with higher decline in the rural areas with 8.8 per cent in contrast to rise of 2 per cent in the urban areas. Furthermore, there was decline of 6.2 million level

[15] FAO, IFAD, UNICEF, WFP and WHO. (2019). *The State of Food Security and Nutrition in the World 2019. Safeguarding against economic slowdowns and downturns*. Rome, FAO: Author.

[16] World Bank. *World Development Indicators*. Retrieved from https://datacatalog.worldbank.org/dataset/world-development-indicators.

[17] FAO, IFAD, UNICEF, WFP and WHO. (2019). *The State of Food Security and Nutrition in the World 2019. Safeguarding against economic slowdowns and downturns*. Rome, FAO: Author.

[18] Jha, S. (2019). Consumer spending falls after 4 decades. *Business Standard*, 14 November.

of employment between 2011-12 and 2017-18 in India (Kannan & Raveendran, 2019)[19]. This highlights the status of growth, employment, poverty and income inequality at the global level and in India. The issues of income inequality and poverty can be looked with many ways but one useful way to think about these problems is the status of labour market.

Economic growth, poverty and income inequality are interrelated. Employment serves as a link between the income inequality and poverty. The distribution of income enlarges the inequality between the persons of different strata in a country. This occurs because the lower income class in the society had to work more and they are being less paid for their jobs. These generally include the casual workers in non-agriculture and agriculture activities and self-employed in rural areas. In contrast, the higher income class in the society work less and they are being paid more for their jobs. They prefer leisure instead of work when their income is high. This causes the increase in the gap between the income of the lowest and the highest income group. Alongside, when the employment increases there is reduction in poverty in the country. This occurs because some households living below the threshold level shift above the threshold level while others remain below the threshold poverty line. They generally include the casual workers and self-employed who are poor. Therefore, there is reduction in poverty and not complete eradication of poverty. This is due to existence of working poor in the economy. Thus, increase in employment reduces the poverty but increases the income inequality in the country. On the whole, there exists a triangular base between employment, poverty and income inequality where growth is the ultimate target which is to be achieved.

India is the fastest growing economy since 1980s. Employment acts as a source of livelihood for the poor in the country. The asset of poor is only their labour power. The unemployment rate in 2011-12 in India was 2.2 per cent (GOI, 2014)[20]. Due to the unemployment rate, there is increase in crime rate and other immoral activities in India. The employment is also not sufficient to pull the people out of the poverty due to low paid jobs. Punjab is a state in which there is mounting annoyance due to unemployment of youth. The unemployment rate during 2017-18 was 7.8 per cent in Punjab (PLFS,

[19] Kannan, K P., & Raveendran, G. (2019). From jobless to job-loss growth: Gainers and losers during 2012–18. *Economic & Political Weekly*, *54*(44), 38-44.

[20] GOI. (2014). *Employment and Unemployment Situation in India.* New Delhi: NSSO.

2019)[21]. There is increase in the demographic dividend of Punjab each year (Sharma & Nagaich, 2015)[22] but due to insufficient availability of jobs there is rise in the number of unemployed people. This is quite worrisome situation as a country and a state cannot progress unless its demographic dividend is appropriately utilised.

The Indian planners and policymakers headed towards the desired directions on improving employment keeping poverty in consideration. But in 1970s, it was found that both were not going in the desired directions. Schemes and Programmes were started to create employment and eradicate poverty. Not surprisingly, there was 'Hindu Rate of Growth' till 1980s in which there was low growth in employment and poverty reduction due to low growth in national income. But after 1990s, there was acceleration in growth and the problem of poverty was widely questioned. The fluctuations of the global economy started affecting the state of Punjab as well as its labour market. There was reduction in poverty with the large span of growth years in Punjab. But still there exists poverty which needs attention by the policymakers in Punjab.

The other important consideration of the policymakers has been the income inequality over the years in India. India ranks on the second highest after South Africa with the income inequality among the countries in the world (Dev, 2018)[23]. The distribution of the benefits of growth has been disproportional among the different level of income groups. The benefits have been grabbed over by rich strata of income and the losses have been borne by the lower strata of income. This has further widened the inequalities instead of reducing it in India. Although there is increase in employment and wages, but it increased the income inequality in Punjab. A large part of agricultural products are being exported by Punjab and the labour migrate to the other countries to a greater extent. The labour who migrate make remittances to their families increasing their income levels but those who are employed within the state are not able to move to high income strata due to low paid jobs. The people with high paid jobs prefer leisure to work. This widens the gap of inequalities in income in Punjab. As pointed by Kuznets curve, at

[21] GOI. (2019). Periodic Labour Force Survey. New Delhi: NSO

[22] Sharma, P., & Nagaich, S. (2015). Demographic dividend in Punjab (India). *International Journal of Business Management and Research,* 2, 1-7.

[23] Dev, S. M. (2018). Inequality, employment and public policy. *The Indian Journal of Labour Economics*, *61*(1), 1-42.

high rates of economic growth inequality diminishes, the problem of increasing income inequality becomes a serious concern.

Therefore, the generation of employment is necessary for reducing poverty and income inequality in Punjab. The policymakers have focussed on economic growth for improving the conditions of employment, poverty and income inequality in Punjab. But no focus has been placed on their triangular relationship which will help solving the jointly determined problem. This is because each one of them is interrelated. This will help in serving for the betterment and well-being of the people in Punjab.

1.2 Employment

Work is the activity which results in the production of goods and services in the economy which makes addition to the value of national output or product. Two characteristics in the structure of the work force which presume stability in the characteristics of employment are major share of agriculture noticeable by the seasonal variations in the activities of agriculture and slight share of the regular workers. These characteristics give rise to the doorstep of the characteristics of employment of the population over the whole year i.e. reference period of 365 days along with the CWS and CDS.

Due to multiple activities of an individual engagement in the year, the usual principal status is used as major time criterion in the estimation of employment. Firstly, the population is classified as in labour force or not in labour force. The days in the labour force classify the person as employed or unemployed on major time criterion. In addition, the usual subsidiary status of involving at least 30 days in a year is taken to capture the contribution of labour. With the change in the structure of economy, the reference period of 365 days is considered necessary for the estimates of employment. With the initiation of Tenth plan, the Planning Commission exercised the employment estimates based on CDS also.

The total number of jobs which covers the organized as well as the unorganized sector of the activity is calculated as the sum total of three things. The first is the workers in the UPS and second component includes the UPS workers other than which were included in first component who work in the subsidiary status of that activity. The last component includes the workers of only subsidiary status. From the total of these

three components, the employment estimates of organized sector of private and public sector enterprises is deducted. This gives the labour in the unorganized sector of the activity.

According to the labour force surveys, the activity status is also taken with 7 days preceding the survey. Moreover, it is also taken as each day of the week. In addition, the activity with full intensity or half intensity also records two activities of the same day of each having half intensity. Thus, CWS and CDS are computed on the available information of 7 days preceding the survey. The 'priority-cum-major time criteria is used to derive the CWS. The person who does not work nor seeking or available for work even 1 hour during the week is taken as being not in labour force in CWS (Sundaram, 2009)[24].

1.3 Poverty

Poverty is a relative term which changes with the economic condition of the nation. It is that phenomenon in which people are not able to fulfil the basic necessities of life. These basic necessities include food, housing, clothing, health and education. Poverty is used with reference of two things:

1. **Absolute Poverty-** It refers to the measurement of poverty considering the economic conditions of nation and many countries define poverty in the context of calorie criteria and minimum consumption expenditure criteria.
2. **Relative poverty-** It refers to inequality in the income or it is measured on the basis of comparison of the income of different countries or group of individuals. Poverty line is the line which divides the population into two groups. It indicates the capacity to satisfy minimum level of needs of the human beings. Two groups of population are 'above the poverty line' and 'below the poverty line'.

1.4 Income Inequality

Income Inequality means income of some individuals is very high while that of a large number of people is quite low. There is no official organisation to compile the data on income in India. NSS provides the data on consumption expenditure which is

[24] Sundaram, K. (2009). Measurement of employment and unemployment in India: Some issues. *Department of Economics, Delhi School of Economics. Centre for Development Economics.* Working Paper No. 174. Retrieved from http://www.cdedse.org/pdf/work174.pdf.

used to measure the income inequality. To examine the income inequality, government appointed different committees and studies have been conducted from time to time which includes report of Prof. P.C. Mahalanobis, NCAER, RBI, World Bank etc. They provide the broad patterns of income inequality. Apart from the various measures of income inequality like Gini Index, Theil's, Index, Lorenz curve etc., income inequality is also determined by the people living below the poverty line.

The government of India has undertaken various measures to solve unemployment and to increase the employment and reduce poverty in states from time to time in India. Some of the policies have been overviewed below:

1. **Employment Guarantee Scheme of Maharashtra** (1972-73)- To assist the economically weaker sections of rural areas.
2. **Crash Scheme for Rural Employment (CSRE)** (1972-73)- For rural employment.
3. **Marginal Farmer and Agriculture Labour Agency (MFALA)** (1973-74)- To provide technical and financial assistance to small and marginal farmers and labour in agriculture.
4. **Small Farmer Development Agency (SFDA)** (1974-75)- For financial and technical assistance to small farmers.
5. **Twenty Point Programme** (1975)- Eradication of poverty and improve the standard of living.
6. **Food for Work Programme** (1977-78)- To provide foodgrains to labour for work development.
7. **Antyodaya Yojana** (1977-78)- To make poor families economically independent.
8. **Training Rural Youth for Self-Employment (TRYSEM)** (1979)- For providing training to rural youth for self-employment.
9. **Integrated Rural Development Programme (IRDP)** (1980)- For all round development of rural poor through programme for self-employment.
10. **National Rural Employment Programme (NREP)** (1980)- To provide employment opportunities to the rural poor.
11. **Development of Women and Children in Rural Areas (DWCRA)** (1982)- To provide self-employment opportunities to women in the rural areas who are poor.

12. **Rural Landless Employment Guarantee Programme (RLEGP)** (1983)- To provide employment to labourers and landless farmers.
13. **Self-Employment to the Educated Unemployed Youth (SEEUY)** (1983-84)- To provide assistance for self-employment.
14. **Self-Employment Programme for the Urban Poor (SEPUP)** (1986)- To provide self-employment to poor in urban areas through bank credit and subsidy.
15. **Jawahar Rozgar Yojana** (1989)- To provide employment to rural unemployed.
16. **Nehru Rozgar Yojana** (1989)- To provide employment to urban unemployed.
17. **Scheme of Urban Micro Enterprises (SUME)** (1990)- To provide assistance for small enterprises to the urban poor.
18. **Scheme of Urban Wage Employment (SUWE)** (1990)- To provide the wage employment where population is less than one lakh after making arrangement of the basic amenities for poor in the urban areas.
19. **Scheme of Housing and Shelter Upgradation (SHASU)** (1990)- To provide the employment in the urban areas with population between one to twenty lakhs by shelter upgradation.
20. **National Housing Bank Voluntary Deposit Scheme** (1991)- To construct low cost houses for the poor by utilising the black money.
21. **National Renewal Fund (NRF)** (1992)- For protecting the interest of the employees in the public sector.
22. **Supply of Improved Toolkits to Rural Artisans** (1992)- To supply modern toolkits to rural craftsmen who are poor.
23. **Employment Assurance Scheme (EAS)** (1993)- To provide employment of atleast 100 days in year in rural areas.
24. **Scheme of Integrated Development of Small and Medium Towns** (Sixth Five Year Plan)- To create employment opportunities in small and medium towns so that the migration from rural to the big cities is prohibited.
25. **Prime Minister's Integrated Urban Poverty Eradication Programme (PMIUPEP)** (1995)- To eradicate urban poverty having population between fifty thousand to one lakh.
26. **National Social Assistance Programme** (1995)- To prove assistance to the people living below the poverty line.

27. **Swarna Jayanti Shahari Rozgar Yojana (SJSRY)** (1997)- To provide self-employment and wage employment to the unemployed in urban areas and under employed poor people.
28. **Swarna Jayanti Gram Swarozgar Yojana (SJGSY)** (1999)- To eradicate the rural unemployment and poverty and promote the self-employment.
29. **Jan Shree Bima Yojana** (2000)- To provide security in the form of insurance to the poor.
30. **Pradhan Mantri Gramodaya Yojana** (2000)- For basic requirements in the rural areas.
31. **Antyodaya Anna Yojana** (2000)- To provide food security to the poor people.
32. **Ashraya Bima Yojana** (2001)- To provide compensation to workers who lose jobs.
33. **Sampurna Gramin Rozgar Yojana** (2001)- To provide employment and food security.
34. **Social Security Pilot Scheme** (2004)- To provide medical, family pension and insurance to the unorganized sector labourers.
35. **National Food for Work Programme** (2004)- To generate supplementary wage employment.
36. **National Rural Employment Guarantee Scheme (MNREGA)** (2006)- To provide atleast 100 days employment in rural areas.
37. **National Rural Livelihood Mission** (2011)- It was restructured from SJGSY.
38. **National Urban Livelihood Mission** (2012-13)- It was restructured from SJSSY.
39. **Deen Dayal Upadhyay Sramev Jayate Scheme** (2014)- To improve employment and skill development of labour.
40. **Make in India** (2014)- To encourage companies to manufacture the products in India and thus enhancing employment.
41. **Pradhan Mantri Kaushal Vikas Yojana** (2015)- To provide skill development training to the youth.
42. **Pradhan Mantri Awas Yojana (PMAY)** (2015)- To provide better living to the urban poor.
43. **Smart Cities Mission** (2015)- To provide better living by urban renewal across India.
44. **Pradhan Mantri Ujjwala Yojana** (2016)- To provide free LPG connections to BPL families.

1.5 Research Questions

Against this background, some questions which arouse the curiosity are listed. What are the characteristics which are important once a person decides to participate in the labour force. To put it more specifically, what are the factors which determine the employment? What are the factors which critically distinguish between poor and non-poor? What are the factors which cause the shift in the lower and higher income classes of the population? The final question examined is how the triangular relationship between the employment, income inequality and poverty is formed in Punjab? More specifically, examining how the standard of living varies across the households in regular employment, casual employment and self-employment. The relationship between employment, income inequality and poverty has to be explored in Punjab which is based on following figure.

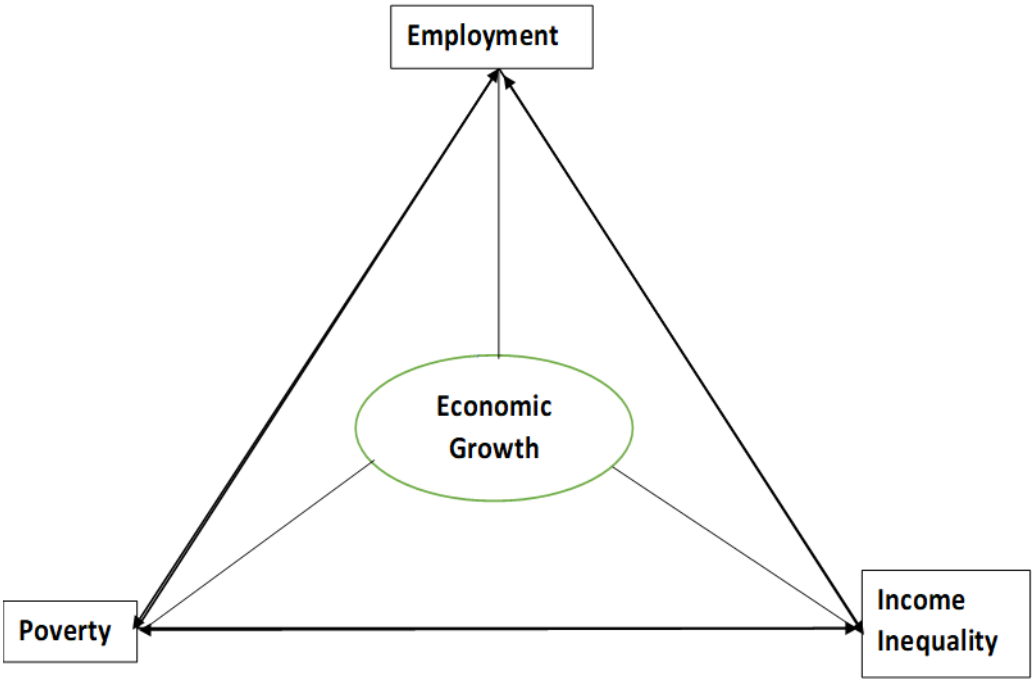

Figure 1.1: Employment, Poverty and Income Inequality triangle

1.6 Research Objectives

As discussed in the forgone, it is well established that the poverty, inequality and employment status of an individual household or a person is interlinked to each other. Economic development of an area; a region; a state; or a country can also reflect in the employment status of the population particularly in different activities. The employment participation in a country, like India, where major part of population depends on

agricultural and allied activities, is totally different from the advanced countries. But there are wide regional variations across states and social groups in India. The study mainly focussed on Punjab which is a state having an impressive performance since the commencement of green revolution. The state is having the upper decile class in per capita income & expenditure which also determines the workforce participation of the people in the state. The study tries to establish the relationship between poverty, inequality and employment status in the state of Punjab and the specified objectives of the study are given as below:

- To analyze the trends and patterns of employment, poverty and income inequality in Punjab.
- To investigate the various determinants of employment, poverty and income inequality in Punjab.
- To study the relation between employment, poverty and income inequality in Punjab.

1.7 Hypothesis of the Study

The process to systematically analyze a phenomenon is testing of some pre-determined hypothesis. Based on literature review, some hypothesis are framed to study the relation between poverty, income inequality and employment in Punjab which is one of an advanced state of India. These hypothesis' will provide the statistical empirical evidence of the relationship between poverty, income inequality & employment and the factors which determine the level of poverty, income inequality and workforce participation rate. Therefore, in this study following hypothesis are framed to test the phenomenon. The specified hypothesis of the study are given as below:

- There is no significant trends of employment, poverty and income inequality in Punjab.
- There is no significant impact of the socioeconomic factors on employment, poverty and income inequality in Punjab.
- There is no significant relation between employment, poverty and income inequality in Punjab.

1.8 Data Sources and Methodology

1.8.1 Data Sources

The data for this study has been taken from various published sources. The reports of Planning Commission, reports of NSSO on employment and unemployment and household consumption expenditure, economic surveys (various issues), statistical abstracts of Punjab (various issues), CSO, MOSPI, NSS, Census of India has been used for the study. The unit level data of Employment-Unemployment, Consumption Expenditure as collected by NSSO and provided by MOSPI has form the major source of data for this study.

1.8.2 Period of Study

To fulfil the objectives embodied in the study, understand the source of problem, and provide suitable suggestions for policy making, a comprehensive and reliable data which has a sound system of collection on labour statistics is needed at regular time intervals. This data is published by MOSPI which provides data at regular intervals. It provides a wide range of information on the consumption expenditure and employment in India. The period of the study is based on NSS 61st and 68th round, i.e., 2004-05 and 2011-12. But it was discontinued after 2011-12. The NITI Aayog data on the employment has been improved by providing it on frequent intervals with the recommendations of the Task Force of the Government of India. In 2017, the NSSO surveys have been replaced by the PLFS. Although the recent PLFS of 2017-18 has been made available by the Government of India but it has not been considered for this study due to comparability issues of survey methodology, the survey design and the mechanism of the collection of data with the previous NSS rounds (Jajoria & Jatav, 2020)[25]. In the PLFS data, the households change quarterly. It does not have the MPCE. Furthermore, data on consumption expenditure has not been released by the government and the report was rejected (Kannan, 2020)[26]. Considering all the above facts of the issues of data and the need of this study, the rounds 2004-05 and 2011-12 have been taken for the study.

[25] Jajoria, D., & Jatav, M. (2020). Is periodic labour force survey, 2017-18 comparable with employment-unemployment survey, 2011-12? *Economic & Political Weekly, 55*(3), 12-16.

[26] Kannan, K. P. (2020). A low growth, no employment and no hope for budget for 'aspirational India'. *Economic & Political Weekly, 55*(9), 27-31.

The unit level employment unemployment and consumption expenditure data is made available by Ministry of Statistics and Programme Implementation in binary form. The employment unemployment data and consumption expenditure data consisted 3118 households surveyed in Punjab. The data has been extracted using the methodology provided by NSSO for its extraction. For preparing data for any of its analysis for calculation of any estimates, different key variables were generated for different blocks which helped in merging of data files. Multipliers were generated for estimating the population parameters. The state codes were generated, labelling the variables and the files were merged based on identification number.

1.8.3 Methodology for Measurement of Poverty

Poverty exists from immemorial time but its interpretation, severity, incidence, depth, description, context and methodology to measure keeps on changing from time to time. There has been sizeable amount of debate on the measurement of poverty. The Planning Commission estimates the poverty as based on the recommendations of the expert groups from time to time. The methodological issues considering the present economic situation are revisited from time to time for measuring the poverty.

In 1979, the Task Force (Alagh) estimated the poverty line based on calorie requirement. In the rural areas, the calorie norm per capita for each day was estimated as 2400 kcal in contrast to 2100 kcal in urban areas. However, it was updated at 1973-74 prices using the implicit deflator.

In 1989, Expert Group (Lakdawala) was appointed by the Planning Commission. It submitted the report in 1993. The poverty lines of Alagh were retained but the national poverty lines were divided into state specific poverty lines. These poverty lines could now measure the inter-state differences in prices by Fisher's index. The poverty lines of the Expert Group were updated using CPIAL for subsequent years for rural areas. In contrast, these were updated using CPIIW for urban areas.

In 2005, the Expert Group (Tendulkar) was appointed by the Planning Commission which submitted its report in 2009. However, this group did not construct the poverty line. But instead it was adopted from Lakdawala group as the poverty line of 2004-05 of urban areas and was converted from URP consumption to MRP consumption. However, the NSS consumption expenditure was used to take the value and quantity of items of consumption expenditure to derive the implicit price indices. These indices were

used to compute the index numbers of states relative to index numbers of India level and the rural prices of states relative to the urban prices of states.

In 2012, a new committee was appointed by the Government of India as Expert Group (Rangarajan) for looking into the methodology of calculating poverty. This group submitted its report in 2014. This group opted for MMRP. The food component was taken in the poverty line basket where the three nutrients i.e., calories, fats and proteins were taken. Secondly, the non-food components which includes clothing, house rent, education and conveyance were included at normative level. Lastly, other non-food items were behaviourally determined (Rangarajan & Dev, 2017)[27].

This study uses the Tendulkar Methodology to estimate the poverty as given by the Planning Commission. The poverty lines of rural and urban areas of the states are used for the districts in rural and urban areas. It is ₹ 1155 per capita per month in urban areas and ₹ 1054 per capita per month in rural areas during 2011-12 and ₹ 643 per capita per month in urban areas and ₹ 544 per capita per month in rural areas during 2004-05.

For the analysis of the objectives to solve the research problem, there is need of some quantitative analysis in the study. The use of such methods yields the desired results providing empirical evidence supported with the literature review in the study. The study uses following statistical methods and econometric models:

1.8.4 Estimation of Descriptive Statistics

The estimation of descriptive statistics provides insights of the basic features and gives the overview of the data. It provides the summary of the sample and acts as base for further methods to be used in the analysis. Mathematical formulation of such measures which have been used in the study is given below:

Mean value of variables is calculated as below:

$$\overline{X}_{it} = \frac{1}{n} * \sum_{i=1}^{n} X_{it}$$

where

[27] Rangarajan, C., & Dev, S. M. (2017). *Counting the poor in India: Where do we Stand (1st ed.).* New Delhi, India: Academic Foundation India.

$\overline{X}_{it}$ is mean value of i[th] indicator at t[th] time;

N is the number of observation and

$\sum_{i=1}^{n} X_{it}$ is sum value of i[th] indicator at t[th] time.

Standard deviation of variables is calculated as below:

$$\sigma = \sqrt{\frac{(x - \overline{x})^2}{n}}$$

where

σ is Standard deviation of i[th] indicator;

N is the number of observations;

x is actual value of x variable and

$\overline{x}$ is mean value of i[th] indicator.

Growth Rate Analysis

The compound growth rate of different indicators has been calculated with the fitting of following exponential model when data is in time series form. But some of the data is in panel form like consumption expenditure survey data collected by national sample survey organisation, in such type of case fit next function.

Growth Rate when data in time series calculated as below:

$$Y = ab^t$$

Log Y = log a + t log b

CGR = (Antilog b-1) * 100

where,

t = time period in year

Y = GSDP, GSDP per capita etc.

a & b = Regression parameters and

CGR = Compound growth rate

Growth Rate when data in time lags calculated as below:

$$Y = ((MPCE_t \ / MPCE_{t-n})\text{^}(1/_{n-1}) - 1) * 100$$

where,

Y = Compound annual growth rate,

$MPCE_t$ = monthly per capita consumption expenditure at 't' time,

$MPCE_{t-1}$= monthly per capita consumption expenditure at 't-n' previous time, and

$1/_{n-1}$ = 1/ no. of gap year.

Correlation Analysis

Karl Pearson (1857–1936), whose contribution has been widely accepted in analysis on the development of correlation coefficient is the most widely used index and it is also called the Pearson product-moment correlation coefficient. The coefficient is appropriate for describing the linear association between two quantitative variables.

$$r = \frac{\frac{\sum(X_i - \bar{X}) - (Y_i - \bar{Y})}{n}}{\sqrt{\left[\frac{\sum(X_i - \bar{X})^2}{n}\right]\left[\frac{\sum(Y_i - \bar{Y})^2}{n}\right]}}$$

where,

r = coefficient of correlation;

X_i = actual value of variable X;

$\bar{X}$ = mean value of variable X;

Y_i = actual value of variable Y;

$\bar{Y}$ = mean value of variable Y;

n = number of observations

Post hoc test

Post hoc test is used to test the differences between three or more means when the F test is significant. This is used in ANOVA. This test is used when there is need for additional exploring the differences among means to know which means significantly differ from each other. Tukey's HSD test has been designed for multiple comparison that

are significantly different from each other. It is used for all pairwise comparisons simultaneously. Mathematically, it is written as:

$$q_{s=\frac{Y_A - Y_B}{SE}}$$

where,

Y_A is the comparison of two larger means;

Y_B is the comparison of two smaller means;

SE is the standard error of sum of means;

If q_s is greater than critical value $q_{\alpha,}$ the means are significantly different at level α.

The study uses the following econometric models:

Logit Model

In the classical linear regression models, the dependent variable is assumed to be quantitative and the explanatory variables can be qualitative or quantitative. However, when the dependent variable is nominal or qualitative such as employed or unemployed, poor household or non-poor household, the assumptions of classical linear regression model may not hold true. To study the determinants of employment, binary outcome variable employment takes two values: 1 meaning employed, 0 meaning unemployed. To study the determinants of poverty, binary outcome variable poverty takes two values: 1 meaning poor household, 0 meaning non-poor household. In such cases, the variance is not constant and the error term is not normally distributed. Logit model was developed by Cox (1958)[28] which is considered appropriate when the relationship between explained variable and explanatory variables is not linear. This model has been used to study the determinants of employment and poverty.

It can be written as:

$$L_i = In\{P_i|1 - P_i\} = \beta_1 + \beta_2 X_i + u_i$$

[28] Cox, D. R. (1958). The regression analysis of binary sequences. *Journal of the Royal Statistical Society: Series B (Methodological)*, *20*(2), 215-232.

where L is the log of odds ratio called logit which is not only linear in X but also linear in parameters, i = 1,…., N shows the observations.

Truncated Tobit Model

Tobit model was developed by Tobin in 1958. A truncated sample has information for only some observations of the dependent variable in the sample. According to Gujarati (2003)[29] using ordinary least square on the truncated data set will lead to inconsistent estimates. To determine the determinants of income inequality truncated Tobit model has been used. The dependent variable is truncated response variable which shows increasing scale leads to improvement in economic situation. It can be either censored left or right, or both left and right censored. The lower and/or upper limit of the regressand can be any number.

$$y_i^* = x_i'\beta + \epsilon_i$$

$$y_i = \begin{cases} a \ \ if \ y_i^* \ \leq a \\ y_i^* \ \ if \ a \ < y_i^* < b \\ b \ \ if \ y_i^* \ \geq b \end{cases}$$

Here a is the lower limit and b is the upper limit of the regressand, subscript i = 1,…., N gives the observation, y_i^* is an unobserved or latent variable, x_i is a vector of explanatory variables, β is a vector of unknown parameters, and ϵ_i is a disturbance term.

The Tobit estimated slope coefficients shows a unit change in the independent variable which affects the income class with the other variables being held constant in the regression. All the findings results are shown by the estimated coefficients and their standard errors. In addition, goodness of fit for the model is acquainted by the log-likelihood test statistic.

Simultaneous Equation Model with 3SLS

To consider the triangular relationship more than one regression equation is needed where set of variables is lumped that can be determined simultaneously. The regression models in which the relationship of more than one variables is studied are

[29] Gujarati, D. N. (2003). *Basic econometrics (4th ed.)*. New York: McGraw-Hill Publications.

known as simultaneous equation regression model (Madnani (2005)[30]; Gujarati (2005)[31]; Gujarati & Porter (2010)[32]; Nikam et al. (2019)[33]. Each of the three variable acts as an instrument in the model and three stage least square method is used which was introduced by Zellner & Theil (1962)[34]. The three stage least square method involves successive application of the OLS technique which removes the correlation between the error term and the independent variables in the model. Mathematically, it can be written as:

$$y_\mu = Y\mu Y_\mu + X_\mu \beta_\mu + u_\mu$$

where,

y_μ is the column vector of observations of one of the jointly variables;

$Y\mu$ is the $T\ X\ m_\mu$ matrix of values taken by explanatory dependent variables of the equation;

Y_μ is the corresponding coefficient vector;

X_μ is the $T\ X\ l_\mu$ matrix of values taken by explanatory predetermined variables;

β_μ is the corresponding coefficient vector;

u_μ is the column vector of *T* structural disturbances

In the present model, there exists the endogenous and exogenous variables. Endogenous variables are those variables whose values are determined within the model. These are the regressors and or dependent variables employment, income inequality and poverty in the model. These variables also act as instruments. Exogenous variables are the variables entering from and determined from outside the system being studied. These are the pre-determined or the independent variables in the system. These variables are

[30] Madnani, G.M.K. (2005). *Introduction to econometrics: Principles and applications (7th ed.)*. New Delhi, India: Oxford and IBH Publishing, New Delhi.

[31] Gujarati, D. N. (2005). *Basic econometrics (4th ed.).* New York: McGraw-Hill Publications.

[32] Gujarati, D. N., & Porter, D. C. (2010). *Essentials of econometrics (4th ed.)*. New York: McGraw-Hill Publications.

[33] Nikam, V., Jhajhria, A., & Pal, S. (2019). *Quantitative methods for social sciences*. New Delhi, India: ICAR-National Institute of Agricultural Economics and Policy Research.

[34] Zellner, A., & Theil, H. (1962). Three-stage least squares: Simultaneous estimation of simultaneous equations. Econometrica, *30*(1), 54-78.

employment, poverty and income inequality, household size, scheduled castes and scheduled tribes, agricultural land, schooling year, age, and illiterate.

This study will give new thoughts to suggest for policies aimed at improving employment growth. This study is going to enhance the existing literature by providing supporting empirical evidences of the relation of variables studied by earlier researchers in this area. This research will be helpful in suggesting policies to the government for enhancing employment and reducing income inequality and poverty in Punjab.

1.9 Conceptual Framework of Employment, Poverty and Income Inequality

The different concepts related to the framework of employment, income inequality and poverty have been discussed below:

1.9.1 Detailed activity status codes

Working (employed)

"*Self-employed*

11 worked in household enterprises (self-employed) as own-account worker

12 worked in household enterprises (self-employed) as an employer

21 worked in household enterprises (self-employed) as helper

Regular wage/ salaried employee

31 worked as regular wage/ salaried employee

Casual labour

41 worked as casual labour in public works other than MGNREG public works

42 worked as casual labour in Mahatma Gandhi NREG public works

51 worked as casual labour in other types of works

61 did not work owing to sickness though there was work in household enterprise

62 did not work owing to other reasons though there was work in household enterprise

71 did not work owing to sickness but had regular/wage employment

72 did not work owing to other reasons but had regular salaried/ wage employment

not working but seeking/available for work (or unemployed)

81 sought work or did not seek but was available for work

neither working nor available for work (or not in labour force)

91 attended educational institutions

92 attended to domestic duties only

93 attended to domestic duties and was also engaged in free collection of goods (vegetables, roots, firewood, cattle feed, etc.), sewing, tailoring, weaving, etc. for household use

94 rentiers, pensioners, remittance recipients, etc.

95 not able to work owing to disability

97 others (including beggars, prostitutes, etc.)

98 did not work owing to sickness (for casual workers only)

99 children of age 0-4 years

It may be noted that codes 42, 61, 62, 71, 72, 82 and 98 were applicable for CWS and CDS approaches only. It may also be noted that activity status code 41 in the usual status is used for casual labour in all types of public works, whereas in the current activity status, code 41 is for casual labour in public works other than MGNREG public works and code 42 is for casual labour in MGNREG public works" (GOI, 2014)[35].

1.9.2 Labour Force: *"Persons who were either 'working' (or employed) or 'seeking or available for work' (or unemployed) constituted the labour force. Persons with activity status codes 11 – 82 constituted the labour force"* (GOI, 2014)[36].

1.9.3 Labour Force Participation Rate: "*Labour force participation rate is defined as the number of persons/person-days in the labour force (which includes both the employed and unemployed) per 1000 person/ person-days"* (GOI, 2014)[37].

1.9.4 Worker: "*Persons who were engaged in any economic activity or who, despite their attachment to economic activity, abstained themselves from work for reason of illness, injury or other physical disability, bad weather, festivals, social or religious functions or other contingencies necessitating temporary absence from work, constituted workers. Unpaid household members who assisted in the operation of an economic*

[35] GOI. (2014). *Employment and Unemployment Situation in India.* New Delhi: NSSO

[36] GOI. (2014). *Employment and Unemployment Situation in India.* New Delhi: NSSO.

[37] GOI. (2014). *Employment and Unemployment Situation in India.* New Delhi: NSSO.

activity in the household farm or non-farm activities were also considered as workers. Relevant activity status codes 11 to 72 were assigned for workers". (GOI, 2014)[38]

1.9.5 Worker Population Ratio: "*Worker population ratio is the number of persons/person-days employed per 1000 persons/person-days"* (GOI, 2014)[39].

1.9.6 Proportion Unemployed: *"Proportion unemployed is the number of persons/person-days unemployed per 1000 persons/person-days"* (GOI, 2014)[40].

1.9.7 Unemployment Rate: Unemployment rate is the ratio of number of unemployed persons over total number of employed and unemployed persons (GOI, 2014)[41].

1.9.8 Not in Labour Force: "*Persons who were neither 'working' nor 'seeking or available for work' for various reasons during the reference period were considered as 'not in labour force'. Persons under this category are students, those engaged in domestic duties, rentiers, pensioners, recipients of remittances, those living on alms, infirm or disabled persons, too young persons, prostitutes, etc. and casual labourers not working due to sickness. Activity status codes 91-95, 97, 98 and 99 were assigned for persons belonging to category 'not in labour force"* (GOI, 2014)[42].

1.9.9 Usual Principal Activity Status: "*The usual activity status relates to the activity status of a person during the reference period of 365 days preceding the date of survey. The activity status on which a person spent relatively long time (i.e. major time criterion) during the 365 days preceding the date of survey was considered as the usual principal activity status of the person"* (GOI, 2014)[43].

1.9.10 Usual Subsidiary Activity Status*: "**A person whose usual principal activity status was determined on the basis of the major time criterion could have pursued some economic activity for a shorter time throughout the reference year of 365 days preceding the date of survey or for a minor period, which is not less than 30 days, during the reference year. The status in which such economic activity was pursued was the subsidiary economic activity status of that person. Activity status codes 11 to 51 only were used for the subsidiary economic activity"* (GOI, 2014)[44].

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[38] GOI. (2014). *Employment and Unemployment Situation in India.* New Delhi: NSSO.
[39] GOI. (2014). *Employment and Unemployment Situation in India.* New Delhi: NSSO.
[40] GOI. (2014). *Employment and Unemployment Situation in India.* New Delhi: NSSO.
[41] GOI. (2014). *Employment and Unemployment Situation in India.* New Delhi: NSSO.
[42] GOI. (2014). *Employment and Unemployment Situation in India.* New Delhi: NSSO.
[43] GOI. (2014). *Employment and Unemployment Situation in India.* New Delhi: NSSO.
[44] GOI. (2014). *Employment and Unemployment Situation in India.* New Delhi: NSSO.

1.9.11 Usual Principal Status and Subsidiary status, us(ps+ss): "*According to the usual status (ps+ss), workers are those who perform some work activity either in the principal status or in the subsidiary status. Thus, a person who is not a worker in the usual principal status is considered as worker according to the usual status (ps+ss), if the person pursues some subsidiary economic activity for 30 days or more during 365 days preceding the date of survey".*(GOI, 2014)[45].

1.9.12 Mixed Reference Period: "*This is the measure of MPCE obtained by the CES when household consumer expenditure on items of clothing and bedding, footwear, education, institutional medical care, and durable goods is recorded for a reference period of last 365 days, and expenditure on all other items is recorded with a reference period of last 30 days".* (GOI, 2013)[46].

1.9.13 Poverty: The concept of poverty could have numerous definitions. However, definition of poverty varies on the basis of food poverty, low consumption expenditure and very low income**.** The concept of poverty has been widely under debate over various years. Some of the definitions are:

"*Poverty is the inability to attain critical minimum amount of consumption*" **(Mok et al., 2007)[47].**

"*The poverty line usually relates to a pre-specified basket of goods presumed to be necessary for above-subsistence existence"* **(Panagariya & Mukim, 2014)[48]**.

"*Poor people are those whose standard of living as measured by income or consumption is lower than the poverty line*" **(Akerele et al., 2012)[49].**

The World Bank's assessment of poverty is linked to the issue of determining "*the critical level of spending that a poor person would deem to be adequate in order to escape poverty*" **(Ravallion, 2001)[50].**

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[45] GOI. (2014). *Employment and Unemployment Situation in India.* New Delhi: NSSO.

[46] GOI. (2013). Key Indicators of Household Consumer Expenditure in India. New Delhi: NSSO.

[47]Mok, T. Y., Gan, C., & Sanyal, A. (2007). The determinants of urban household poverty in Malaysia. *Journal of Social Sciences, 3*(4), 190-196.

[48] Panagariya, A., & Mukim, M. (2014). A comprehensive analysis of poverty in India. *Asian Development Review, 31*(1), 1-52.

[49] Akerele, D., Momoh, S., Adewuyi, S. A., Phillip, B. B., & Ashaolu, O. F. (2012). Socioeconomic determinants of poverty among urban households in south-west Nigeria. *International Journal of Social Economics, 39*(3), 168-181.

[50] Ravallion, M. (2001). Growth, inequality and poverty: Looking beyond averages. *World Development*, *29*(11), 1803-1815.

Thus, poverty is inability to meet the minimum level of consumption expenditure which in turn is minimum expenditure on food and non-food items.

1.9.14 Income Inequality: Kravis (1960)[51], describes income inequality when "*income dispersion was less pronounced in the lower part of the distribution scale and greater in the upper part of the distribution scale*".

Ahluwalia, (1976)[52] confirms inequality when "*there is a high degree of inequality due to the small share of income accruing both to the middle-income group and to the lowest income group*".

Thus, income inequality means how far the households are from each other in terms of consumption expenditure.

1.9.15 Head Count Ratio: HCR is the proportion of population living below the poverty line. It is mathematically expressed as:

$$HCR = \frac{1}{n}\sum_{i=1}^{m} i, (Y_i < Z) = \frac{m}{n}, where\ m < n$$

where,

HCR is head count ratio

For each household '*i*'

MPCE is represented as *Yi*;

Z is the poverty line where out of '*n*' households, '*m*' are below the poverty line *Z*.

1.9.16 Gini Coefficient: It measures the income inequality as inequality in the distribution of MPCE. It is expressed mathematically as:

$$Gini\ index = \frac{1}{2N^2\bar{Y}}\sum_{i=1}^{N}\sum_{j=1}^{N}\left|Y_i - Y_j\right|$$

where,

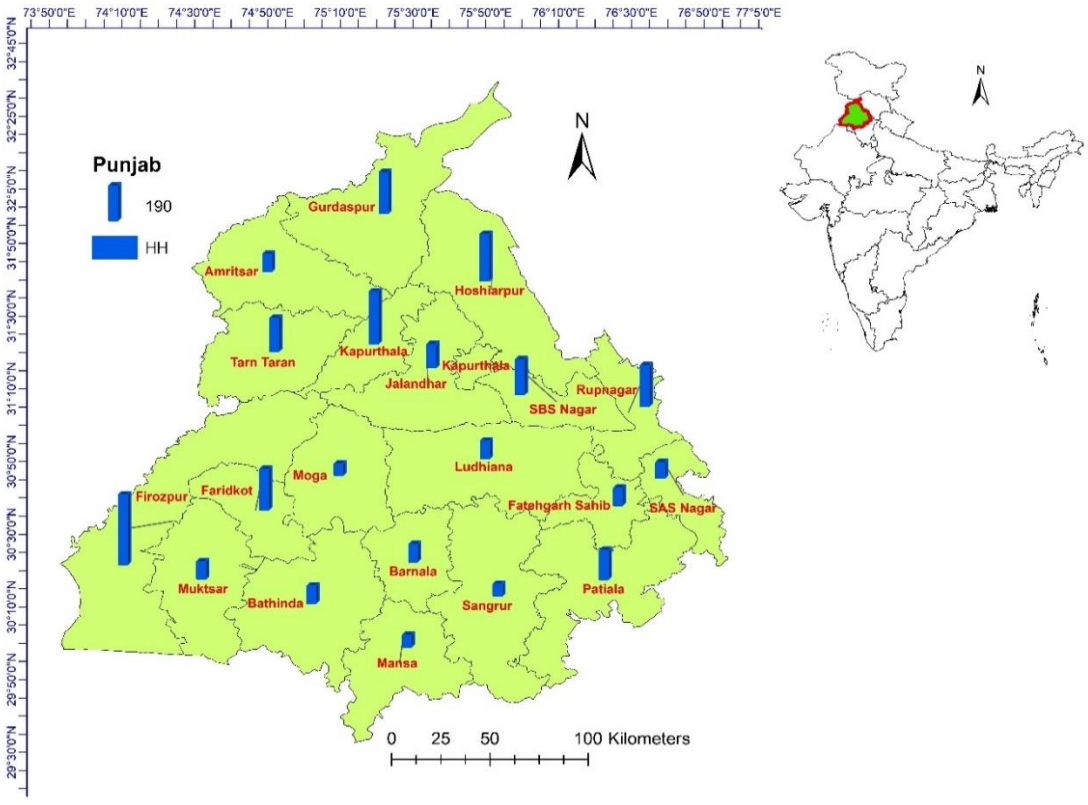
[51] Kravis, I. B. (1960). International differences in the distribution of income. *The Review of Economics and Statistics, 42*(4), 408-416.

[52] Ahluwalia, M. S. (1976). Inequality, poverty and development. *Journal of Development Economics, 3*(4), 307-342.

$\bar{Y}$ is the average expenditure of the households and Y_i and Y_j are the expenditure of *i*th and *j*th household.

1.10 Profile of the Study Area

Punjab is one of the states in India which lies in the northwest region. It is composed of two words *Punj* meaning five and *Aab* meaning water, that is, it is land of five rivers. These rivers are Chenab, Sutlej, Ravi, Jhelum and Beas. At present, Ravi, Sutlej and Beas are the rivers which flow in Punjab. Chenab and Jhelum are now the part of Pakistan. The state of Punjab is divided into three different regions which are named as Majha, Malwa and Doaba (Government of Punjab, India)[53]



Map 1.1: Study area and Sample size from NSSO data

1.10.1 Geographic Area of Punjab

The total area of Punjab is 50,362 square kilometres out of which 47,847.4 square kilometres is covered under the rural areas and 2,514.6 square kilometres is covered under

[53]Government of Punjab. *Know Punjab*. Retrieved from http://punjab.gov.in/know-punjab.

the urban areas (Census of India, 2011)[54]. District Firozpur occupies the largest area of 5,305 square kilometres and district Fatehgarh Sahib, the smallest area of 1180 square kilometres in Punjab. Its average height above the sea level is 300 meters or 980 ft. It ranges from the southwest to northeast across the border. From the southwest, its range is 180 meters or 590 ft and from border of northeast, its range is greater than 500 meters or 1600 ft (Government of Punjab, India)[55]

1.10.2 Location of Punjab

Punjab is bounded by Jammu and Kashmir in the north and Rajasthan and Haryana in the south, on the northeast side range is Himachal Pradesh and Pakistan is on the west of Punjab. It has an extended latitude of 29.30° North to 32.32° North with 73.44° East to 76.50° East longitudes (Government of Punjab, India)[56].

1.10.3 Different characteristics of the Population of Punjab

Table 1.1 pertains to some of the selected characteristics of Punjab. It shows more share of population in rural areas (62.52 per cent), a literacy rate of 75.84 per cent. The

Table 1.1: Selected characteristics of Population in Punjab

Particulars	Unit	Rural	Urban	Total
No. of households		3358113	2154958	5513071
Total population	Persons	17344192	10399146	27743338
	Population share (%)	62.52	37.48	100
	Male population	9093476	5545989	14639465
	Female population	8250716	4853157	13103873
Literacy rate (%)	Persons	71.42	83.18	75.84
	Male	76.62	86.67	80.44
	Female	65.74	79.21	70.73
Gender Ratio (Female per 1000 Males)		907	875	895
Decadal growth of population (%)	Persons	7.75	25.86	13.89
	Male	6.77	24.11	12.74
	Female	8.85	27.91	15.21
Population density (persons per square km)		362	4136	551

Source: Census of India, 2011

[54] Government of India. (2011). *Census of India.* Government of India.

[55] Government of Punjab. *Know Punjab*. Retrieved from http://punjab.gov.in/know-punjab.

[56] Government of Punjab. *Know Punjab*. Retrieved from http://punjab.gov.in/know-punjab.

decadal growth of population in Punjab was 13.89 per cent with density of 551 persons per square kilometres.

Table 1.2 presents the number of religion groups in Punjab. It can be seen that the highest share of population is Sikhs followed by Hindus, Muslims, Christians and other stated religion groups.

Table 1.2: Population across Religion Groups in Punjab

Religion group	Rural	Urban	Total
All Religions	17344192	10399146	27743338
Hindus	4396066	6282072	10678138
Muslims	278825	256664	535489
Christians	242977	105253	348230
Sikhs	12348455	3656299	16004754
Buddhists	23577	9660	33237
Jains	4366	40674	45040
Other religion	6646	4240	10886
Religion not stated	43280	44284	87564

Source: Census of India, 2011

Table 1.3 shows the population across social groups in Punjab. As it can be observed in the rural areas, there is no scheduled tribe population in Punjab but large number of persons of scheduled caste population is found followed by the urban areas in Punjab.

Table 1.3: Population across Social Groups in Punjab

Social Group		Rural	Urban	Total
Scheduled caste population	Persons	6496986	2363193	8860179
	Male	3396329	1243546	4639875
	Female	3100657	1119647	4220304
Scheduled Tribes population	Persons	0	0	0
	Male	0	0	0
	Female	0	0	0

Source: Census of India, 2011

Table 1.4 pertains to the profile of working population of Punjab. There are total of 98,97,362 (35.67 per cent) workers in Punjab. The lowest number of workers are household industry workers. There is large difference in the population of main workers and that of marginal workers, agricultural labourers and the cultivators of land. However, the non-working population is more than the working population.

Table 1.4: Profile of Working Population of Punjab

Particulars	Rural	Urban	Total
Total workers	61,79,199	37,18,163	98,97,362
% of working population	35.63	35.75	35.67
Non-working population	11164993	66,80,983	1,78,45,976
Main workers	51,07,024	33,43,912	84,50,936
Marginal workers	10,72,175	3,74,251	14,46,426
Cultivators	18,40,001	94,510	19,34,511
Agricultural labourers	14,74,732	1,13,723	15,88,455
Household industry workers	2,35,251	1,50,709	3,85,960
Other workers	26,29,215	33,59,221	59,88,436

Source: Census of India, 2011

Table 1.5 pertains to the GSDP and PCI at current and constant prices. It can be seen from 1980-81 to 1985-86, the change in PCI has been less but during 2005-06 to 2006-07 and 2006-07 to 2007-08, the increase in PCI was more. After that, the increase has been substantial.

Table 1.6 pertains to the GSDP and per capita income. The PCI at constant pries is increasing but as it can be seen in table 1.6 that 2006-07 shows the highest percentage change of 8.18 per cent. This is followed by 2007-08 and 2016-17. The change in GSDP was highest in 2006-07 with 10.18 per cent followed by 2007-08 with 9.05 per cent.

Table 1.7 shows the growth rate of GSDP, PCI and population. There was highest decadal growth of PCI between 2010-11 to 2018-19 with 4.49 per cent. The GSDP growth has been highest between 2000-01 to 2010-11 with 6.38 per cent. The highest decadal growth of population was between 1990-91 to 2000-01 which was 1.91 per cent. The growth rate of GSDP between 1980-81 to 1990-91 was 5.32 per cent due to 4.78 per cent growth in agriculture and manufacturing growth rate of 8.56 per cent but it declined to 4.73 per cent between 1990-91 to 2001-2001 due to decline in growth of agriculture

which was 4.73 per cent and manufacturing growth rate which was 5.10 per cent (Singh & Singh, 2017[57]; Singh & Singh, 2017[58]). This is because green revolution was practised in a better way. The growth rate of GSDP declined between 2010-11 to 2018-19 due to the decline in agriculture and manufacturing growth rate.

Table 1.5: GSDP and PCI in Punjab over the time at current and constant (2011-12 price)

Year	GSDP at Current price (Rs. Million)	GSDP Constant at Constant price (Rs. Million)	Population (in 1000)	PCI at current price (Rs.)	PCI at constant price (Rs.)
1980-81	56100	531650	15729	3567	33801
1985-86	106129	707511	17238	6157	41044
1990-91	210820	886437	19022	11083	46600
1995-96	442485	1097223	20909	21163	52477
2000-01	778078	1406525	22982	33857	61202
2001-02	829478	1433587	23276	35637	61591
2002-03	856969	1474438	23706	36150	62197
2003-04	938649	1563990	24144	38877	64777
2004-05	1007119	1641412	24591	40955	66750
2005-06	1129820	1738324	25045	45112	69408
2006-07	1322076	1915305	25508	51829	75085
2007-08	1583349	2088632	25980	60945	80394
2008-09	1810004	2210800	26460	68405	83552
2009-10	2053994	2349887	26949	76218	87198
2010-11	2352518	2503007	27447	85711	91194
2011-12	2666283	2666283	27955	95379	95379
2012-13	2977338	2808229	28321	105129	99158
2013-14	3321469	2994497	28692	115765	104368
2014-15	3551018	3121253	29067	122165	107380
2015-16	3900874	3300519	29448	132467	112080
2016-17	4269881	3530406	29834	143124	118337
2017-18	4791410	3755347	30224	158529	124250
2018-19	5218609	3977113	30620	170432	129887

Source: Estimates made by author based on CSO, NAS

[57] Singh, A. & Singh, J. (2017). Agricultural and issues: A study of Punjab and Haryana. *International Journal of Research in Economics and Social Sciences, 7*(7), 422-430.

[58] Singh, A. & Singh, J. (2017). Growth and contribution of industrial sector in Punjab and Haryana economy. *International Journal of Research in Economics and Social Sciences, 7*(9), 360-367.

Table 1.6: Growth rate of GSDP and PCI in Punjab (2011-12 prices)

Year	Year-on-Year change %		
	GSDP	PCI	Population
1996-97	7.35	5.34	1.91
1997-98	3.00	1.08	1.91
1998-99	5.59	3.61	1.91
1999-00	5.63	3.65	1.91
2000-01	3.93	1.99	1.91
2001-02	1.92	0.63	1.28
2002-03	2.85	0.98	1.85
2003-04	6.07	4.15	1.85
2004-05	4.95	3.04	1.85
2005-06	5.90	3.98	1.85
2006-07	10.18	8.18	1.85
2007-08	9.05	7.07	1.85
2008-09	5.85	3.93	1.85
2009-10	6.29	4.36	1.85
2010-11	6.52	4.58	1.85
2011-12	6.52	4.59	1.85
2012-13	5.32	3.96	1.31
2013-14	6.63	5.25	1.31
2014-15	4.23	2.89	1.31
2015-16	5.74	4.38	1.31
2016-17	6.97	5.58	1.31
2017-18	6.37	5.00	1.31
2018-19	5.91	4.54	1.31

Source: Estimates made by author based on CSO, NAS

Table 1.7: Growth rate of GSDP and PCI during different decades in Punjab (at constant 2011-12 prices)

Time period	Growth rate %		
	GSDP	PCI	Population
1980-81 to 1990-91	5.32	3.35	1.90
1990-91 to 2000-01	4.73	2.76	1.91
2000-01 to 2010-11	6.38	4.48	1.82
2010-11 to 2018-19	5.89	4.49	1.35
1980-81 to 2018-19	5.29	3.41	1.82

Source: Estimates made by author based on CSO, NAS

1.11 Limitations of the Study

The study aimed to explore and quantify the aspects of employment, poverty and income inequality but still there are few limitations of the study which are given below:

- This study does not include the latest PLFS data due to the comparability issues.
- The study has been undertaken to study the relationship of employment, poverty and income inequality where households is the unit of analysis. Due to problem of sample size of the districts, it has not been taken as a unit of analysis.

1.12 Organisation of Thesis

The study is organised into six chapters.

Chapter 1 is introductory in nature. It includes the introduction, research questions, objectives of the study, hypothesis of the study, data sources and methodology, conceptual framework, study area and limitations of the study.

Chapter 2 provides the review of literature of employment, poverty and income inequality and their relationship.

Chapter 3 deals with trends and patterns of employment, poverty and income inequality in Punjab.

Chapter 4 provided the econometric model estimation for analyses the determinants of employment, poverty and income inequality.

Chapter 5 captures the relationship between employment, poverty and income inequality. It further deepened to provide the theoretical explanation of relationship of employment, poverty and income inequality proceeding with the concept of working poor, empirical estimation of the relationship of variables with the effect of other variables.

Chapter 6 gives the conclusion and policy recommendation of the study.

CHAPTER II

REVIEW OF LITERATURE

Labour is one of the crucial factors for the progress of economic growth of a country. The skill formation of labour enhances the generation of employment opportunities. Such job creation perceives the proceeding of employment-oriented growth. There are many theoretical models which have discussed the relation between economic growth and employment.

2.1 Theoretical Background

A phenomenon is explained and predicted with the help of some theory. This theoretical background is committed to the critical review of some comprehensive models of development. It also examines the relevance of these models to the present study.

Rosenstein-Rodan (1943[59], 1944[60]) explains the theory in which a minimum level of resources are required for self-sustained growth. To overcome the problem of unemployment, there is need to provide skill and training which push the people for taking up self-employment. The theory provides a ground that a big push investment in the form of training and investment can help in increasing the decent employment and solve the problem of poverty and inequality. Thus, this theory can considered to solve the statement of problem of this study.

Lewis (1954)[61] explained the theory of unlimited supply of labour in which as the surplus labour withdraws from the subsistence sector to capitalist sector it results into capital accumulation which helps in economic development. The productivity of the capitalist sector being higher than the subsistence sector results into capital formation when more people are employed from the agriculture sector. It continues till labour supply is inelastic and surplus labour in the subsistence sector disappears.

[59] Rosenstein-Rodan, P. N. (1943). Problems of industrialisation of eastern and south-eastern Europe. *The Economic Journal, 53*(210/211), 202-211.

[60] Rosenstein-Rodan, P. N. (1944). The international development of economically backward areas. *International Affairs, 20*(2), 157-165.

[61] Lewis, W. A. (1954). Economic development with unlimited supplies of labour. *The Manchester School*, *22*(2), 139-191.

Solow (1956)[62] considers dual sector consisting agriculture and industrial sector. The steady growth takes place with high capital-labour ratio in the capitalist sector and low capital labour ratio in the agriculture sector. This technique becomes advantageous for the growth of labour. Such a process generates rising and then falling inequality. This was first described by Kuznets (1955[63], 1963[64]) as "inverted U-curve". According to this hypothesis, the economic development as measured by the per capita income results into increasing the income inequality in the initial stages of development and decreases in the later stages of development.

Leibenstein (1960)[65] gave the theory to explain the solution of problem of poverty. A minimum effort is necessary to stimulate growth which enables the poor to rise above the poverty line. This is in the form of critical minimum level of investment in the form of skill and training which will make development self-sufficient by generating sufficient incomes for the households.

Nurkse (1962)[66] explained the solution of vicious circle of poverty by increasing capital formation. The disguised unemployed people from agriculture be absorbed by using capital to create new jobs. This will help lead to balanced growth in the country and solve the problems of poverty, unemployment and inequality which is being discussed in the study.

Employment and income distribution are the indivisible elements in the process of growth. The First United Nations Development Decade (1961-70) was strategically focusing on economic growth while that the Second Development Decade (1971-80) concentrated on association of employment and income distribution with economic growth. This trend was further highlighted in the strategy of further Development Decades. The changes in the structure of employment, be it self-employment or regular employment or casual employment are revealed in the changes in the distribution of

[62] Solow, R. M. (1956). A contribution to the theory of economic growth. *The Quarterly Journal of Economics*, *70*(1), 65-94.

[63] Kuznets, S. (1955). Economic growth and income inequality. *The American Economic Review*, 1-28.

[64] Kuznets, S. (1963). Quantitative aspects of the economic growth of nations: VIII. Distribution of income by size. *Economic Development and Cultural Change*, *11*(2, Part 2), 1-80.

[65] Leibenstein, H. (1960). *Economic backwardness and economic growth.* John Wiley and Sons, Inc. pp. 94-110.

[66] Nurkse, R. (1961). *Problems of capital formation in underdeveloped countries*. New York: Oxford University Press. p. 163

income. Thus, there is direct and indirect link of inequality and poverty. The direct link of inequality and poverty is obvious in the society through the unequal distribution of resources which affects negatively to certain group of persons. These persons are classified as poor. The indirect link of poverty and inequality is based on link through growth and employment. The various theoretical models discussed above provided base for other researchers' contribution with unfinished evidences.

Despite high growth, rising inequality and poverty has become a big issue in the development process which is the central point of many research studies undertaken. However, one of the controversial issues has been to study the mutual effects of employment, income inequality and poverty. Their direction of causality has been under debate in the literature.

This chapter delves on the review of literature related to employment, poverty and income inequality. Section 2.1 deals with theoretical background. The rest of the chapter proceeds with the literature on income inequality, poverty and employment, literature on poverty and income inequality, literature on employment and poverty, literature on employment and income inequality, literature on the relationship between employment, poverty and income inequality, research gap of the study and the last part gives the conclusion of the chapter.

2.2 Literature on Income Inequality

Kuznets (1955)[67] expressed his view that during initial stages of economic growth, there is rise in income inequality, then it settles, and finally declines during the later stages of economic growth. In undeveloped countries, the problems in providing equal education and other discrimination obstruct some groups preventing them to compete equally with the others. In the subsequent stages of growth, the enhancement of education, social security and the rise in work income relative to the property income causes a decline in the income inequality. This hypothesis became the subject of further in-depth studies undertaken by the other researchers. However, many studies do not confirm the Kuznets hypothesis that high growth is the cause of the income inequality.

[67] Kuznets, S. (1955). Economic growth and income inequality. *The American Economic Review*, 1-28.

Beck & Kamionka (2012)[68] points out that transforming the growth into declining poverty and income inequality has been discouraging and issues have been put forward on growth being unequally distributed. Chaudhuri & Ravallion (2006)[69] found that the NSS data suggest that the rise in income inequality with the per capita expenditures growth of the high-income groups during 1993-94. According to Hari & Hatti (2015)[70] there is widening of inequality in different regions, classes, rural and urban sectors due to the high growth which is termed as growth inequality paradox. The income gap of medium and large farms widened when there was uneven allocation from the benefits of growth in Punjab (Joshi, 2004)[71]. However, Gries & Redlin (2010)[72] has revealed causality between growth and inequality which is bidirectional and positive.

In literature, the trends of inequality explained by Kuznets curve is used by the researchers. However, Galbraith (2012)[73] arguments the universal application of the Kuznets curve. Recent studies on trends of Gini index had suggested a varied pattern in which there was rising inequality in 65 countries and declining income inequality in 51 countries with no trend being observed in the 14 other countries (United Nations, 2013)[74]. A rising inequality was found across European countries while lower inequality within

[68]Beck, S., & Kamionka, T. (2012). Who benefits from growth? *Center for Research in Economics and Statistics*. CREST Working Papers No. 2012-18. Retrieved from http://crest.science/RePEc/wpstorage/2012-18.pdf.

[69] Chaudhuri, S., & Ravallion, M. (2006). *Partially awakened giants: Uneven growth in China and India*. In L. A. Winters, & S. Yusuf (Eds.). Washington, DC: World Bank.

[70] Hari, K. S., & Hatti, N. (2015). Poverty and inequality in India: An exploratory analysis. *Social Science Spectrum*, 1(4), 249-261.

[71] Joshi, A. (2004). Farm household income, investment and consumption. *Economic and Political Weekly, 39*(4), 321-323.

[72] Gries, T., & Redlin, M. (2010). Short-run and long-run dynamics of growth, inequality and poverty in the developing World. *Center for International Economics*. University of Paderborn, Germany. Working Paper Series, September, No. 05. Retrieved from https://pdfs.semanticscholar.org/0784/1270beb62de46f382677f9e2c979f680bb47.pdf

[73] Galbraith, J. K. (2012). *Inequality and instability: A study of the world economy just before the great crisis*. Oxford University Press.

[74] United Nations. (2013). *Inequality matters: Report on the world social situation.* Department of Economic and Social Affairs, ST/ESA/345, New York: United Nations.

the European countries (Galbraith & Chowdhury, 2007)[75]. Piketty & Saez (2003)[76] recorded U-shape curve of income inequality during 1913-1998 in USA. Thus, the income inequality varies widely across the countries. According to World Bank[77], Gini index was 0.52 in Brazil, 0.42 in USA and 0.36 in China.

The literature on inequality in India is almost based on NSS consumption expenditure surveys. Sen (1997)[78] focussed the requirement for involving the well-being of individual and the economic freedom to shift from the income inequality to the economic equality. Deaton & Dreze (2002)[79] highlighted the broadening disparity and rising economic inequality in different regions in India. McKay & Pal (2004)[80] found the Gini coefficient reduced from the initial levels which were not even high in rural Karnataka and urban Punjab. Thus, there was relatively fast growth in the consumption along with declining inequality in urban areas in Punjab between 1960 and 1994. Dev & Ravi (2007)[81] revealed that Gini coefficient increased for rural as well as urban areas during the post-reform period in India. However, at the state level, the rate of fall in inequality was slow in 13 states out of the 17 states during the post-reform period in comparison to the pre-reform period. There was increasing disparities in rural and urban areas in the post-reform period. In 1983, the MPCE of rural areas as a percentage of

[75] Galbraith, J. K., & Chowdhury, D. R. (2007). The European wage structure, 1980–2005: How much flexibility do we have? Austin. UTIP Working Paper No. 41. Retrieved from https://s3.amazonaws.com/academia.edu.documents/34413853/utip_41.pdf?response-content-disposition=inline%3B%20filename%3DThe_European_Wage_Structure_1980-_2005_H.pdf&X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=AKIAIWOWYYGZ2Y53UL3A%2F20200129%2Fus-east-1%2Fs3%2Faws4_request&X-Amz-Date=20200129T021232Z&X-Amz-Expires=3600&X-Amz-SignedHeaders=host&X-Amz-Signature=1c06f7f7e3b082a974c93f55a4eafa24a04a7e0991309f5904874e680010a3ff.

[76] Piketty, T., & Saez, E. (2003). Income inequality in the United States, 1913-1998. *The Quarterly Journal of Economics*, *118*(1), 1-41.

[77] World Bank. *World Development Indicators*. Retrieved from https://datacatalog.worldbank.org/dataset/world-development-indicators.

[78] Sen, A. K. (1997). From income inequality to economic inequality. *Southern Economic Journal, 64*(2), 384–401.

[79] Deaton, A., & Dreze, J. (2002). Poverty and inequality in India: A re-examination. *Economic and Political Weekly, 37*(36), 3729–3748.

[80] McKay, A., & Pal, S. (2004). Relationships between household consumption and inequality in the Indian states. *Journal of Development Studies*, *40*(5), 65-90.

[81] Dev, S. M., & Ravi, C. (2007). Poverty and inequality: All India and states, 1983–2005. *Economic and Political Weekly, 42*(6), 509–521.

MPCE of urban areas reduced from 66 per cent to 61 per cent in 1993-94, and it reduced to 56 per cent in 2004-05 in India.

Himanshu & Sen (2014)[82] captured the rising economic inequality among states and also within the states in India. Chauhan et al. (2016)[83] measured the extent of inequality in the different regions in India using the consumption expenditure data for the period 1993-94 to 2011-12. The study found that the Gini index increased in 61 regions and decreased in 20 regions. In addition, the rich-poor ratio increased in 57 regions. Further, the rich-poor ratio was lower in the underdeveloped regions but it was more in the developed regions in India. The Gini coefficient was highest in Chandigarh (0.361) in 1993-94. Dadra and Nagar Haveli was found to have highest inequality in 2004-05 with Gini coefficient of 0.386 followed by Chandigarh and Maharashtra with Gini coefficient of 0.381 and 0.380 respectively. The gap between the consumption of richest and the consumption of poorest widened in India. This was measured with rich-poor ratio which was recorded 3.52, 3.94 and 3.99 during 1993-94, 2004-05 and 2011-12 respectively. Azam & Bhatt (2018)[84] highlighted the mean income differences which were smaller in urban areas than rural areas between 1993-94 and 2011-12 in India. During this period, there was one-third rise in inequality due to the contribution of change in the mean income across the districts in India. Dubey & Tiwari (2019)[85] conducted the analysis of inequality between 2004-05 and 2011-12 in Uttar Pradesh and found that it increased by two percentage points in the rural counterpart while it declined marginally in the urban areas. Moreover, income inequality was more in urban counterparts in Uttar Pradesh in contrast to the all India level. Furthermore, there was rise in consumption inequality in the urban areas in Uttar Pradesh.

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[82]Himanshu, & Sen, K. (2014). Revisiting the great Indian poverty debate: Measurement, patterns, and determinants. *Brooks World Poverty Institute*. The University of Manchester. BWPI Working Paper 203. Retrieved from http://hummedia.manchester.ac.uk/institutes/gdi/publications/workingpapers/bwpi/bwpi-wp-20314.pdf.

[83]Chauhan, R. K., Mohanty, S. K., Subramanian, S. V., Parida, J. K., & Padhi, B. (2016). Regional estimates of poverty and inequality in India, 1993–2012. *Social Indicators Research, 127*(3), 1249-1296.

[84] Azam, M. & Bhatt, B. (2018). Spatial income inequality in India, 1993–2011: A decomposition analysis. *Social Indicators Research, 138*(2), 505-522.

[85]Dubey, A., & Tiwari, S. (2019). Poverty and inequality: A disaggregated analysis. In: R. P. Mamgain (ed.), *Growth, disparities and inclusive development in India* (pp. 133-153). India studies in business and economics. Springer, Singapore.

Many studies have pointed to the factors affecting income inequality. McDowell et al. (1997)[86] analysed the effect of socioeconomic characteristics on expenditures across three income classes in United States using Tobit model. The findings reveal that the variables family size, age, ethnicity and marital status had significant effect on the income class. Demissie & Legesse (2013)[87] examined the determinants of diversification of income in Ethiopia whereby multinomial logit model was used to determine factors whichh influence participation of household in non-farm activities and Tobit model was used to analyse determinants of non-farm income. It was found that age and gender of the head of household, education of the head of household, number of persons economically active in household, presence of children, assets of livelihood influence the participation in non-farm activities.

Grivani et al., (2014)[88] analysed the determinants of absolute poverty in Iran using Tobit model in 2010. Absolute poverty line was estimated by decile class of the total expenditure. The results revealed the gender, dependency ratio, sector and education except guardian age effectively determine the absolute poverty. Chauhan et al. (2016)[89] revealed that urban residence, ST population and State Domestic Product per capita explained 37 per cent of the disparity in the Gini index of income inequality model. The rich poor ratio was significantly affected by the old dependency ratio, mean household size, urban residence, labourer households and time. This analysis was based on the income inequality in the different regions in India considering the consumption expenditure data for the period 1993-94 to 2011-12 using multiple regression analysis. Rani et al. (2017)[90] analysed the factors which contribute to income inequality based on regression decomposition using various rounds of NSSO in India. Education emerges as one of the important factor affecting income inequality in both rural and urban areas

[86] McDowell, D. R., Allen-Smith, J. E., & McLean-Meyinsse, P. E. (1997). Food expenditures and socioeconomic characteristics: Focus on income class. *American Journal of Agricultural Economics*, *79*(5), 1444-1451.

[87] Demissie, A., & Legesse, B. (2013). Determinants of income diversification among rural households: The case of smallholder farmers in Fedis district, Eastern Hararghe zone, Ethiopia. *Journal of Development and Agricultural Economics*, *5*(3), 120-128.

[88] Gerivani, F., Ahmadi Shadmehri, M. T., & Falahi, M. A. (2014). A study of determinats of absolute poverty of households in the northern khorasan province of Iran using Tobit Model. *International Journal of Management and Humanity Sciences*, *3*(4), 1662-1671.

[89] Chauhan, R. K., Mohanty, S. K., Subramanian, S. V., Parida, J. K., & Padhi, B. (2016). Regional estimates of poverty and inequality in India, 1993–2012. *Social Indicators Research, 127*(3), 1249-1296.

[90] Rani, U., Krishnakumar, J., & Bigotta, M. (2017). Accounting for income inequality: Empirical evidence from India. *Indian Economic Review*, *52*(1-2), 193-229.

followed by household size, employment status, regional variations and land ownership. Education has more contribution towards inequality of salaried employed followed by that of self-employed and very less for casual employed. The regional variations and household size contribute more for inequality of casual employed in urban sector. However, in the rural sector, land size, household size and regional variations are the factors of income inequality of self-employed. Azam & Bhatt (2018)[91] examined various spatial factors determining the income inequality in India by decomposable indices which includes Theil index, mean log deviation and Gini index using data of Human Development Profile of India and IHDS-2 for 1993 and 2011. The findings reveal that within district differences in income leads to the widen the income inequality in urban and rural areas and between state differences in income explains the between district income inequality in the rural areas. However, the within state differences in income in the urban areas account for between district income inequality. Furthermore, using NSS data these findings are compared which reveal that inequality is lower when consumption expenditure data is used as compared to the inequality when income data is used for both urban and rural sector in 1999 and 2011.

Ganaie (2018)[92] used the ARDL cointegration approach for analysing the determinants of income inequality using time series Estimated Household Income Inequality Data during 1963 to 2007 in India. The findings reveal that real GDP per capita has positive impact on top 1 per cent income share population and negative impact on overall income inequality. Furthermore, trade openness, price level, government expenditure positively affects the inequality. There is improvement in the income distribution with increase in the agriculture share in total GDP.

Syadullah et al. (2019)[93] examined the different economic and non-economic factors of income inequality in ASEAN countries during 2012-2016 period using panel data analysis. The findings of the study reveal dependency ratio, corruption perception index, unemployment rate, agricultural sector to GDP, democracy index influenced the

[91] Azam, M. & Bhatt, B. (2018). Spatial income inequality in India, 1993–2011: A decomposition analysis. *Social Indicators Research, 138*(2), 505-522.

[92]Ganaie, A. A., Bhat, S. A., & Kamaiah, B. (2018). Macro-determinants of income inequality: An empirical analysis in case of India. *Economics Bulletin*, *38*(1), 309-325.

[93]Syadullah, M., Adriansyah, B. G., & Wibowo, T. (2019). Impact of economic and non-economic factors on income inequality in ASEAN countries. *Asian Economic and Financial Review, 9*(12), 1346-1357.

income inequality. It was recommended to increase the investment for labour market in formal as well as informal sectors, provide banking services in the rural areas and making improvement in banks in providing the credit along with the savings function by the government. Sehrawat & Singh (2019)[94] investigated the empirical relation between human capital and inequality during 1970-2016 using ARDL co-integration approach in India. The findings of the study reveal the education expansion as an important factor in reduction in income inequality and increase in the average schooling years leads to more equitable distribution of income. On the other hand, the inflation, high economic growth and the openness in trade causes more inequality in distribution of income. It has been suggested in this study that policies should focus on the quality of education, inclusive education, providing training to the unskilled workers. Furthermore, encouragement of price stability shall lead to a fair distribution of income in India.

Tripathi (2019)[95] conducted an empirical inquiry to study the effect of education on inequality by estimating the Gini coefficient in 52 selected cities in urban India using NSS data of 2011-12 by ordinary least square method. The study revealed that city level education taken as number of students enrolled in Ph.D in universities have positive significant effect on the inequality. Furthermore, poverty has the negative significant effect on the inequality.

Tey et al. (2019)[96] examines factors affecting the income differentials using Household Income and Basic Amenities Survey of 2014 using quantile regression across states in Malaysia. The results revealed that the lower ends of distribution of income differentials was more pronounced and it varied at different levels of income across the states. There were differences in the income per capita of urban and rural areas and ethnicity groups which were significant. The structure of employment, urbanisation level, migration, female labour force participation and education level were also the factors affecting the income differentials. It was suggested that the male and females be provided with assistance necessary for their career so that there is increase in the household

[94]Sehrawat, M., & Singh, S. K. (2019). Human capital and income inequality in India: Is there a non-linear and asymmetric relationship? *Applied Economics*, *51*(39), 4325-4336.

[95]Tripathi, S. (2019). Does higher level of education reduce poverty and increase inequality? Evidence from urban India. *International Journal of Business and Globalisation*, *22*(3), 419-431.

[96]Tey, N. P., Lai, S. L., Ng, S. T., Goh, K. L., & Osman, A. F. (2019). Income inequality across states in Malaysia. *Planning Malaysia*, *17*(2), 12-26.

income. A flexible structure of employment and the use of technology was recommended for employers and policymakers.

2.3 Literature on Poverty

During the period 2004-05 to 2008-09, there was 8-9 per cent growth in Indian economy. However, there has been wide debate as to what contribution has been made by this growth phase in reducing the poor in India by Mehta & Shah (2003)[97]; Patnaik (2007)[98]; Datt & Ravallion (2010)[99]. Theoretically, there should be trickle-down mechanism with which there is fall in number of poor people in the country. The common view in the literature is that there is more rapid decline in poverty with the high rate of growth (Kraay, 2006)[100]. As it has been under debate by policy makers that rate of economic growth is the only thing which leads to the reduction in poverty, there are many states which have nine to ten per cent growth rate but still their reduction in poverty is tremendously varying. Thus, it is not solely the high growth rate which ensures the reduction in poverty. In many cases, it has been found that the trickle-down effect on poor has not been made by the growth. The growth elasticity of poverty might have been declined in such cases. The results of such cases are, however, mixed in the literature with large number of studies arguing that there is slow reduction in poverty in India (Hari & Hatti, 2015)[101]. In the study by Chaudhuri & Ravallion (2006)[102] using NSS data, it was examined that there was uneven growth which lead to evolution of poverty in India. However, Gries & Redlin (2010)[103] has revealed the negative causality showing bidirectional relationship between growth and poverty.

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[97] Mehta, A. K., & Shah, A. (2003). Chronic poverty in India: Incidence, causes and policies. *World Development*, *31*(3), 491-511.

[98] Patnaik, U. (2007). Neoliberalism and rural poverty in India. *Economic and Political Weekly*, *42*(30), 3132-3150.

[99] Datt, G., & Ravallion, M. (2010). Shining for the poor too? *Economic and Political Weekly, 45*(7), 55-60.

[100] Kraay, A. (2006). When is growth pro-poor? Evidence from a panel of countries. *Journal of Development Economics*, *80*(1), 198-227.

[101] Hari, K. S., & Hatti, N. (2015). Poverty and inequality in India: An exploratory analysis. *Social Science Spectrum, 1*(4), 249-261.

[102] Chaudhuri, S., & Ravallion, M. (2006). *Partially awakened giants: Uneven growth in China and India*. In L. A. Winters, & S. Yusuf (Eds.). Washington, DC: World Bank.

[103] Gries, T., & Redlin, M. (2010). Short-run and long-run dynamics of growth, inequality and poverty in the developing world. *Center for International Economics*. University of Paderborn, Germany. Working Paper Series, September, No. 05. Retrieved from https://pdfs.semanticscholar.org/0784/1270beb62de46f382677f9e2c979f680bb47.pdf.

The literature explaining the factors affecting poverty is numerous which has been made clear as follows. Rodriguez & Smith (1994)[104] identified the factors influencing poverty in urban and rural, farm and non-farm families and compared the level of poverty in these families by using data of household income survey of 1986 applying the logistic regression in Costa Rica. Higher education level, large number of family members, high child dependency ratio raise the probability of being poor. It has been recommended to expand policies of secondary education level for creating opportunities in the rural off-farm sector.

Iceland (2003)[105] explained the trends in poverty in U.S. between 1949-1999 and the factors which explain these trends were family structure, economic inequality and the income growth. The study stated that if there is rise in the average PCI due to increase in employment then the poverty will decline. The economic inequality will weaken the influence of income growth if the workers with low income and the unemployed do not get the growth benefits. The study pointed that female headed households were more likely to be poor and vulnerable.

Radhakrishna et al. (2006)[106] estimated the social, economic and demographic determinants of chronic poverty using incidence of nutrition and income by using NSS and NFHS data applying the logit model among the social groups and states of India. The findings conclude the probability of a household being chronically poor increases with the dependency ratio, household size and the number of children; it decreases with the number of working days and household expenditure of the household. It was identified that the scheduled castes households, casual labour in urban areas, rural agriculture labour and urban self-employed households were the chronic poor household groups. Wage rate was identified as pulling the labourers from poverty.

[104]Rodriguez, A. G., & Smith, S. M. (1994). A comparison of determinants of urban, rural and farm poverty in Costa Rica. *World Development*, *22*(3), 381-397.

[105]Iceland, J. (2003). Why poverty remains high: The role of income growth, economic inequality, and changes in family structure, 1949-1999. *Demography*, *40*(3), 499-519.

[106]Radhakrishna, R., Rao, K. H., Ravi, C., & Reddy, B. S. (2006). Estimation and determinants of chronic poverty in India: An alternative approach. *Indira Gandhi Institute of Development Research.* Mumbai. Working Paper 2006-007. *Retrieved from* http://saber.eastasiaforum.org/testing/eaber/sites/default/files/documents/IGIDR_Radhakrishna_2006.pdf

Mok et al. (2007)[107] identified the factors of poverty from Household Expenditure Survey of 2004-05 in urban areas in Malaysia using logistic regression. It has been identified that the human capital reduces the chances of being poor significantly. However, workers who migrate are more liable of being poor. The regions, race and household size also affect the results of poverty. The probability of being poor is correlated negatively with the employment in secondary sector.

De Silva (2008)[108] conducted the study based on Sri Lanka Integrated Survey data to study the conditional profile of poverty using logistic regression. The per capita consumption correlates were examined by quantile regression. It was found that education of the household head, salaried employed and self-employed have a positive significant effect on the living standard. The chances of being poor increases with the female household head, rural sector living, household size and being a casual employed in Sri-Lanka.

Akerele et al. (2012)[109] identified the socio-economic factors affecting poverty in urban areas in Nigeria using multistage sampling technique applying FGT index and Tobit regression model. The study revealed the poverty was higher among female household head, larger number of dependents. Education, dependency ratio and household assets also influenced the poverty in Nigeria. It has been recommended that the poverty eradication programmes should be planned bottom-top instead of top-bottom to suitably address the problem of poverty in urban sector.

Thapa et al. (2013)[110] analyses the determinants of poverty using multi-stage sampling method on cross-section data in Nepal using binary logistic regression. It has been identified that land holding size, age of the head of household, caste, occupation of family and women's involvement in job are significant determinants of poverty in rural areas. However, remittances do not have significant effect on the poverty. It has been

[107]Mok, T. Y., Gan, C., & Sanyal, A. (2007). The determinants of urban household poverty in Malaysia. *Journal of Social Sciences, 3*(4), 190-196.

[108]De Silva, I. (2008). Micro-level determinants of poverty reduction in Sri Lanka: A multivariate approach. *International Journal of Social Economics*, *35*(3), 140-158.

[109]Akerele, D., Momoh, S., Adewuyi, S. A., Phillip, B. B., & Ashaolu, O. F. (2012). Socioeconomic determinants of poverty among urban households in south-west Nigeria. *International Journal of Social Economics, 39*(3), 168-181.

[110]Thapa, A. K., Dhungana, A. R., Tripathi, Y. R., & Aryal, B. (2013). Determinants of poverty in rural parts of Nepal: A study of western development region. *Pinnacle Economics & Finance*. Retrieved from https://pdfs.semanticscholar.org/c0f8/c032661035c8ed5988d9a4efc28534a32283.pdf.

suggested that the policy makers should consider cultural and social aspects to address the problem of poverty in Nepal.

Makame & Mzee (2014)[111] addresses the problem of poverty by determining its factors using ZHBS of 2004-05 and 2009-10 using logistic regression. The study reveals various social and economic variables which significantly affect the probability of being poor. These variables were sector, household size and education level. The nature of work and household head were found to be statistically insignificant in determining the poverty.

Mberu et al. (2014)[112] analysed the factors affecting poverty in Kenya during 2006 and 2009 using NUHDSS data applying the logit model. The findings revealed that gender, secondary education of household head, formal employment, marital status are the determinants significantly affecting the probability of being poor. It was recommended that the options of anti-poverty policy measures be adopted which address the access to education, problems of female head households and economic opportunities.

Torres & Guirao (2017)[113] identified the determinants of poverty using Household Sample Survey data in Venezuelan applying binomial logit model during 1997-2007. It has been found the higher education of the head of household lowers the likely chances of being poor. Other determinants which effect the poverty were low labour productivity, gender, female household head, unemployed household head, schooling rate, economic dependency. The households whose head is unemployed have more likely chances to be poor. Households with female household head have more chances of being poor. Schooling rate has negative effect on the probability of poverty.

Tripathi (2019)[114] conducted an empirical inquiry to find effect of education on poverty measured by HCR, PGR and SPGR in 52 selected cities in urban India using NSS

[111] Makame, I. H., & Mzee, S. S. (2014). Determinants of poverty on household characteristics in Zanzibar: A logistic regression model. *Developing Country Studies*, *4*(20), 188-195.

[112] Mberu, B. U., Ciera, J. M., Elungata, P., & Ezeh, A. C. (2014). Patterns and determinants of poverty transitions among poor urban households in Nairobi, Kenya. *African Development Review*, *26*(1), 172-185.

[113] Rivas, E. T., & Pérez, G. G. (2010). Measurement and analysis of poverty: The Venezuelan case. In *Proceedings of the 9th* World Scientific and Engineering Academy and Society *International Conference on Computational Intelligence, Man-machine Systems and Cybernetics* (pp. 110-115).

[114] Tripathi, S. (2019). Does higher level of education reduce poverty and increase inequality? Evidence from urban India. *International Journal of Business and Globalisation*, *22*(3), 419-431.

data of 2011-12 by ordinary least square method. The study revealed that city level education taken as number of students enrolled in Ph.D in universities have negative significant effect on the poverty in urban areas. The variables inequality and work force participation rate also have negative effect on the head count ratio.

Kannan (2020)[115] stated that the report which was prepared by NSSO on consumer expenditure survey 2017-18 was possibly rejected. This points to the questions on the integrity of data and the reputation of the statistics of India. There is slowdown in the Indian economy without any doubt through the falling aggregate demand. This has been due to the informal employment which has nearly 80 per cent of the workforce. Moreover, there has been decline in the consumption as well as employment in the rural India.

2.4 Literature on Employment

An enormous number of studies have been carried out on the employment examining its trends and the various factors which affect the employment status of persons and households. Minhas & Majumdar (1987)[116] focussed on studying the relationship between casual workers of labour force and the unemployment incidence in 17 major states using NSS data of 1972-73, 1977-78 and 1983 applying simple regression in India. It was found that the relationship held good for all the years taken for the study. Despite of the low rates of unemployment, the proportion of casual workers rose at a sustainable rate. The 1 per cent change in casual workers brought 0.40 per cent change in the incidence of unemployment.

Mitra (2006)[117] analysed the changes in the pattern of female employment, sectoral share of females employed and annual average growth rate of female employment in urban areas for the period 1983 to 1999-2000 using NSS data by compound annual average growth rates in India. It was revealed that the rate of increase in the growth of output was not translated into opportunities of increased employment for females in urban areas. There was rise in open unemployment and work conditions

[115] Kannan, K. P. (2020). A low growth, no employment and no hope for budget for 'aspirational India'. *Economic & Political Weekly, 55*(9), 27-31.

[116] Minhas, B. S., & Majumdar, G. (1987). Unemployment and casual labour in India: An analysis of recent NSS data. *Indian Journal of Industrial Relations*, *22*(3), 237-253.

[117] Mitra, S. (2006). Patterns of female employment in urban India: Analysis of NSS data (1983 to 1999-2000). *Economic and Political Weekly*, *41*(48), 5000-5008.

deteriorated for the females in terms of the low pay and lack of non-wage payment although there was increase in the regular but subsidiary work of the females in the urban areas.

Unni & Raveendran (2007)[118] analysed the long-term growth in employment during 1983 to 2004-05 using NSS data in India. It was found that during 1993-2004, in rural areas, there was slight slowdown of employment growth as compared to 1983-1993. In the urban areas, there was increase in the employment although the quality of employment needed attention. There was fall in the real wages of the casual workers and regular earners in urban areas and however, there was increase in self-employment substantially but with poor remuneration.

Abraham (2009)[119] captured the trends and patterns of employment growth which was distress and poverty pushed growth in employment in India during 1999-00 and 2004-05. This employment growth was found in the agricultural sector during the distress period with low productivity in agriculture, indebtedness lead by stagnation and the instability in prices. When the income declines below the level of sustenance during the period of distress, the household income is enlarged by the non-working population who enters the labour market forcibly under those circumstances. This leads to increase in the labour force participation of females and the older people of the population.

Srivastava & Srivastava (2010)[120] analysed the trends, patterns and determinants of women employment using NSS data of the period 2004-05 applying the logistic regression in India. It was found in rural areas that the majority of women were employed as casual or self-employed in agriculture with discrimination in low paying jobs. The variables marital status, wealth status, age, landholding, social group and autonomy of women were significantly affecting their employment. Education was found to be the important determinant of good quality jobs in non-agriculture and better outcomes in employment for women. It was recommended to value the work of women, fix the minimum wages for women for the work which is home based and also consider the

[118] Unni, J., & Raveendran, G. (2007). Growth of employment (1993-94 to 2004-05): Illusion of inclusiveness? *Economic and Political Weekly*, *42*(3), 196-199.

[119] Abraham, V. (2009). Employment growth in rural India: Distress-driven? *Economic and Political Weekly, 44*(16), 97-104.

[120] Srivastava, N., & Srivastava, R. (2010). Women, work, and employment outcomes in rural India. *Economic and Political Weekly*, *45*(28), 49-63.

disadvantaged social groups of the women workers by identifying their needs relating to employment.

Bhalla & Kaur (2011)[121] made analysis of the trends of female LFPR and its determinants during 1983 to 2004-05 using NSS data applying probit model in India. The findings reveal that LFPR of women have low rates in urban areas and greater rate in rural areas due to considerations of poverty. Education showed a positive effect on LFPR of females. The married women with highly educated spouse with high earnings tend not to work. There was discrimination found in the wages of women having low paid jobs and also of economically backward castes and communities.

Chowdhury (2011)[122] analysis the employment situation of the NSS data of 2009-10 in India. The findings reveal that there was limited job creation between the period 2004-05 and 2009-10, removal of women from the labour force and grim picture of employment in the non-agriculture sector. The social orthodox attitude had been the cause for the drastic fall in female LFPR in rural and urban areas in contrast to males. The slow growth rate of employment in the non-agriculture sector makes less possible for the wages of the workers to increase in future.

Kaur & Kaur (2012)[123] studied the pattern and determinants of female LFPR in Punjab between 1991 and 2001 using OLS technique of regression. The findings reveal that although the female LFPR has increased but still it is low in contrast to the all India level. Nawanshahr was having the highest female WPR and Gurdaspur was having the lowest WPR. The female WPR was significantly affected by the male WPR, education, literacy rate of females and sex ratio. The participation of females in the labour force increased with the education level as matric education level was required for female participation in the labour market.

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[121] Bhalla, S., & Kaur, R. (2011). Labour force participation of women in India: Some facts, some queries. *LSE Asia Research Centre.* London School of Economics & Political Science, London. Working Paper No. 40. Retrieved from http://eprints.lse.ac.uk/38367/1/ARCWP40-BhallaKaur.pdf.

[122] Chowdhury, S. (2011). Employment in India: What does the latest data show? *Economic and Political Weekly*, *46*(32), 23-26.

[123] Kaur, P., & Kaur, G. (2012). Factors affecting female labour force participation in Punjab: An inter-district analysis. *Journal of Research in Peace, Gender and Development*, *2*(4), 81-88.

Kannan (2020)[124] captured the statistics of 2017-18 PLFS data and found the downfall in employment in rural areas which was borne wholly by the women who were less educated. In the formal sector, there was employment of 20 per cent of the total workers while there was informal employment of 80 per cent of the workforce in 2017-18. However, in the formal sector, 53 per cent of the employed were informal workers i.e., temporary, contractual, casual etc. Therefore, it gives the insights that 90 per cent was an informal sector employment which became the cause of their vulnerability.

2.5 Literature related to Poverty and Income Inequality

Theoretically, income inequality and poverty have been identified to be intrinsically connected to each other in such a way that, often, the existence of one is inferred as the existence of the other one (Bourguignon, 2004)[125]. The direct link of inequality and poverty is obvious looking at the standard of living of the individual. The indirect link of poverty and inequality is through growth based on the Kuznets's "inverted U shaped" curve. However, the impact of income inequality on poverty was studied by Ravallion (2005)[126] in India and China during 1980-2000. It was found that there was reduction in poverty due to economic growth in India and China and the effectiveness of decline in poverty was reduced by the income inequality. Le (2008)[127] explained the negative relation of poverty with economic growth and a positive relation between inequality and poverty such that reduction in one causes the reduction in the other. The literature clearly states the relationship between inequality and growth and poverty and growth, a possible causal relation between poverty and inequality has to be considered to identify the causal directions of the triangle which has been made clear by Gries & Redlin

[124] Kannan, K. P. (2020). A low growth, no employment and no hope for budget for 'aspirational India'. *Economic & Political Weekly, 55*(9), 27-31.

[125] Bourguignon, F. (2004). The poverty-growth-inequality triangle. *Indian Council for Research on International Economic Relations,* New Delhi. Working paper No. 125. Retrieved from https://www.econstor.eu/bitstream/10419/176147/1/icrier-wp-125.pdf.

[126] Ravallion, M. (2005). Inequality is bad for the poor. *World Bank Policy Research*. World Bank, Washington DC. Working Paper No. 3677. Retrieved from http://213.154.74.164/invenio/record/14592/files/ravallionwps3677.pdf.

[127] Le, H.Q. 2008. The linkages between growth, poverty and inequality in Vietnam: An empirical analysis. *National Economics University*, Vietnam. Working Paper No. 6. Retrieved from http://veam.org/wp-content/uploads/2016/06/2009_theLinkagesBetweenGrowth_PovertyAndInequalityInVietnam.pdf.

(2010)[128] which revealed a positive bidirectional causality between poverty and inequality as well as between growth and inequality and a negative bidirectional causality between economic growth and poverty. This relationship has been referred as poverty growth-inequality triangle by Bourguignon (2004)[129]. Therefore, growth is undoubtedly necessary for the reduction in poverty but it is noticeable from the studies that growth is getting weakly linked with the reduction in poverty and some other factors appear to play an important role. Inequality is one of those which explains the differences in reduction of poverty performance of the states. Thus, inequality acts as an intermediary between the relation between poverty and economic growth.

World Bank (2011)[130] gives the straightforward link between poverty and inequality. If other things remain same, an increase in inequality will lessen the reduction effect of poverty. When other things are not equal, it might not be possible that without increasing the inequality there is increase in the growth.

Jitsuchon (2014)[131] explored the relationship between growth, poverty and income inequality during 1988-2010 by calculating the growth elasticity of reduction in poverty and inequality in Thailand. It was found that the growth elasticity of reduction in poverty was negative except for some years. There was no clear pattern of the growth elasticity of inequality as the regression does not give significant results for the change in Gini coefficient. The economy of Thailand followed the declining part of Kuznets curve. The predictions of Lewis model were not found in the labour market and internal migration in rural and urban areas.

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[128] Gries, T., & Redlin, M. (2010). Short-run and long-run dynamics of growth, inequality and poverty in the developing world. *Center for International Economics*. University of Paderborn, Germany. Working Paper Series, September, No. 05. Retrieved from https://pdfs.semanticscholar.org/0784/1270beb62de46f382677f9e2c979f680bb47.pdf

[129] Bourguignon, F. (2004). The poverty-growth-inequality triangle. *Indian Council for Research on International Economic Relations,* New Delhi. Working paper No. 125. Retrieved from https://www.econstor.eu/bitstream/10419/176147/1/icrier-wp-125.pdf.

[130] World Bank. (2011). *Perspectives on poverty in India: Stylized facts from survey data*. Washington: World Bank.

[131] Jitsuchon, S. (2014). Income inequality, poverty and labor migration in Thailand. *The Singapore Economic Review*, *59*(1), 1-16.

2.6 Literature related to Employment and Poverty

The studies related to the employment and poverty have been discussed as employment plays a crucial role in the reduction of poverty. Araujo (2004)[132] explores the effect of employment of non-agriculture sector on the poverty reduction in Mexico based on 1990 and 2000 population census data. It was found that employment in non-agriculture rural sector has negative association with poverty. Various factors associated with reduction in poverty were income inequality, government expenditure and manufacturing employment.

Visaria (1981)[133] examined the association between unemployment and poverty in Maharashtra and Gujarat in India using the NSS data 1972-73. The study found that there is more widespread poverty than the unemployment. It has been made clear with the evidence that in any poverty alleviation and employment programme, high priority should be given to the casual labourers. The additional employment opportunities to casual labourers will have a positive impact in raising their standard of living and the incomes.

Bradbury (1996)[134] compared the standard of living of low income self-employed with the employee households having low income using ABS Household Expenditure Survey of 1993-94 applying logistic regression in Australia. It was concluded that the average standard of living of the self-employed cannot be considered by average incomes which acts as a poor indicator for the measurement. Self-employed households were more prone to be poor but the standard of living of the self-employed households were more than the employee households due to the weak association between expenditure and the income for the self-employed households.

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[132] Araujo, C. (2004). Can non-agricultural employment reduce rural poverty? Evidence from Mexico. *Cuadernos de economía*, *41*(124), 383-399.

[133] Visaria, P. (1981). Poverty and unemployment in India: An analysis of recent evidence. *World Development*, *9*(3), 277-300.

[134] Bradbury, B. (1996). Are the low income self-employed poor? *Social Policy Research Centre*. University of New South Wales, Sydney. Discussion Paper No. 73. Retrieved from https://www.researchgate.net/profile/Bruce_Bradbury/publication/23740854_Are_the_Low-Income_Self-Employed_Poor/links/54d1fbad0cf25ba0f042261d/Are-the-Low-Income-Self-Employed-Poor.pdf

Eardley (2000)[135] examined the working poverty based on links between low paid employment and household poverty using ABS survey data in Australia between 1980-1990. It was found that the low paid hourly workers who were poor was one in five households. There was increase in poverty among the casual or part time workers and even among the full-time workers households, particularly among the households with single person. It was suggested that low paid workers need special attention, particularly in current reviewing of the wages of the youth.

Saunders (2002)[136] analysed the study on household income survey to study the direct and indirect impact of unemployment on the income inequality and poverty in Australia. The findings revealed that there was risk of increase in poverty and inequality with the increase in unemployment. The full-time work was required to protect the people from the poverty. The casualisation of the workers tend to lower their wages creating 'working poor'.

Odhiambo & Manda (2003)[137] assessed the relationship between poverty in urban sector and LFPR based on ILFS for 1998-99 in Kenya applying logit model. The results reveal the strong association of urban poverty and LFPR because the main source of income of the poor were the labour earnings. However, participating in the labour force does not ensure them out of poverty. More than half of the overall poor were the working poor which includes probability of being poor in some sectors and occupations more than the others.

Sundaram (2007)[138] focussed on structure of workforce and poverty in India during 1999-2000 to 2004-05. It was observed that there was marginal increase in the total of working poor and considerable rise in the regular employed and self-employed workers located in the households which are above the poverty line.

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[135] Eardley, T. (2000). Working but poor? Low pay and poverty in Australia. *The Economic and Labour Relations Review*, *11*(2), 308-338.

[136] Saunders, P. (2002). The direct and indirect effects of unemployment on poverty and inequality. *Australian Journal of Labour Economics*, *5*(4), 507-529.

[137] Odhiambo, W., & Manda, D. K. (2003). Urban poverty and labour force participation in Kenya. In *A* paper presented at the "World Bank Urban Research Symposium", Washington DC. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.195.9972&rep=rep1&type=pdf.

[138] Sundaram, K. (2007). Employment and poverty in India, 2000-2005. *Economic and Political Weekly*, *42*(30), 3121-3131.

2.7 Literature on Employment and Inequality

With the increase in the employment, there is rise in the income inequality as pointed by Kuznets it acts as an indirect channel to handle the problem of poverty and income inequality. Topel (1994)[139] examined the regional differences of inequality in wages in U.S during 1973-1991using the current population surveys. It was found that change in technology favours the workers who are skilled causing the increase in the inequality. The increasing level of schooling reduce the supply of unskilled workers and thus declines the inequality. However, there is variation in inequality in different regions. Less improvement in the regions leads to more wage inequality. Immigration also plays important role in the supply of low skilled workers in United States.

Ahmad (2002)[140] studied the income inequalities using household data of HIES of 1992-93 calculating the Gini coefficient of between occupations and within the occupations in Pakistan. The findings reveal that skilled workers were having highest inequality and professionals were having the lowest inequality within the occupations. The skilled workers had slightly higher level of inequality in contrast to the overall Pakistan and the professionals with lower level of inequality than the national level.

Saunders (2002)[141] conducted study on household income survey to study the direct and indirect impact of unemployment on inequality and poverty in Australia. It was revealed that there was risk of increase in poverty and inequality with the increase in unemployment. It also affected the social life of the unemployed people as well as of their families. It was suggested to reform the welfare emphasising the generation of employment. There was increase in the demand of skilled labour and unskilled labour was less in demand by the firms.

Svizzero & Tisdell (2003)[142] explained the within and between group inequality between skilled and unskilled workers in OECD countries. Innovation is found to be the

[139] Topel, R. H. (1994). Regional labor markets and the determinants of wage inequality. *The American Economic Review*, *84*(2), 17-22.

[140] Ahmad, M. (2002). Income inequality among various occupations/professions in Pakistan-Estimates based on household income per capita. *The Lahore Journal of Economics*, *7*(1), 89-106.

[141] Saunders, P. (2002). The direct and indirect effects of unemployment on poverty and inequality. *Australian Journal of Labour Economics*, *5*(4), 507-529.

[142] Svizzero, S., & Tisdell, C. (2003). Income inequality between skilled individuals. *International Journal of Social Economics*, *30*(11), 1118-1130.

most common reason of between group and within group inequality. However, race, experience, gender and education also affect the within group income inequality.

Dutta (2005)[143] investigates the wage inequality of regular and casual wage workers using NSS data from 1983 to 1999-00 applying multinomial logit model in India. It was found that wage inequality widened for the workers getting regular salaries, but it declined for the casual wage workers. Human capital emerges as the important factor for changes in inequality of regular wage earners whereas geographic location determines the inequality of casual wage earners.

Gupta & Dutta (2011)[144] gives a three-sector general equilibrium model taking skilled and unskilled labour using the efficiency wage hypothesis. It was revealed that when there is presence of unemployment, the Gini coefficient of income distribution from wages and the relative wage of skilled-unskilled moves in the reverse direction due to comparative static effect in India.

Amine & Scrimger (2015)[145] analysed the economic situation which exist causing income gaps of skilled and unskilled workers using SLID during 1996-2010 using bipolarisation index in Canada. There were appreciable gaps in income of skilled and unskilled workers due to which the unskilled workers were worse off compared to the skilled workers. There was high intra-categorical inequality within the unskilled workers who were working in sales and services as compared to the other unskilled occupations.

Kapoor (2016)[146] examined the effect of change in technology on inequality of earnings and wages using ASI data from 2000-01 to 2010-11 applying instrumental variables technique in the organised manufacturing sector in India. It was found that not only the capital intensity growth but the increase in inequality is also explained by the growth of contract workers. The capital-skill were complementary in which there was

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[143] Dutta, P. V. (2005). Accounting for wage inequality in India. *Indian Journal of Labour Economics*, *48*(2), 273-295.

[144] Gupta, M. R., & Dutta, P. B. (2011). Skilled–unskilled wage inequality and unemployment: A general equilibrium analysis. *Economic Modelling*, *28*(4), 1977-1983.

[145] Amine, S., & Scrimger, P. (2015). Income disparities: The case of unskilled workers in Canada (1996-2010). *Theoretical Economics Letters*, *5*(1), 74-81.

[146] Kapoor, R. (2016). Technology, jobs and inequality: Evidence from India's manufacturing sector. *Indian Council for Research on International Economic Relations.* Working Paper No. 313. Retrieved from https://think-asia.org/bitstream/handle/11540/9112/Working_Paper_313.pdf?sequence=1.

greater disparity in wages of the skilled and unskilled workers employed by the firms with more capital intensity.

2.8 Relationship between Employment, Poverty and Income Inequality

A poverty-inequality-growth triangle (Dhrifi, 2015)[147] was firstly used by Bourguignon, 2004)[148] and Grammy & Assane (2006)[149]; Kapoor (2013)[150] has empirically analysed this relationship to explain the changes in absolute poverty in a country as determined by income inequality and income growth change. Chibba & Luiz (2011)[151] presented a policy review of unemployment, poverty and inequality in South Africa based on Sen (1973)[152] views that identification of poverty is not merely with income inequality but with unemployment too. Different studies which have been conducted proceeds as follows:

Hull (2009)[153] have found the growth of one sector does not automatically shift into reduction in poverty in the economy but it depends on employment which is the profile of growth, the employment sector of the poor and the range of flexibility of the sectors.

Iceland (2003)[154] explained the trends in poverty in U.S. between 1949-1999 and the factors which explain these trends were family structure, economic inequality and the income growth. The study stated that if there is rise in the average PCI due to increase in employment then the poverty will decline. This points to the link of employment, poverty

[147] Dhrifi, A. (2015). Financial development and the" growth-inequality-poverty" triangle. *Journal of the Knowledge Economy*, *6*(4), 1163-1176.

[148] Bourguignon, F. (2004). The poverty-growth-inequality triangle. *Indian Council for Research on International Economic Relations,* New Delhi. Working paper No. 125. Retrieved from https://www.econstor.eu/bitstream/10419/176147/1/icrier-wp-125.pdf.

[149] Grammy, A., & Assane, D. (2006). The poverty-growth-inequality triangle hypothesis: An empirical examination. *Journal of Policy Modelling*. 1-12.

[150] Kapoor, R. (2013). Inequality matters. *Economic and Political Weekly*, *48*(2), 58-65.

[151] Chibba, M., & Luiz, J. M. (2011). Poverty, inequality and unemployment in South Africa: Context, issues and the way forward. *Economic Papers: A journal of applied economics and policy*, *30*(3), 307-315.

[152] Sen, A. (1973). Poverty, inequality and unemployment: Some conceptual issues in measurement. *Economic and Political Weekly*, *8*(31/33), 1457-1464.

[153] Hull, K. (2009). Understanding the relationship between economic growth, employment and poverty reduction. *Unclassified DCD/DAC, 16/ADD*, 30-52.

[154] Iceland, J. (2003). Why poverty remains high: The role of income growth, economic inequality, and changes in family structure, 1949-1999. *Demography*, *40*(3), 499-519.

and inequality. The economic inequality will weaken the influence of income growth if the workers with low income and the unemployed do not get the growth benefits.

Khan (2007)[155] explored the role of employment in relationship between poverty and economic growth focussing on how employment shapes the link between poverty and economic growth in sixteen countries based on WDI data sets. It was found that in India, the growth rate has been high with the income inequality rising and increased employment growth but still slow due to bad incentives. However, the poverty rate falls during 1990-2002. The large numbers of workers have been engaged in tough and unremunerative work with long working hours.

Ukpere & Slabbert (2009)[156] contends on the positive relation between unemployment and globalisation, poverty and inequality based on meta-analysis. It reveals that unemployment causes rise in poverty and inequality in society. Globalisation resulted in increasing the poverty and income inequality also leading to job termination, reduction in wages causing global unemployment.

Burns et al. (2010)[157] explores the relation between the poverty, inequality and employment in South Africa. It shows the skilled labour and well-educated labour force causes rise in unemployment. Exercise of decomposition shows that these labour market dynamics causes increase in inequality and prevents the labour market in playing a positive role to eradicate poverty.

Ali (2013)[158] examined the trends in employment and its determinants based on World Values Survey of 2005-2008 using logistic regression in Egypt. The study focussed on understanding the linkages of employment, poverty and income inequality as employment is the major approach through which growth leads to reduction in poverty. It was found employment does not have any significant effect on poverty due to weak

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[155] Khan, A. R. (2007). Growth, employment and poverty: An analysis of the vital nexus based on some recent UNDP and ILO/SIDA studies. *Economic and Social Affairs*. United Nations. DESA Working Paper No. 49. Retrieved from https://www.un.org/esa/desa/papers/2007/wp49_2007.pdf.

[156] Ukpere, W. I., & Slabbert, A. D. (2009). A relationship between current globalisation, unemployment, inequality and poverty. *International Journal of Social Economics*, *36*(1/2), 37-46.

[157] Burns, J., Leibbrandt, M., & Woolard, I. (2010). Poverty, inequality and the labor market: Evidence from South Africa. In Conference Booklet, *Employment and Development.* Proceedings of the Fifth IZA Conference of World Bank. Cape Town, South Africa.

[158] Ali, H. A. E. H. (2013). Employment status, income equality, and poverty in Egypt. *Mediterranean Journal of Social Sciences*, *4*(9), 27-35.

relationship of economic growth and employment. However, quality of work and the type of work also determines whether employment reduces the income inequality and poverty.

Khan et al. (2014)[159] analysed empirically the growth-poverty-inequality triangle using principal component approach for 138 countries using household survey data for the period of 2005-2010. It was found that the economic growth reduces poverty and the income inequality raises the poverty. When the impact of inequality raises poverty, this effect was greater than the effect in overall poverty reduction which is due to the effect of growth in the mean income. Further, it was found that the barrier for the reduction of poverty is likely to be the poverty itself.

Ogbeide & Agu (2015)[160] established the causal relationship between inequality and poverty using Granger Causality technique in Nigeria for the period 1980-2010. It was found that there is direct link between inequality and poverty and also it was observed that there was an indirect link between inequality and poverty through unemployment. Unemployment has been the cause of inequality and poverty is caused due to inequality. The study recommends employment as an important tool to fight with inequality and poverty in Nigeria.

Kinyondo & Pelizzo (2018)[161] analysed the link between employment, inequality, poverty and economic growth in Tanzania between 1991-92 and 2011-12. The findings of the study revealed the growth led to creation of more employment opportunities and a decline in poverty but its impact on inequality did not existed. There was no progress in reducing the income inequality in Tanzania.

Muhammad et al. (2018)[162] analysed the impact of debt, development expenditure, political stability, military expenditure, inflation and foreign direct investment on unemployment, income inequality and poverty in Pakistan using data from 1980 to 2014 applying ARDL approach. The findings reveal the rise in development

[159] Khan, M. A., Khan, M. Z., Zaman, K., Hassan, U., & Umar, S. (2014). Global estimates of growth–inequality–poverty (GIP) triangle: Evidence from World Bank's classification countries. *Quality & Quantity*, *48*(5), 2631-2646.

[160] Ogbeide, E. N. O., & Agu, D. O. (2015). Poverty and income inequality in Nigeria: Any causality? *Asian Economic and Financial Review*, *5*(3), 439-452.

[161] Kinyondo, A., & Pelizzo, R. (2018). Growth, employment, poverty and inequality in Tanzania. *Africology: The Journal of Pan African Studies*, *11*(3), 164-181.

[162] Muhammad, A. A., Amir, M., & Amin, W. (2018). The relationship between poverty, income inequality and unemployment: Evidence from ARDL and Bound testing approach. *European Online Journal of Natural and Social Sciences*, *7*(1), 42-53.

expenditure decreases unemployment and poverty but capitalism causes rise in income inequality. An inverse relation was found between unemployment, inequality and military expenditure

Tripathi (2019)[163] conducted an empirical analysis to study the impact of education on inequality by estimating Gini coefficient in 52 selected cities in urban India using NSS data for 2011-12 by OLS method. The study revealed that city level education taken as number of students enrolled in Ph.D in universities have positive significant effect on the inequality. Furthermore, poverty has the negative significant effect on the inequality. The variables inequality and WPR also have negative effect on the head count ratio.

McKnight (2019)[164] reviewed the different theoretical literature research and empirical research on the relation between poverty, economic growth and inequality. It was found that income inequality is acceptable for economic growth and some convincing empirical evidence was found that inequality is unacceptable for growth. There were variations in the methodology of data, quality of data and the extent of countries which have been included in studies, therefore, it becomes difficult for comparing the evidences. It has also studied the three-way relationship between growth, inequality and poverty. It has been found that the economic growth provides benefits to the people who were in already well-off situation and the poverty impacts negatively on the possibility of growth.

Therefore, the studies have been able to identify inequality and poverty as the major problems which are inter woven and eating an economy of a country. The indirect channel to combat these problems is the employment. The policy measures undertaken to combat one problem should consider the other problem because the effectiveness of the different measures undertaken are related to the other problem too. It has been identified that employment is one of an important result of welfare intervention. Therefore, it is not at all surprising that there are many factors that come to light in the analysis of employment, poverty and income inequality. An examination of such factors

[163] Tripathi, S. (2019). Does higher level of education reduce poverty and increase inequality? Evidence from urban India. *International Journal of Business and Globalisation*, *22*(3), 419-431.

[164] McKnight, A. (2019). Understanding the relationship between poverty, inequality and growth: A review of existing evidence. *Centre for Analysis of Social Exclusion.* London School of Economics and Political Science, London. Case Paper No. 216.

is important for the policy making. The studies in the literature have also identified the labour market groups which are vulnerable to poverty such as casual labour. Moreover, there exists the income gap in different strata of the people. The working poor has been identified as one of the important groups which needs attention.

2.9 Research Gap

There are numerous studies available on studying the trends of employment, poverty and income inequality in states of India. As seen above, some of the studies have highlighted the poverty reduction (Islam 2004)[165] whereas some of the other studies have expressed their disappointment on the increasing income inequality (Deaton & Dreze, 2002[166]; Himanshu, 2007[167]). It is believed that there has been refinement in the standard of living of the people in the state and those who were on the better footing initially, could now experience growth at a faster rate during the period of reforms. On the contrary, there was no improvement in some of the deprived population. As Himanshu (2008)[168] points out there is rise in the income inequality with the rapid post-reform growth in GDP and it is not supplemented with the faster reduction in poverty. Sastry (2003)[169]; Chaudhuri & Gupta (2009)[170] found evidence that improvement in the level of living with the distribution has not been done properly and there exist certain districts which continue to be poor despite there has been overall growth in the states. Therefore, depending exclusively on the aggregates of states may not reveal accurate extent of unevenness which prevails and such issues at the district level has been scarcely discussed in the studies. After reviewing the earlier researchers' work, it is found that there is a urgent need to understand the overall trends and patterns of employment, poverty and income

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[165] Islam, R. (2004). The nexus of economic growth, employment and poverty reduction: An empirical analysis. *Recovery and Reconstruction Department.* International Labour Office, Geneva. Discussion Paper No. 14. Retrieved from http://www.ilo.int/wcmsp5/groups/public/---ed_emp/documents/publication/wcms_120690.pdf

[166] Deaton, A., & Dreze, J. (2002). Poverty and inequality in India: A re-examination. *Economic and Political weekly*, *37*(36), 3729-3748.

[167] Himanshu. (2007). Recent trends in poverty and inequality: Some preliminary results. *Economic and Political Weekly*, *42*(6), 497-508.

[168] Himanshu. (2008). Growth, employment and poverty reduction: Post-reform Indian experience. *Asia Research Centre*. London School of Economics and Political Science, London. Working Paper No.23. Retrieved from http://eprints.lse.ac.uk/38342/1/ARCWP23-Himanshu.pdf.

[169] Sastry, N. S. (2003). District level poverty estimates: Feasibility of using NSS household consumer expenditure survey data. *Economic and Political Weekly*, *38*(4), 409-412.

[170] Chaudhuri, S., & Gupta, N. (2009). Levels of living and poverty patterns: A district-wise analysis for India. *Economic and Political Weekly*, *44*(9), 94-110.

inequality in various districts of Punjab which has not been addressed in the various papers as this phenomenon has been unsettled as well as puzzling in Punjab. Various studies on determinants of employment, poverty and income inequality have been done above but such quantitative assessment of variables have not been done with respect to the Punjab. The variables such as education, age, gender etc. probably should have astonishing effects on economy of Punjab as it can be seen from various studies that these variables affect significantly. It is found from various studies that with increase in employment opportunities there is decline in poverty and rise in income inequality. There is need to update the impact of employment status on poverty and income inequality by studying the working poor in Punjab. The study involves the in-depth analysis and exploring the relationship of employment, poverty and income inequality in Punjab. Such quantitative assessment of this triangular relationship has not yet been done for the Punjab. This study aims to identify the mentioned research questions through the objectives framed on this research gap.

2.10 Conclusion

This chapter studies the contributions of earlier researchers in the area of employment, income inequality and poverty and their relationship. The studies have been able to identify inequality and poverty as the major problems which are inter woven and eating an economy of a country. The indirect channel to combat these problems is the employment. The policy measures undertaken to combat one problem should consider the other problem because the effectiveness of the different measures undertaken are related to the other problem too. It has been identified that employment is one of an important result of welfare intervention. Therefore, it is not at all surprising that there are many factors that come to light in the analysis of employment, poverty and income inequality. An examination of such factors is important for the policy making. The studies in the literature have also identified the labour market groups which are vulnerable to poverty such as casual labour. Moreover, there exists the income gap in different strata of the people. The working poor has been identified as one of the important groups which needs attention. Then it proceeds with the research gap in which it is clearly stated that such kind of quantitative analysis has not been done for Punjab where there is mounting unemployment and existence of working poor which increases the income inequality in Punjab.

phenomenon over the time period. This serves a background for the rest of the chapters in this thesis.

With this background, the chapter is organized as follows. Section 3.1 gives the introduction of the chapter. Section 3.2 gives the clear picture of trends and patterns of employment in Punjab. Section 3.3 delves with the trends and patterns of poverty and income inequality in Punjab. Section 3.4 summarizes the major conclusions of this chapter.

3.2 Trends and Patterns of Employment in Punjab

In order to have better understanding of employment, a comprehensive study of the different parameters is needed. For this, the different sets of estimates of LFPR and WPR are placed one after the other to indicate the extent of divide even at the district level in Punjab.

3.2.1 Status of Labour Force Participation Rate and Worker Population Ratio

In India, there was addition of 2 million people in the labour force between 2004-05 and 2011-12. Due to mechanisation in agriculture, declining participation of women in labour, increased enrolment in higher education and changes in the demographic profile of young population there was decline in the growth rate of labour force (Mehrotra et al., 2014)[173]. Table 3.1 provides insights of the LFPR and table 3.2 pertains to WPR during 2011-12 in districts of Punjab. These are very important indicators of the labour market. Any change in these may lead to change in employment rate or unemployment rate or both. The features that emerged from the two tables are:

1. There were noticeable differences in one or more estimates of many districts of Punjab. These differences point to the unemployed persons in the districts.
2. A majority of the districts had the LFPR and WPR which was below the state level and only some of them were high which were actually responsible for dragging the figures of the state level estimates.
3. There were some districts for which LFPR and WPR was higher than the same at the state level.

[173]Mehrotra, S., Parida, J., Sinha, S., & Gandhi, A. (2014). Explaining employment trends in the Indian economy: 1993-94 to 2011-12. *Economic and Political Weekly*, *49*(32), 49-57.

Table 3.1: LFPR for all persons according to us(ps+ss) in the districts of Punjab in 2011-12

District	Labour Force Participation Rate		
	Number of persons reported	Percent	Total
Amritsar	455	34.18	1331
Barnala	117	37.38	313
Bathinda	386	48.61	794
Faridkot	145	43.94	330
Fatehgarh Sahib	143	49.31	290
Firozpur	506	45.96	1101
Gurdaspur	380	35.58	1068
Hoshiarpur	307	34.85	881
Jalandhar	455	42.97	1059
Kapurthala	224	38.03	589
Ludhiana	614	37.28	1647
Mansa	235	50.43	466
Moga	218	46.78	466
Muktsar	191	44.84	426
Nawanshahr	167	38.3	436
Patiala	413	38.67	1068
Rupnagar	133	34.82	382
SAS Nagar (Mohali)	138	37.1	372
Sangrur	379	42.16	899
Tarn Taran	153	33.12	462
All	5759	40.05	14380

Source: Estimations based on NSS data

It can be observed from table 3.1 that LFPR of Punjab was 40.05 per cent showing 5759 persons employed out of the total number of persons surveyed. However, looking into the results of districts, the picture seems different. District Mansa has the highest LFPR of 50.43 per cent with 235 persons employed as compared to all other districts and also above the Punjab level. Other districts which have the LFPR greater than the Punjab

level followed by Mansa were Fatehgarh Sahib (49.31 per cent), Bathinda (48.61 per cent), Moga (46.78 per cent), Firozpur (45.96 per cent), Muktsar (44.84 per cent), Faridkot (43.94 per cent), Jalandhar (42.97 per cent), Sangrur (42.16 per cent). However, district Tarn Taran was found to have lowest LFPR of 33.12 per cent with 153 persons employed in contrast to all other districts and also lower than the Punjab level. Furthermore, other districts which have lower LFPR than the Punjab level were Patiala (38.67 per cent) followed by Nawanshahr (38.3 per cent), Kapurthala (38.03 per cent), Barnala (37.38 per cent), Ludhiana (37.28 per cent), SAS Nagar (Mohali) (37.1 per cent), Gurdaspur (35.58 per cent), Hoshiarpur (34.85 per cent), Rupnagar (34.82 per cent) and Amritsar (34.18 per cent) respectively.

The table 3.2 exhibits the WPR of Punjab was 39.1 per cent with 5622 persons in the workforce. But the districts results are somewhat different. Interestingly, district Mansa has the highest WPR of 50.21 per cent with 234 persons in comparison to all other districts and also above the Punjab level. Beside this, other districts which have WPR above than the Punjab level followed by Mansa were Bathinda (48.24 per cent), Fatehgarh Sahib (46.9 per cent), Moga (45.49 per cent), Firozpur (44.87 per cent), Muktsar (44.37 per cent), Faridkot (42.73 per cent), Jalandhar (41.74 per cent) and Sangrur (41.16 per cent). Apparently, district Rupnagar has the lowest WPR of 32.2 per cent with 123 persons in contrast to all other districts and also lower than the Punjab level. In addition, other districts which have lower WPR than the Punjab level were Patiala (37.73 per cent), Ludhiana (37.16 per cent), Kapurthala (37.18 per cent), Barnala (36.42 per cent), Nawanshahr (36.24 per cent), SAS Nagar (Mohali) (35.48 per cent), Gurdaspur (34.18 per cent), Amritsar (33.73 per cent), Hoshiarpur (33.48 per cent) and Tarn Taran (32.25 per cent) respectively.

It is interesting that table 3.1 and table 3.2 shows the proportion unemployed which has been estimated from the figures of LFPR and WPR. The proportion unemployed for Punjab was 0.95 per cent with 137 persons. However, the figures of districts depict many districts having more proportion unemployed than Punjab level. It is observable that district Rupnagar with lowest WPR has the highest proportion unemployed of 2.62 per cent with 10 persons as compared to all other districts and also above the Punjab level.

Table 3.2: WPR for all persons according to us(ps+ss) in the districts of Punjab in 2011-12

District	Worker Population Ratio		
	Number of persons reported	Percent	Total
Amritsar	449	33.73	1331
Barnala	114	36.42	313
Bathinda	383	48.24	794
Faridkot	141	42.73	330
Fatehgarh Sahib	136	46.9	290
Firozpur	494	44.87	1101
Gurdaspur	365	34.18	1068
Hoshiarpur	295	33.48	881
Jalandhar	442	41.74	1059
Kapurthala	219	37.18	589
Ludhiana	614	37.16	1647
Mansa	234	50.21	466
Moga	212	45.49	466
Muktsar	189	44.37	426
Nawanshahr	158	36.24	436
Patiala	403	37.73	1068
Rupnagar	123	32.2	382
SAS Nagar (Mohali)	132	35.48	372
Sangrur	370	41.16	899
Tarn Taran	149	32.25	462
All	5622	39.1	14380

Source: Estimations based on NSS data

Moreover, other districts which have proportion unemployed greater than the Punjab level followed by Rupnagar were Fatehgarh Sahib (2.41 per cent) with 7 persons, Nawanshahr (2.06 per cent) with 9 persons, SAS Nagar (Mohali) (1.62 per cent) with 6 persons, Gurdaspur (1.4 per cent) with 15 persons, Hoshiarpur (1.37 per cent) with 12 persons, Moga (1.29 per cent) with 6 persons, Jalandhar (1.23 per cent) with 13 persons, Faridkot (1.21 per cent) with 4 persons, Firozpur (1.07 per cent) with 12 persons, Sangrur

(1.0 per cent) with 9 persons and Barnala (0.96 per cent) with 3 persons. However, district Ludhiana has the lowest proportion unemployed of 0.12 per cent as compared to all districts and also lower than the Punjab level. Ludhiana is the industrial hub due to which it has less percentage of proportion unemployed. Furthermore, other districts which have lower proportion unemployed than the Punjab level were Patiala (0.94 per cent) with 10 persons, Tarn Taran (0.87 per cent) with 4 persons, Kapurthala (0.85 per cent) with 5 persons, Amritsar (0.45 per cent) with 6 persons, Muktsar (0.47 per cent) with 2 persons, Bathinda (0.37 per cent) with 3 persons and Mansa with 0.22 per cent respectively.

Apart from the above proportion unemployed the table 3.1 and table 3.2 also forms the base for estimating the unemployment rate. The unemployment rate for Punjab was 2.37 per cent. However, the figures of districts depict many districts having more unemployment rate than Punjab level. District Rupnagar has the highest unemployment rate of 7.52 per cent in contrast to all other districts and also above the Punjab level. Other districts which have unemployment rate greater than the Punjab level followed by Rupnagar were Nawanshahr (5.38 per cent), Fatehgarh Sahib (4.89 per cent), SAS Nagar (Mohali) (4.37 per cent), Gurdaspur (3.93 per cent), Hoshiarpur (3.93 per cent), Jalandhar (2.86 per cent), Moga (2.76 per cent), Faridkot (2.75 per cent), Tarn Taran (2.63 per cent), Barnala (2.57 per cent) and Patiala (2.43 per cent). District Sangrur and Firozpur has the unemployment rate of 2.37 per cent which was equal to the unemployment at the state level. However, district Ludhiana has the lowest unemployment rate of 0.32 per cent as compared to all districts and also lower than the Punjab level. Other districts which have lower unemployment than the Punjab level were Kapurthala (2.24 per cent), Amritsar (1.32per cent), Muktsar (1.05 per cent), Bathinda (0.76 per cent) and Mansa (0.44 per cent) respectively.

The estimation of the persons not in the labour force has been done from table 3.1 and table 3.2. The not in labour force for Punjab was 59.95 per cent. However, the figures of districts depict many districts having more per cent of not in labour force than Punjab level. Interestingly, Tarn Taran which has lowest LFPR, surely, has the highest not in labour force of 66.88 per cent in contrast to all other districts and also above the Punjab level. Other districts which have proportion unemployed greater than the Punjab level followed by Tarn Taran were Amritsar (65.82 per cent), Rupnagar (65.18 per cent), Hoshiarpur (65.15 per cent), Gurdaspur (64.42 per cent), SAS Nagar (Mohali) (62.90 per cent), Ludhiana (62.72 per cent), Barnala (62.62 per cent), Kapurthala (61.97 per cent),

Nawanshahr (61.70 per cent) and Patiala (61.33 per cent). However, district Mansa has the lowest not in labour force of 49.57 per cent as compared to all districts and also lower than the Punjab level. This was followed by the other districts with not in labour force lower than the Punjab were Sangrur (57.84 per cent), Jalandhar (57.03 per cent), Faridkot (56.06 per cent), Muktsar (55.16 per cent), Firozpur (54.04 per cent), Moga (53.22 per cent), Bathinda (51.39 per cent) and Fatehgarh Sahib (50.69 per cent).

3.2.2 Education Level of the Labour Force

Education helps in providing the skills required for labour market and have an influence on the labour market outcomes of employment and unemployment. The wage inequality rises due to rapid rise in the wage rate of skilled labour compared to the unskilled labour. The education level of the labour force can thus serve as a measure of the level of skill of the labour force. Table 3.3 gives the level of education of the labour force in Punjab during 2011-12.

Table 3.3: Education Level of Labour Force in Punjab in 2011-12

Education	**Labour force Participation Rate**		**Total**
	Number of persons	**Percent**	
Not literate	1249	21.69	3695
Literate without formal schooling	12	0.21	49
Literate: below primary	356	6.18	2051
Literate: primary	891	15.47	2112
Literate: middle	728	12.64	1640
Literate: diploma/certificate course	73	1.27	103
Literate: secondary and higher secondary	1870	32.47	3718
Literate: graduate	403	7	726
Literate: postgraduate and above	177	3.07	286
All	5759	100	14380

Source: Estimations based on NSS data
Note: Literate without formal schooling includes EGS/NFEC/AEC, TLC and others

It can be seen from the table that a large proportion of the labour force, that is, 21.69 per cent (1249 persons) was not literate during 2011-12 in Punjab. However, among the literate labour force, the number of persons was higher with secondary level and higher secondary education with 32.47 per cent (1870 persons) followed by literate with primary level education with 15.47 per cent (891 persons). This was followed by middle level education with 12.64 per cent (728 persons) and graduate education with 7 per cent (403 persons). The literate with graduate followed by below primary education level of labour force was 6.18 per cent (356 persons out of 2051 persons) of labour force. The literate with postgraduate and above level of the labour force was 3.07 per cent (177 persons). The literate with diploma/certificate course was 1.27 per cent (73 persons) of the labour force. However, a very small proportion of labour force was literate without formal schooling, that is, 0.21 per cent representing 12 persons in the labour force.

3.2.3 Composition of Labour Force by Age Groups

Composition of labour force by age groups is the per cent of population which takes part in the labour force from each age group. Age group 0-15 are children and the age group 15-30, 30-45 and 45-60 belongs to the working age population and age group 60 and above belongs to old age group of the population. Table 3.4 shows the labour force participation of each of these age groups during 2011-12.

Table 3.4: Composition of Labour Force by Age Groups in 2011-12

Age group	**Labour force Participation Rate**		
	Number of Persons	**Percent**	**Total**
0-15	36	0.63	3622
15-30	1892	32.85	4173
30-45	2080	36.12	3065
45-60	1294	22.47	2106
60 and above	457	7.94	1414
All	5759	100	14380

Source: Estimations based on NSS data

Looking into the table it can be seen that the LFPR of 0-15 years of age group was 0.63 per cent (36 persons) in Punjab. This shows that there is small proportion of children who participate in the work force. Thus, government of Punjab has not been able to stop the child labour. For the age group 15-30 and 30-45, the LFPR was 32.85 and

36.12 per cent respectively. This shows the working age group where the LFPR is more representing 1892 and 2080 persons respectively. However, the LFPR for the age group 45-60 and 60 and above was 22.47 and 7.94 per cent which was lower than that of the age groups 15-30 and 30-45. Thus, age group 30-45 represents the highest LFPR which is the working age group.

3.2.4 Status of Employment

In India, a large segment of people are found seeking employment in the non-agriculture including secondary and tertiary sectors. A larger number of workers have been able to find regular jobs but still 29 per cent continues to be casual wage workers and 50 per cent are self-employed in India during 2011-12 (Shaw, 2013)[174]. According to latest PLFS (2019)[175] report, there were 46.0 per cent self-employed, 33.6 per cent regular employed and 20.4 per cent casual employed during 2017-18 in Punjab.

Table 3.5: Distribution of Workers by Employment Type in 2011-12 in Punjab

Employment type	**Worker Population Ratio**		
	Number of Persons	**Percent**	**Total**
Casual labour in urban sector	239	4.25	622
Casual labour in agriculture	277	4.93	602
Casual labour in non-agriculture	518	9.21	1320
Others	19	0.34	559
Salaried	1530	27.21	3940
Self-employed in urban sector	1272	22.63	3362
Self-employed in agriculture	1160	20.63	2429
Self-employed in non-agriculture	607	10.8	1546
All	5622	100	14380

Source: Estimations based on NSS data

Table 3.5 provides insights of the type of employment status of persons out of the work force. Out of the total workforce reported in the sample of 5622 persons, a larger proportion of share is taken by salaried workers which was 27.21 per cent, that is, 1530 persons in combined urban and rural areas in Punjab. However, self-employed in urban

[174] Shaw, A. (2013). Employment trends in India: An overview of NSSO's 68th round. *Economic and Political Weekly*, *48*(42), 23-25.

[175] GOI. (2019). Periodic Labour Force Survey. New Delhi: NSO

sector also shares a large share of 22.63 per cent out of the work force. The share of self-employed in agriculture in rural areas was 20.63 per cent and self-employed in non-agriculture in rural areas was 10.8 per cent out of the total workforce. There were 4.25 per cent of casual labour in urban areas in the workforce which was quite low in comparison to the other employment type. The casual labour in agriculture was 4.93 per cent and casual labour in non-agriculture was 9.21 per cent in the rural sector.

3.2.5 Growth Rate of Workers across Employment Status

In order to know the workforce trend across employment status, the growth rate of workers across employment status has been calculated in table 3.6. It also enables to know the workers and non-workers in the total population. There is marginal hike in the growth rate of self-employed persons between 2004-05 to 2011-12. However, there was some rise in the growth rate among the regular employed in contrast to the self-employed. However, there was large addition in the growth rate of casual workers which was 3.07 per cent. In addition, there was decline in the others employed whose growth rate was found to be negative. Furthermore, a large section of the population is found to be not working due to which the growth rate for this proportion of population (2.44 per cent) is higher than the working population (0.99 per cent). Although there is rise in the growth rate of workers but there is marginal decline in the WPR of workers during 2004-05 and 2011-12.

Table 3.6: Growth Rate of Workers across Employment Status

Household type	Worker population ratio		Number of worker/non worker		Growth rate (%)
	2004-05	2011-12	2004-05	2011-12	2004-05 to 2011-12
Self-employed	0.218	0.193	5670616	5707203	0.09
Regular employed	0.103	0.103	2679236	3045813	1.85
Casual labour	0.069	0.075	1794828	2217825	3.07
Others	0.026	0.022	676312	650562	-0.55
Total worker	0.416	0.392	10820992	11591832	0.99
Not working	0.584	0.608	15191008	17979168	2.44
Total Population			26012000	29571000	

Source: Estimations based on NSS data

3.2.6 Average MPCE of categories of Employment Status

In order to know the quality of employment, it is necessary to examine the standard of living of the workers across different employment status in the economy of Punjab. Table 3.7 pertains to average MPCE of categories of employment status in districts and table 3.8 shows the average MPCE of combined all categories of employment in districts. It is found in table 3.7 that in Punjab the average MPCE of urban others group is highest (₹ 4511) showing a better living standard in comparison of the various categories of employment status in urban areas followed by urban regular employed (₹ 2780), urban self-employed (₹ 2743), urban casual labour (₹ 1613). However, the average MPCE of rural others is highest (₹ 2894) giving insights of improved standard of living in contrast to the various categories of employment status in rural areas including self-employed in rural sector (₹ 2576), rural regular employed (₹ 2144) and casual labour in rural sector (₹ 1486).The average MPCE of all categories group is ₹ 2356 (table 3.8). However, the impression is different for the people living in different districts.

In Barnala, the average MPCE of urban others group is highest (₹ 3721) in comparison to the various categories of employment status in urban areas followed by urban regular employed (₹ 2896), urban self-employed (₹ 2514) and urban casual labour (₹ 1037). In addition, the average MPCE of rural self-employed is highest (₹ 2106) in comparison to the various categories of employment status in rural areas which included rural others (₹ 2084), rural regular employed (₹ 1544) and rural casual labour (₹ 1174). On the contrary, table 3.8 shows average MPCE of all categories group is ₹ 1949 in district Barnala. In table 3.7, district Bathinda shows average MPCE of urban others group being highest (₹ 8068) with better standard of living in contrast to the various categories of employment status in urban areas followed by urban regular employed (₹ 4459), urban self-employed (₹ 3167) and urban casual labour (₹ 1473). Furthermore, the average MPCE of rural others is highest (₹ 2761) in comparison to the various categories of employment status in rural areas followed by self-employed in rural areas (₹ 2655), regular employed in rural sector (₹ 1649) and rural casual labour (₹ 1306). The average MPCE of all categories of employment is ₹ 2824 in Bathinda (table 3.8).

Looking for the status of district Mansa in table 3.7, the standard of living of urban others group is highest with the average MPCE ₹ 8579 per month in contrast to the

various categories of employment status in urban areas followed by self-employed in urban sector (₹ 2542), regular employed in urban areas (₹ 2385) and casual labour in urban sector (₹ 1942). However, in the rural sector, average MPCE of rural self-employed is highest (₹ 3154) in comparison to the various categories of employment status followed by rural regular employed (₹ 2551), rural others (₹ 2160) and rural casual labour (₹ 1506). For the combined urban and rural areas of Mansa, the average MPCE of all categories of employment shown in table 3.8 is ₹ 2639. As shown in table 3.7, in Muktsar, among the urban employment category groups, the average MPCE of urban others group is highest (₹ 2193) showing improved living standard in comparison to the various urban categories of employment status which includes urban regular employed (₹ 1908), urban self-employed (₹ 1891) and urban casual labour (₹ 1273). Similarly, in the rural areas, the average MPCE of rural others is highest (₹ 3861) showing a living standard in comparison of the various categories of employment status in rural areas followed by self-employed in rural sector (₹ 2468), regular employed in rural areas (₹ 2237) and casual labour in rural sector (₹ 1402). Furthermore, the average MPCE of all categories of employment status in the combined rural and urban areas is ₹ 1810 per month (table 3.8) in district Muktsar.

The status of district Patiala in table 3.7 is somewhat similar in the urban areas, there is better living standard of urban others group whose average MPCE is highest (₹ 4297) followed by self-employed in urban sector (₹ 3272), regular employed in urban sector (₹ 3243) and casual labour in urban areas (₹ 1690). However, the average MPCE of rural self-employed is highest (₹ 3896) in comparison of the various categories of employment status in rural areas followed by rural regular employed (₹ 2695), rural casual labour (₹ 1689) and rural others (₹ 1674). The average MPCE of all categories of employment is ₹ 3002 per month in Patiala (table 3.8). The standard of living of categories of employment status of district Rupnagar has been estimated in table 3.7 with average MPCE of urban others group being highest (₹ 3291) in comparison to the various categories of employment status in urban areas followed by self-employed in urban areas (₹ 2578), regular employed in urban sector (₹ 2430) and casual labour in urban sector (₹ 1110). However, in the rural sector, the average MPCE of rural others is highest (₹ 5003) showing an improved level of living in comparison of the various categories of employment status in rural areas followed by rural regular employed (₹ 2504), rural self-

employed (₹ 2211) and rural casual labour (₹ 1658). District Rupnagar has the average MPCE of all categories of employment as ₹ 2513 per month as estimated in table 3.8.

Table 3.7: Average MPCE (₹) across categories of Employment Status

District	Rural casual labour	Rural others	Rural regular employed	Rural self-employed	Urban casual labour	Urban others	Urban regular employed	Urban self-employed
Barnala	1174	2084	1544	2106	1037	3721	2896	2514
Bathinda	1306	2761	1649	2655	1473	8068	4459	3167
Mansa	1506	2160	2551	3154	1942	8579	2385	2542
Muktsar	1402	3861	2237	2468	1273	2193	1908	1891
Patiala	1689	1674	2695	3896	1690	4297	3243	3272
Rupnagar	1658	5003	2504	2211	1110	3291	2430	2578
Sangrur	1351	2856	2514	2725	1759	3187	2891	3056
Amritsar	1655	2397	2053	2461	1563	1962	2462	2277
Faridkot	1442	3328	1493	2747	982	4649	2903	2636
Fatehgarh Sahib	1411	3309	1999	2791	1553	3843	2857	2526
Firozpur	1484	2997	1959	2471	1298	3027	2835	2688
Jalandhar	1338	3714	1860	2140	2038	5150	2965	3119
Ludhiana	1630	2958	2108	2278	1761	3106	2468	2506
Moga	1336	3604	1809	3441	1203	NA	2271	3332
Tarn Taran	1430	1931	2584	2274	1220	4435	2108	1976
Gurdaspur	1598	2526	2873	2250	1773	3252	2203	2233
Hoshiarpur	1507	3152	2416	2303	1051	3161	2299	2784
Kapurthala	1394	1633	1443	2420	1565	4369	3017	2666
Nawanshahr	1339	2066	1746	2186	1615	3675	1933	2940
SAS Nagar	1370	NA	2169	2247	2038	8920	2954	4043
All	1486	2894	2144	2576	1613	4511	2780	2743

Source: Estimations based on NSS data
NA- Not available

The standard of living of district Sangrur for combined rural and urban areas is estimated in table 3.8 as the average MPCE of all categories of employment ₹ 2414 per month. However, observing table 3.7, in the urban areas, average MPCE of urban others group is highest (₹ 3187) showing a better living in comparison to the various categories of employment status in urban areas followed by self-employed in urban sector (₹ 3056), regular employed in urban sector (₹ 2891) and casual labour in urban areas (₹ 1759). Similarly, in the rural sector, the average MPCE of rural others is highest (₹ 2856) in contrast to the various categories of employment status in rural areas followed by self-employed in rural areas (₹ 2725), regular employed in rural areas (₹ 2514) and casual labour in rural sector (₹ 1351). Looking into table 3.7, in Amritsar, the average MPCE of urban regular employed group is highest (₹ 2462) showing a better living standard in comparison of the various categories of employment status in urban areas followed by urban self-employed (₹ 2277), urban others (₹ 1962) and urban casual labour (₹ 1563). In the rural sector, the average MPCE of rural self-employed is highest (₹ 2461) showing an improved living standard in comparison of the various categories of employment status in rural areas followed by rural others (₹ 2397), rural regular employed (₹ 2053) and rural casual labour (₹ 1655). In addition, the average MPCE of all categories of employment in table 3.8 is ₹ 2147 per month.

As observed from the table 3.7, district Faridkot has the average MPCE of urban others group as ₹ 4649 per month which is highest in urban sector revealing a better level of living in comparison of the various categories of employment status in urban areas followed by urban regular employed (₹ 2903), urban self-employed (₹ 2636) and urban casual labour (₹ 982). Similarly, the average MPCE of rural others is highest (₹ 3328) in rural areas followed by self-employed in rural sector (₹ 2747), regular employed in rural sector (₹ 1493) and casual labour in rural areas (₹ 1442). However, table 3.8 shows the average MPCE of all categories of employment is ₹ 2468 per month in Faridkot. The living standard in Fatehgarh Sahib can be easily observed from the estimated figures of table 3.7 where average MPCE of urban others group is highest (₹ 3843) showing a better situation of this group in contrast of the various categories of employment status in urban areas followed by urban regular employed (₹ 2857), urban self-employed (₹ 2526) and urban casual labour (₹ 1553). Further, it can be seen the average MPCE of rural others is highest (₹ 3309) showing an improved living standard in comparison of the various categories of employment status in rural areas followed by self-employed in rural areas

(₹ 2791), regular employed in rural sector (₹ 1999) and casual labour in rural areas (₹ 1411). The overall average MPCE of all categories of employment estimated in table 3.8 is ₹ 2322 per month in Fatehgarh Sahib.

In Firozpur, the average MPCE of urban others group is highest (₹ 3027) in comparison of the various categories of employment status in urban areas followed by urban regular employed (₹ 2835), urban self-employed (₹ 2688) and urban casual labour (₹ 1298) shown in table 3.7. In addition, the average MPCE of rural others is highest (₹ 2997) in contrast to the various categories of employment status in rural areas which included self-employed in rural sector (₹ 2471), regular employed in rural areas (₹ 1959) and casual labour in rural sector (₹ 1484). On the contrary, table 3.8 shows average MPCE of all categories of employment is ₹ 2151 in Firozpur. District Jalandhar in table 3.7 gives the average MPCE of urban others group being highest (₹ 5150) with better living standard in contrast to the various categories of employment status in urban areas followed by urban self-employed (₹ 3119), urban regular employed (₹ 2965) and urban casual labour (₹ 2038). Furthermore, the average MPCE of rural others is highest (₹ 3714) in comparison to the various categories of employment status in rural areas followed by self-employed in rural sector (₹ 2140), regular employed in rural areas (₹ 1860) and casual labour in rural areas (₹ 1338). However, observing table 3.8, the average MPCE of all categories of employment is ₹ 2504 in Jalandhar.

The status of standard of living of district Ludhiana is somewhat similar in the urban areas in table 3.7 which shows average MPCE of urban others group is highest (₹ 3106) followed by self-employed in urban sector (₹ 2506), regular employed in urban areas (₹ 2468) and casual labour in urban areas (₹ 1761). However, the average MPCE of rural others is highest (₹ 2958) in comparison of the various categories of employment status in rural areas followed by self-employed in rural areas (₹ 2278), regular employed in rural areas (₹ 2108) and casual labour in rural sector (₹ 1630). The average MPCE of all categories of employment is ₹ 2295 in Ludhiana (table 3.8). The standard of living of categories of employment status of district Moga has been estimated in table 3.7 with the average MPCE of urban self-employed group being highest (₹ 3332) in comparison of the various categories of employment status in urban areas followed by urban regular employed (₹ 2271) and urban casual labour (₹ 1203). However, in the rural areas, the average MPCE of rural others is highest (₹ 3604) showing a better living standard in comparison of the various categories of employment status in rural areas followed by

self-employed in rural sector (₹ 3441), regular employed in rural areas (₹ 1809) and casual labour in rural sector (₹ 1336). But in table 3.8, district Moga has the average MPCE of all categories of employment as ₹ 2452 per month.

Table 3.8: Average MPCE of all categories of Employment

District	**Average MPCE$_{MRP}$ (in ₹)**
Barnala	1949
Bathinda	2824
Mansa	2639
Muktsar	1810
Patiala	3002
Rupnagar	2513
Sangrur	2414
Amritsar	2147
Faridkot	2468
Fatehgarh Sahib	2322
Firozpur	2151
Jalandhar	2504
Ludhiana	2295
Moga	2452
Tarn Taran	1919
Gurdaspur	2118
Hoshiarpur	2244
Kapurthala	2290
Nawanshahr	1947
SAS Nagar (Mohali)	2943
All	2356

Source: Estimations based on NSS data

Looking the status of Tarn Taran in table 3.7, the standard of living of urban others group is highest (₹ 4435) as compared to the various categories of employment status in urban areas followed by urban regular employed (₹ 2108), urban self-employed (₹ 1976) and urban casual labour (₹ 1220). However, in the rural sector, the average MPCE of rural regular employed is highest (₹ 2584) showing an improved standard of living in

comparison of the various categories of employment status in rural areas followed by rural self-employed (₹ 2274), rural others (₹ 1931) and rural casual labour (₹ 1430). For the combined urban and rural sector of Tarn Taran in table 3.8, the average MPCE of all categories of employment is ₹ 1919. The figures of table 3.7 points that in Gurdaspur, among the urban employment category groups, the average MPCE of urban others group is highest (₹ 3252) showing improved standard of living in comparison of the various categories of employment status in urban areas which includes self-employed in urban sector (₹ 2233), regular employed in urban areas (₹ 2203) and casual labour in urban sector (₹ 1773). Similarly, in the rural areas, the average MPCE of rural regular employed is highest (₹ 2873) showing a better living standard in contrast of the various categories of employment status in rural areas followed by rural others (₹ 2526), rural self-employed (₹ 2250) and rural casual labour (₹ 1598). Furthermore, the table 3.8 captures the average MPCE of all categories of employment in combined urban and rural sector being ₹ 2118 in Gurdaspur.

The standard of living of district Hoshiarpur for combined urban and rural sector is calculated in the table 3.8 as the average MPCE of all categories of employment ₹ 2244 per month. However, observing table 3.7, the average MPCE of urban others group is highest (₹ 3161) showing an improved level of living in contrast to the various categories of employment status in urban areas followed by self-employed in urban sector (₹ 2784), regular employed in urban areas (₹ 2299) and casual labour in urban sector (₹ 1051). Similarly, in the rural sector, the average MPCE of rural others is highest (₹ 3152) in contrast to the various categories of employment status in rural areas followed by rural regular employed (₹ 2416), rural self-employed (₹ 2303) and rural casual labour (₹ 1507). In Kapurthala, the average MPCE of urban others group is highest (₹ 4369) revealing to have a better living standard in comparison of the various categories of employment status in urban areas followed by urban regular employed (₹ 3017), urban self-employed (₹ 2666) and urban casual labour (₹ 1565) shown in table 3.7. The average MPCE of rural self-employed is highest (₹ 2420) in the rural areas showing an improved standard of living as compared to the various categories of employment status in rural areas followed by rural others (₹ 1633), rural regular employed (₹ 1443) and rural casual labour (₹ 1394). In addition, the average MPCE of all categories of employment is ₹ 2290 per month in Kapurthala district (table 3.8).

As looked into table 3.7, district Nawanshahr has the average MPCE of urban others group is ₹ 3675 per month which is highest in urban areas giving insights of an improved standard of living in comparison of the various categories of employment status in urban areas followed by self-employed in urban sector (₹ 2490), regular employed in urban sector (₹ 1933) and casual labour in urban areas (₹ 1615). Similarly, the average MPCE of rural self-employed is highest (₹ 2186) in rural areas followed by rural others (₹ 2066), rural regular employed (₹ 1746) and rural casual labour (₹ 1339). However, table 3.8 shows the average MPCE of all categories of employment is ₹ 1947 per month in Nawanshahr. The living standard in SAS Nagar (Mohali) can be easily known from the estimated values of table 3.7 where the average MPCE of urban others group is highest (₹ 8920) showing a better situation of this group in comparison of the various categories of employment status in urban areas followed by urban self-employed (₹ 4043), urban regular employed (₹ 2954) and urban casual labour (₹ 2038). Further, it can be seen the average MPCE of rural self-employed is highest (₹ 2247) and thus have standard of living which is better in comparison of the various categories of employment status in rural areas followed by rural regular employed (₹ 2169) and rural casual labour (₹ 1370). The overall average MPCE of all categories of employment in table 3.8 is ₹ 2943 per month in SAS Nagar (Mohali).

3.2.7 Analysis of Difference in Means between categories of Employment Status

In order to know the whether there is any statistical difference between means of various categories of employment status, the consumption expenditure of the various categories of employment is compared with all other categories of employment status. As it can be observed from table 3.9 that comparing the consumption expenditure of urban others with each of the categories of employment status yields significant results. The consumption expenditure between the urban others and rural others is ₹ 1426.22 per month which is the lowest difference of the urban others with all other categories of employment. Its statistically significant result implies there is difference in the average consumption expenses of the urban others and rural others. In addition, the significant result of difference of consumption expenditure between the urban others and urban regular employed is ₹ 1580.99 per month. Therefore, there is difference in the mean consumption expenses of urban others and urban regular employed. The consumption expenses between the urban others and rural self-employed is ₹ 1591.73 per month and this disparity is statistically significant. It implies there is difference in the mean

consumption expenditure of urban others and rural self-employed. Furthermore, the consumption expenditure between the urban others and urban self-employed is ₹ 1712.47 per month and is statistically significant which implies there is disparity in the consumption expenses of urban others and urban self-employed. The consumption expenses between the rural regular employed and urban others is ₹ 2125.91 per month with statistically significant result. It implies there is difference in the mean consumption expenses of rural regular employed and urban others. It is noticeable that the consumption expenses between the urban others and urban casual labour is ₹ 2788.67 per month which is the highest difference of urban others with all other categories and this difference is statistically significant which states there is disparity in the mean consumption expenditure of urban others and urban casual labour.

Looking deeply into the table 3.9, it is found that the consumption expenditure between the rural others and urban regular employed is ₹ 154.77 per month which is quite low difference of rural others with each one of other categories and this difference is not statistically significant. This indicates there no difference in the average consumption expenditure of rural others and urban regular employed. In addition, the consumption expenses between the rural others and self-employed in rural sector is ₹ 165.51 per month which is slight above the previous difference of rural others and urban regular employed discussed and this difference is not statistically significant. This clearly indicates that there is no difference in the mean consumption expenditure of rural others and rural self-employed. However, the consumption expenditure between the rural others and urban self-employed is ₹ 286.25 per month with significant values. Therefore, it is deducible that there exists distinction in the average consumption expenditure of rural others and urban self-employed. The consumption expenditure between the rural others and rural regular employed is ₹ 699.69 per month yielding significant results. It implies there is difference in the mean consumption expenditure of rural others and rural regular employed. However, the consumption expenses between the urban casual labour and rural others is ₹ 1362.45 per month and this difference is statistically significant. It can be clearly understood that the mean consumption expenditure of rural others and urban casual labour is different. Similarly, the consumption expenses between the rural others and casual labour in rural areas is ₹ 1415.36 per month which is the highest difference of rural others with all other categories and this difference is statistically significant. This indicates there is difference in the mean consumption expenditure of rural others and rural

casual labour. Overall, a clear disparity can be seen between the average consumption expenditure of the rural others and urban self-employed, rural regular employed, urban casual labour and rural casual labour. But there is no difference between the mean consumption expenditure of the rural others and urban regular employed, rural self-employed.

It is clearly visible that consumption expenses between the regular employed in urban sector and self-employed in rural areas is ₹ 10.74 per month which is quite low difference and this difference is not statistically significant. It implies there is no difference in the average consumption expenses of regular employed of urban sector and self-employed in rural sector. Similarly, the consumption expenses between the regular employed in urban sector and urban self-employed is ₹ 131.48 per month which is again low as compared to difference of all the other categories of employment status with the urban regular employed and this distinction is statistically significant. It can be inferred there is difference in the mean consumption expenditure of urban regular employed and urban self-employed. Besides this, the consumption expenditure between the urban regular employed and rural regular employed is ₹ 544.92 per month yielding significant result.

Thus, it can be gathered there is difference in the mean consumption expenses of regular employed in urban sector and regular employed in rural sector. However, the consumption expenses between the urban regular employed and urban casual labour is ₹ 1207.68 per month and this difference is statistically significant which figures out there is difference in the mean consumption expenditure of urban regular employed and urban casual labour. The consumption expenditure between the urban regular employed and rural casual labour is ₹ 1260.59 per month with significant values. This clearly states there is difference in the mean consumption expenditure of urban regular employed and rural casual labour. Thus, it can be gathered that the average consumption expenditure of the urban regular employed and urban self-employed, rural regular employed, urban casual labour and rural casual labour is different. But there is no difference between the mean consumption expenses of the regular employed in urban sector and self-employed in rural areas.

It can be noticed that the consumption expenses between the rural self-employed and urban self-employed is ₹ 120.74 per month which is quite low in contrast to the

difference of all other categories of employment status with rural self-employed as well as has significant result. It implies there is difference in the mean consumption expenditure of self-employed in the rural sector and self-employed in the urban sector. However, the consumption expenditure between the rural self-employed and rural regular employed is ₹ 534.18 per month with significant results. This shows the difference in mean consumption expenditure of rural self-employed and rural regular employed exists. In addition, the consumption expenditure between the rural self- employed and urban casual labour is ₹ 1196.94 per month with significant value. This clearly implies there exists distinction in the mean consumption expenditure of self- employed in rural sector and urban casual labour. Importantly, the consumption expenditure between the rural self-employed and rural casual labour is ₹ 1249.85 per month which is highest in comparison to the difference of all other categories of employment status with rural self-employed and this difference is significant. It infers the difference in the mean consumption expenditure of rural self- employed and rural casual labour exists. Thus, it can be assembled that the difference exists between the average consumption expenditure of the rural self-employed and urban self-employed, rural regular employed, urban casual labour and rural casual labour.

Interestingly, the consumption expenditure between the rural self-employed and urban self-employed is ₹ 120.74 per month which is quite low in contrast to the difference of all other categories of employment status with rural self-employed as well as this difference is significant. This implies there is difference in the mean consumption expenditure of self-employed in rural sector and urban self-employed. However, the consumption expenditure between the rural self-employed and rural regular employed is ₹ 534.18 per month with significant results. This shows the disparity in the mean consumption expenses of rural self-employed and rural regular employed exists. In addition, the consumption expenditure between the rural self- employed and urban casual labour is ₹ 1196.94 per month with significant value. This clearly implies the disparity in the mean consumption expenditure of rural self- employed and urban casual labour. Importantly, the consumption expenses between the rural self-employed and rural casual labour is ₹ 1249.85 per month which is highest in comparison to the difference of all other categories of employment status with rural self-employed and this difference is found to be significant. It infers the difference in the mean consumption expenditure of rural self- employed and rural casual labour exists. Thus, it can be assembled that there

Table 3.9: Difference in Means between categories of Employment Status

Comparisons significant at the 0.05 level are indicated by **				
Employment Comparison	Difference Between Means	95% Confidence Limits		
Urban others - Rural others	1426.22	1133.17	1719.26	**
Urban others - Urban regular employed	1580.99	1362.56	1799.42	**
Urban others - Rural self-employed	1591.73	1377.3	1806.16	**
Urban others - Urban self-employed	1712.47	1496.58	1928.35	**
Urban others - Rural regular employed	2125.91	1898.44	2353.37	**
Urban others - Urban casual labour	2788.67	2541.81	3035.53	**
Urban others - Rural casual labour	2841.58	2620.16	3062.99	**
Rural others - Urban regular employed	154.77	-64.96	374.5	
Rural others - Rural self-employed	165.51	-50.24	381.27	
Rural others - Urban self-employed	286.25	69.05	503.45	**
Rural others - Rural regular employed	699.69	470.98	928.4	**
Rural others - Urban casual labour	1362.45	1114.44	1610.46	**
Rural others - Rural casual labour	1415.36	1192.66	1638.06	**
Urban regular employed - Rural self-employed	10.74	-80.84	102.32	
Urban regular employed - Urban self-employed	131.48	36.54	226.42	**
Urban regular employed - Rural regular employed	544.92	425.98	663.85	**
Urban regular employed - Urban casual labour	1207.68	1054.88	1360.48	**
Urban regular employed - Rural casual labour	1260.59	1153.67	1367.5	**
Rural self-employed - Urban self-employed	120.74	35.4	206.07	**
Rural self-employed - Rural regular employed	534.18	422.76	645.6	**
Rural self-employed - Urban casual labour	1196.94	1049.91	1343.97	**
Rural self-employed - Rural casual labour	1249.85	1151.36	1348.33	**
Urban self-employed - Rural regular employed	413.44	299.24	527.64	**
Urban self-employed - Urban casual labour	1076.2	927.06	1225.34	**
Urban self-employed - Rural casual labour	1129.11	1027.49	1230.73	**
Rural regular employed - Urban casual labour	662.76	497.31	828.22	**
Rural regular employed - Rural casual labour	715.67	591.34	840	**
Urban casual labour - Rural casual labour	52.91	-104.13	209.94	

Source: Estimations based on NSS data

Note: ** stands for 5 per cent significance level

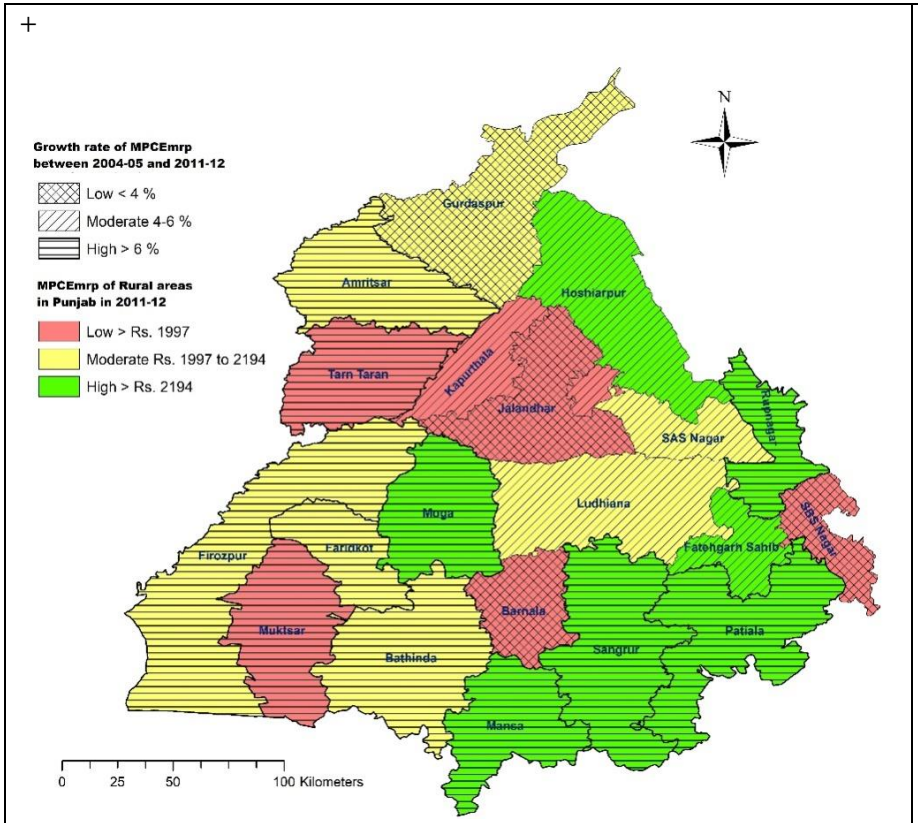
is difference between the average consumption expenditure of the rural self-employed and urban self-employed, rural regular employed, urban casual labour and rural casual labour.

One of the other categories of employment, i.e., urban self-employed is compared with different categories of employment status. It is found that the consumption expenses between the self-employed in the urban sector and rural regular employed is ₹ 413.44 per month and this difference is significant. This implies there is difference in the mean consumption expenditure of urban self-employed and rural regular employed. The consumption expenditure between the urban self-employed and urban casual labour is ₹ 1076.2 per month which gives significant result. Thus, it indicates the difference in the mean consumption expenditure of urban casual labour and urban self-employed exists. Importantly, the consumption expenditure between the urban self- employed and rural casual labour is ₹ 1129.11 per month and this difference is statistically significant. This clearly explains there is difference in the mean consumption expenditure of urban self-employed and rural casual labour. Thus, it gives insights of the difference between the average consumption expenditure of the urban self-employed and rural regular employed, urban casual labour and rural casual labour.

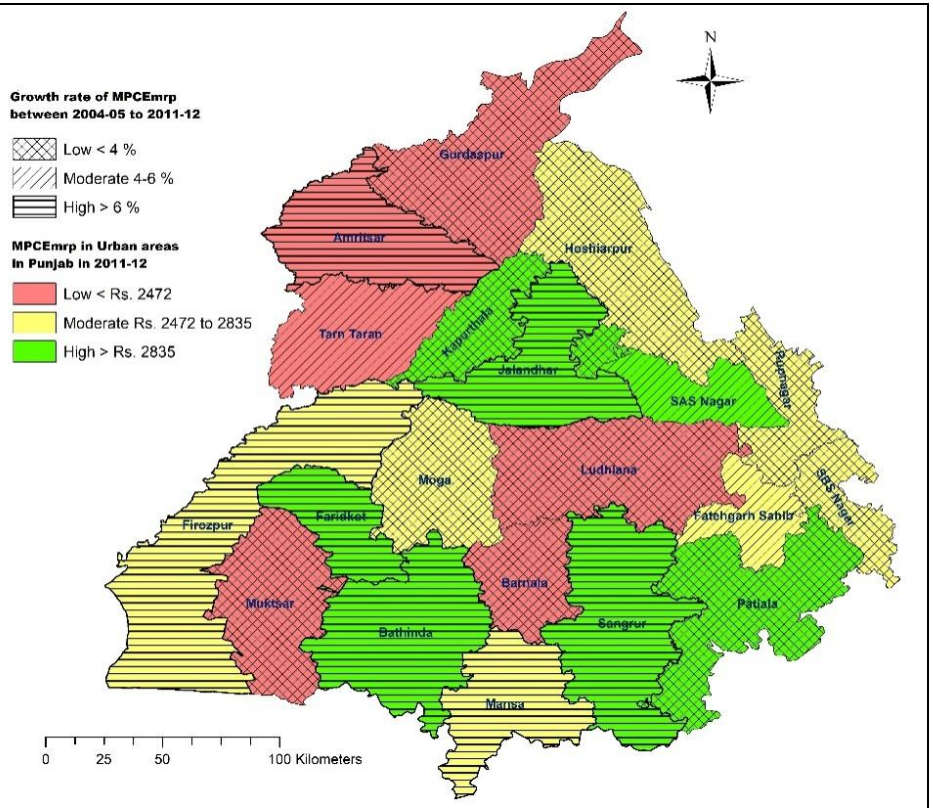
It is clearly observable from table 3.9 that consumption expenditure between the rural regular employed and urban casual labour is ₹ 662.76 per month which is statistically significant. This deduces the fact that there exists disparity in the mean consumption expenditure of regular employed in rural sector and casual labour in urban sector. However, the consumption expenses between the rural regular employed and rural casual labour is ₹ 715.67 per month with significant result. It indicates there is difference in the mean consumption expenditure of rural regular employed and rural casual labour. It is discernible to note that the consumption expenditure between the urban casual labour and rural casual labour is ₹ 52.91 per month and this difference is not significant. It implies there is no difference found in the mean consumption expenditure of urban casual labour and rural casual labour. Thus, overall it shows there exists difference between the average consumption expenditure of the rural regular employed and urban casual labour rural casual labour. But the results do not reveal any difference between the mean consumption expenditure of the urban casual labour and rural casual labour.

The map 3.1 shows the MPCE of rural areas in Punjab in 2011-12 and the growth rate of MPCE at mrp between 2004-05 and 2011-12. It can be seen that the consumption expenditure is less than ₹ 1997 in Barnala, Muktsar, Jalandhar, Kapurthala, Tarn Taran and SBS Nagar. However, Barnala, SAS Mohali, Jalandhar also had the growth rate of less than 4 per cent between 2004-05 and 2011-12, Kapurthala having moderate growth rate between 4-6 per cent and Muktsar and Tarn Taran having high growth rate of greater than 6 per cent. Districts Amritsar, Gurdaspur, Firozpur, Faridkot, Bathinda, Ludhiana and SAS Nagar having consumption expenditure between ₹ 1997-2194. Out of these districts, Gurdaspur had less than 4 per cent growth rate between 2004-05 and 2011-12; Ludhiana and SAS Nagar having 4-6 per cent moderate growth rate and Amritsar, Firozpur, Faridkot, Bathinda having greater than 6 per cent growth rate. Districts Moga, Mansa, Sangrur, Patiala, Fatehgarh Sahib, Rupnagar and Hoshiarpur having consumption expenditure greater than ₹ 2194. However, districts Hoshiarpur, Fatehgarh Sahib had growth rate between 4-6 per cent and Moga, Sangrur, Mansa, Patiala, Rupnagar had high growth rate of greater than 6 per cent between 2004-05 and 2011-12.

The map 3.2 shows the MPCE of urban areas in Punjab in 2011-12 and the growth rate of MPCE at MRP between 2004-05 and 2011-12. It can be noticed that consumption expenditure level is less than ₹ 2472 in Muktsar, Barnala, Ludhiana, Tarn Taran, Amritsar and Gurdaspur. However, Barnala, Muktsar, Ludhiana, Gurdaspur also had the growth rate of below 4 per cent between 2004-05 and 2011-12, Tarn Taran having moderate growth rate between 4-6 per cent and Amritsar having high growth rate of greater than 6 per cent. Districts Hoshiarpur, Firozpur, Moga, Mansa, Fatehgarh Sahib, SBS Nagar, Rupnagar, Hoshiarpur having consumption expenditure between ₹ 2472-2835. Out of these districts, Hoshiarpur, Rupnagar, SBS Nagar and Moga had the growth rate of below 4 per cent between 2004-05 and 2011-12; Fatehgarh Sahib having moderate growth rate between 4-6 per cent and Firozpur, Mansa having growth rate of greater than 6 per cent. Districts Kapurthala, Jalandhar, SAS Nagar, Sangrur, Patiala, Bathinda and Faridkot having consumption expenditure greater than ₹ 2835. However, districts Kapurthala and Patiala had growth rate of below 4 per cent, districts SAS Nagar had growth rate between 4-6 per cent and Jalandhar, Sangrur, Bathinda and Faridkot had high growth rate of greater than 6 per cent between 2004-05 and 2011-12.



Map 3.1: Level of MPCEmrp in 2011-12 and growth rate of MPCEmrp between 2004-05 and 2011-12 in Rural sector in Punjab



Map 3.2: Level of MPCEmrp in 2011-12 and growth rate of MPCEmrp between 2004-05 and 2011-12 in Urban sector in Punjab

Figure 3.1 depicts the convergence trend of MPCE at MRP in rural districts in Punjab between 2004-05 and 2012. The quadrant I in the figure depicts Patiala district with high growth and high level of MPCE. Patiala has been able to maintain its consumption expenditure. In the quadrant II, different districts i.e., Muktsar, Firozpur, Amritsar, Tarn Taran, Faridkot, Bathinda, Moga, Mansa shows the high growth but low level of MPCE. In quadrant III, there is no district with low level of consumption expenditure and low growth rate. Quadrant IV depicts the districts with low growth but high level of per capita consumption expenditure. These districts are Barnala, Jalandhar, Sangrur, Fatehgarh Sahib, Rupnagar, Ludhiana, Hoshiarpur, SAS Nagar, SBS Nagar and Gurdaspur. The slope of regression is negative. It implies the converging trends of districts in terms of MPCE over the study period.

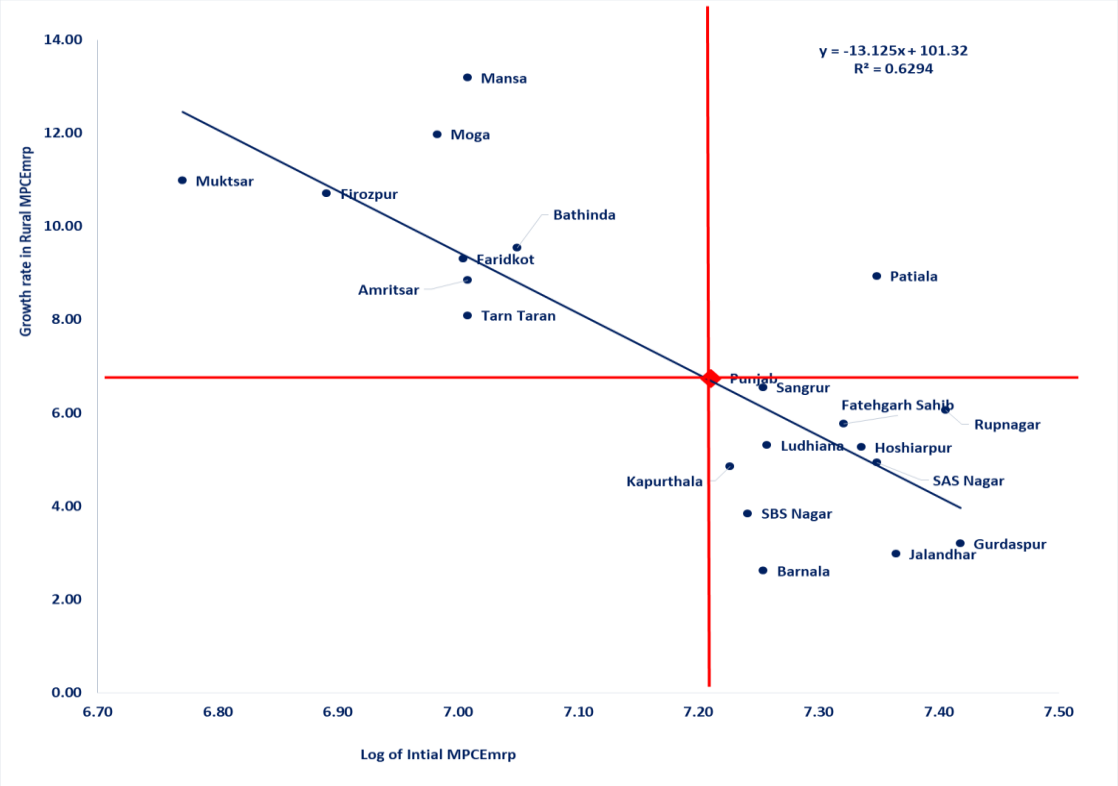


Figure 3.1: Convergence trend of MPCEmrp in Rural sector in Districts of Punjab between 2004-05 and 2011-12

Figure 3.2 depicts the convergence trend of MPCE at MRP in urban districts in Punjab between 2004-05 and 2012. The quadrant I in the figure depicts Jalandhar district with high growth and high level of MPCE. Jalandhar has been able to maintain its

consumption expenditure. In the quadrant II, different districts i.e., Bathinda, Faridkot, Firozpur, Mansa, Sangrur, Amritsar and Tarn Taran shows high growth but low level of MPCE. In quadrant III, Muktsar, Barnala and Fatehgarh Sahib had low level of consumption expenditure and low growth rate. Quadrant IV depicts the districts with low growth but high level of per capita consumption expenditure. These districts are SBS Nagar, Ludhiana, Moga, Hoshiarpur, Gurdaspur, Rupnagar, Moga, Kapurthala, Patiala and SAS Nagar. The slope of regression is negative. On the basis of negative slope and R^2 value of 0.62, it is clear that the districts are converging in terms of MPCE during this period. There is convergence of districts with negative growth of -12.619.

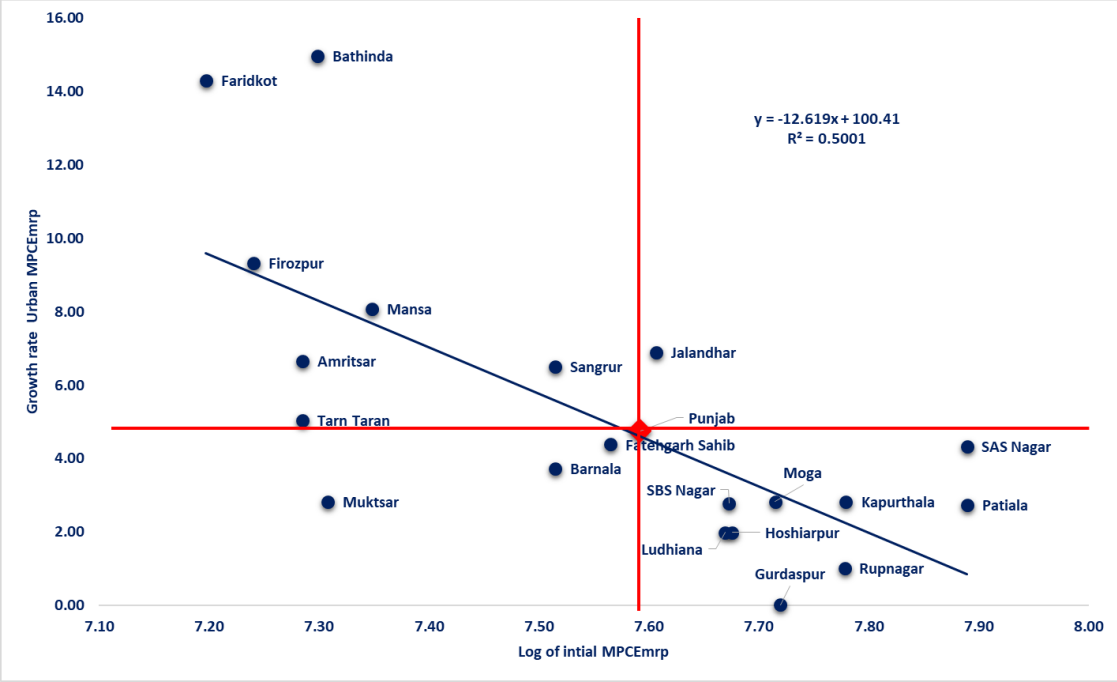


Figure 3.2: Convergence trend of MPCEmrp in Urban sector in Districts of Punjab between 2004-05 and 2011-12

3.3 Trends and Patterns of Poverty and Income Inequality in Punjab

To understand the problem of income inequality and poverty in the districts, a comprehensive study of the HCR and Gini coefficient is done for the period 2004-05 and 2011-12. The state specific poverty lines have been used for measurement of head-count ratio. Some features which emerge from the various estimates are:

1. Some of the significant differences have been observed in the head-count ratio and Gini coefficients of various districts.

2. There were many districts whose poverty rate was below the poverty rate of Punjab. But it is quite discernible that some of the districts had the poverty rate more than the poverty rate of Punjab. The figures of districts depict the actual picture of poverty than the state level figure.

It can be seen from the table 3.10 that the poverty rate of Punjab was 21.5 per cent in 2004-05. However, looking into the results of districts the picture seems to be different.

Table 3.10: Changing status of Poverty in districts of Punjab

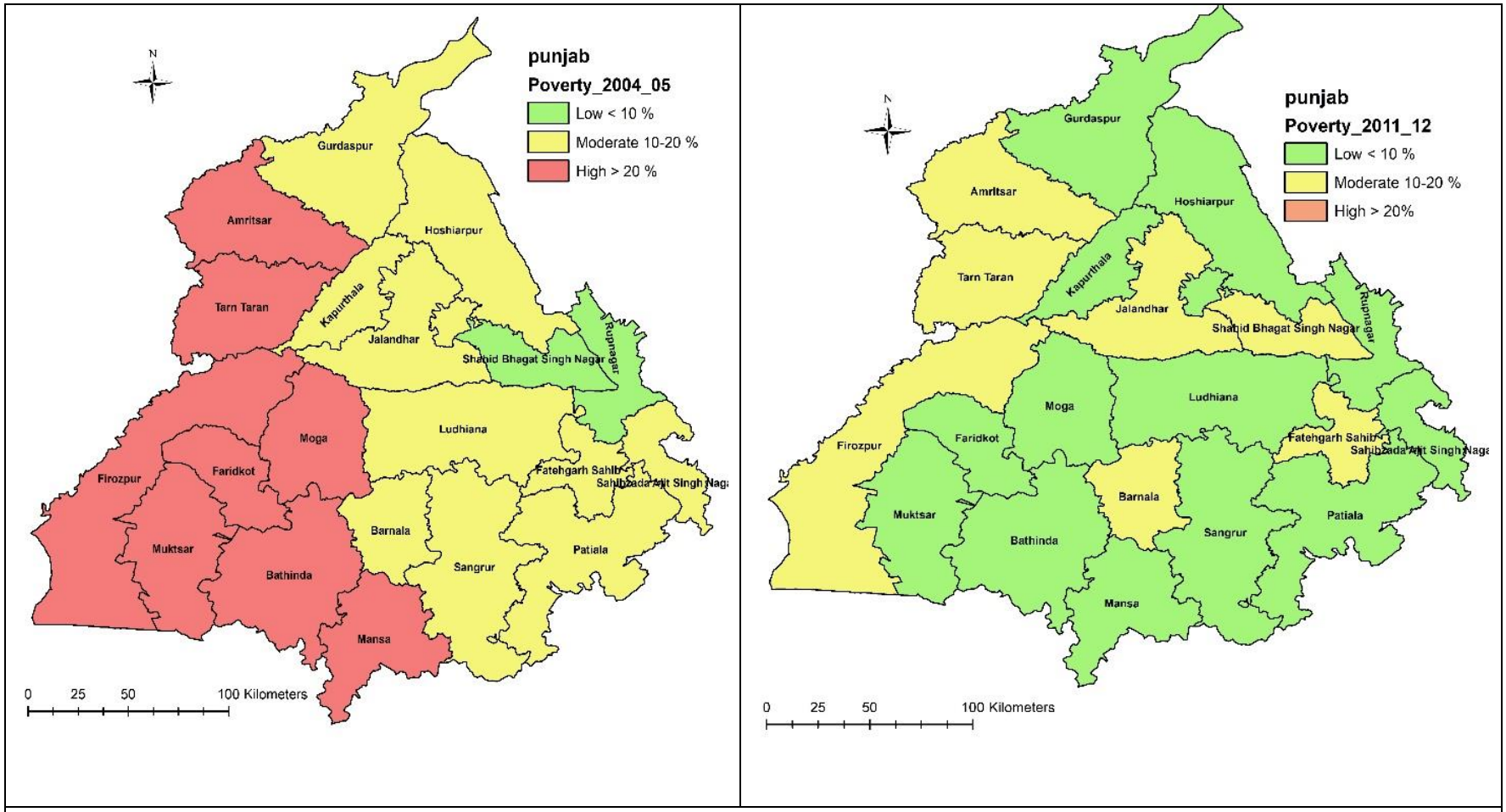
District	HCR (%)		Percentage change in HCR
	2004-05	2011-12	2004-05-2011-12
Gurdaspur	15.59	5.12	-67.16
Amritsar	25.37	10.29	-59.44
Kapurthala	12.24	9.9	-19.12
Jalandhar	12.55	14.15	12.75
Hoshiarpur	10.1	6.87	-31.98
Nawanshahr	6.28	11.72	86.62
Rupnagar	9.34	6.94	-25.70
Fatehgarh Sahib	15.99	11.26	-29.58
Ludhiana	17.71	7.47	-57.82
Moga	40.29	4.13	-89.75
Firozpur	42.84	10.83	-74.72
Muktsar	47.6	5.91	-87.58
Faridkot	39.3	7.9	-79.90
Bathinda	36.36	6.67	-81.66
Mansa	33.03	2.57	-92.22
Sangrur	14	7.81	-44.21
Patiala	11.15	3.08	-72.38
SAS Nagar (Mohali)	10.245	2.69	-73.74
Barnala	14	17.53	25.21
Tarn Taran	25.37	14.4	-43.24
Punjab	21.5	8.23	-61.72

Source: Estimations based on NSS data

District Muktsar has the highest poverty rate of 47.6 per cent in comparison to the other districts and also above the Punjab level. Other districts which have the poverty rate greater than the state level followed by Muktsar were Firozpur (42.84 per cent), Moga (40.29 per cent), Faridkot (39.3 per cent), Bathinda (36.36 per cent), Mansa (33.03 per cent), Tarn Taran (25.37 per cent) and Amritsar (25.37 per cent). However, in contrast to it, district Nawanshahr has the lowest poverty rate of 6.28 per cent as compared to all other districts and also lower than the Punjab level. Other districts which have lower poverty rate than the Punjab level were Ludhiana (17.71 per cent), Fatehgarh Sahib (15.99 per cent), Gurdaspur (15.59 per cent), Barnala (14 per cent), Sangrur (14 per cent), Jalandhar (12.55 per cent), Kapurthala (12.24 per cent), Patiala (11.15 per cent), SAS Nagar (Mohali) (10.245 per cent), Hoshiarpur (10.1 per cent), Rupnagar (9.34 per cent) respectively in 2004-05.

It can be observed that the poverty rate of Punjab was 8.23 per cent in 2011-12. However, the districts picture of poverty is different. District Barnala has the highest poverty rate of 17.53 per cent as shown in comparison to all other districts and also above the Punjab level. Other districts which have the poverty rate greater than the Punjab level followed by Barnala were Tarn Taran (14.4 per cent), Jalandhar (14.15 per cent), Nawanshahr (11.72 per cent), Fatehgarh Sahib (11.26 per cent), Firozpur (10.83 per cent), Amritsar (10.29 per cent) and Kapurthala (9.9 per cent). However, district Mansa has the lowest poverty rate of 2.57 per cent as compared to all other districts and also lower than the Punjab level. Other districts which have lower poverty rate than the Punjab level were Faridkot (7.9 per cent), Sangrur (7.81 per cent), Ludhiana (7.47 per cent), Rupnagar (6.94 per cent), Hoshiarpur (6.87 per cent), Bathinda (6.67 per cent), Muktsar (5.91 per cent), Gurdaspur (5.12 per cent), Moga (4.13 per cent), Patiala (3.08 per cent), SAS Nagar (Mohali) (2.69 per cent) respectively in 2011-12.

However, map 3.3 clearly depicts how the poverty has changed in different regions of Punjab during 2004-05 and 2011-12. There is decline in poverty in north region of Punjab as well as the south west region where the poverty has declined from high to moderate and low in many districts of Punjab. In the south east part of the state, the poverty rate has declined from moderate to low during the period 2004-05 to 2011-12 in combined urban and rural areas in Punjab. This is due to the fact that the declining share of agriculture and rising share of tertiary and secondary sector in the national income.



Map 3.3: Poverty incidence in Punjab in 2004-05 and 2011-12

There has been relatively slower growth of agricultural sector vis-a-vis the non-agriculture sector.

It can be observed from the table 3.11 that the Gini coefficient of Punjab was 0.32 in 2004-05. However, looking into the results of districts the picture seems different. District Fatehgarh Sahib has the Gini coefficient equal to the Punjab, that is, 0.32. District Rupnagar has the highest Gini coefficient of 0.36 as compared to all other districts and

Table 3.11: Changing status of Income Inequality in districts of Punjab

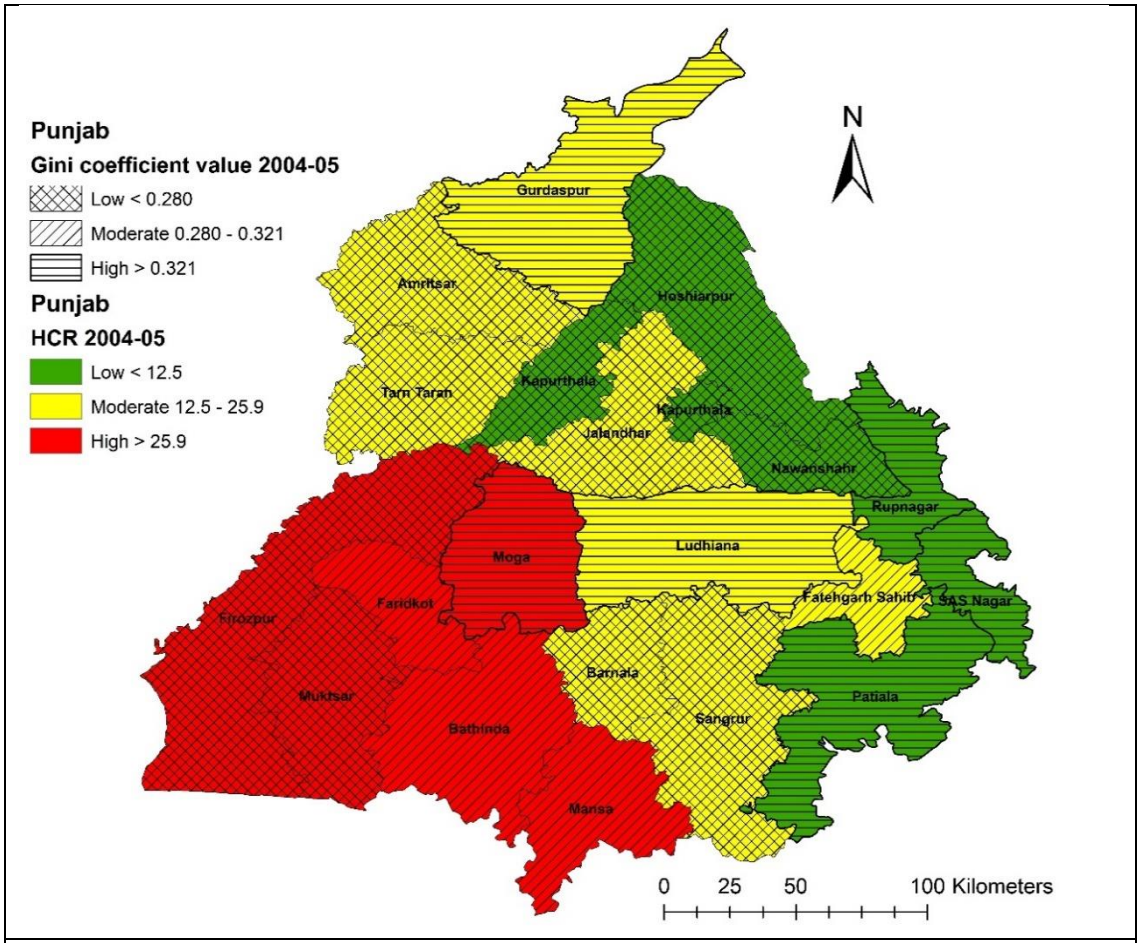
District	Gini coefficient		Percentage change in income inequality
	2004-05	2011-12	2004-05-2011-12
Gurdaspur	0.35	0.23	-35.53
Amritsar	0.23	0.27	16.67
Kapurthala	0.28	0.29	2.81
Jalandhar	0.28	0.38	34.41
Hoshiarpur	0.28	0.25	-11.67
Nawanshahr	0.23	0.26	11.06
Rupnagar	0.36	0.29	-17.65
Fatehgarh Sahib	0.32	0.32	-0.08
Ludhiana	0.33	0.24	-28.35
Moga	0.33	0.33	-0.44
Firozpur	0.25	0.31	21.45
Muktsar	0.24	0.23	-4.79
Faridkot	0.31	0.35	15.82
Bathinda	0.31	0.37	19.48
Mansa	0.29	0.30	5.38
Sangrur	0.28	0.29	0.52
Patiala	0.33	0.35	5.89
SAS Nagar (Mohali)	0.34	0.33	-4.54
Barnala	0.28	0.24	-13.95
Tarn Taran	0.23	0.25	6.17
Punjab	0.32	0.30	-5.16

Source: Estimations based on NSS data

also above the Punjab level. Other districts which have the Gini coefficient greater than the Punjab level followed by Rupnagar were Gurdaspur (0.35), SAS Nagar (Mohali) (0.34), Ludhiana (0.33), Moga (0.33) and Patiala (0.33). However, districts Amritsar, Nawanshahr and Tarn Taran has the lowest Gini coefficient of 0.23 as compared to all other districts and also lower than the Punjab level. Other districts which have lower Gini coefficient than the Punjab level were Faridkot (0.31), Bathinda (0.31), Mansa (0.29), Kapurthala (0.28), Jalandhar (0.28), Hoshiarpur (0.28), Sangrur (0.28), Barnala (0.28), Firozpur (0.25), Muktsar (0.24) respectively in 2004-05.

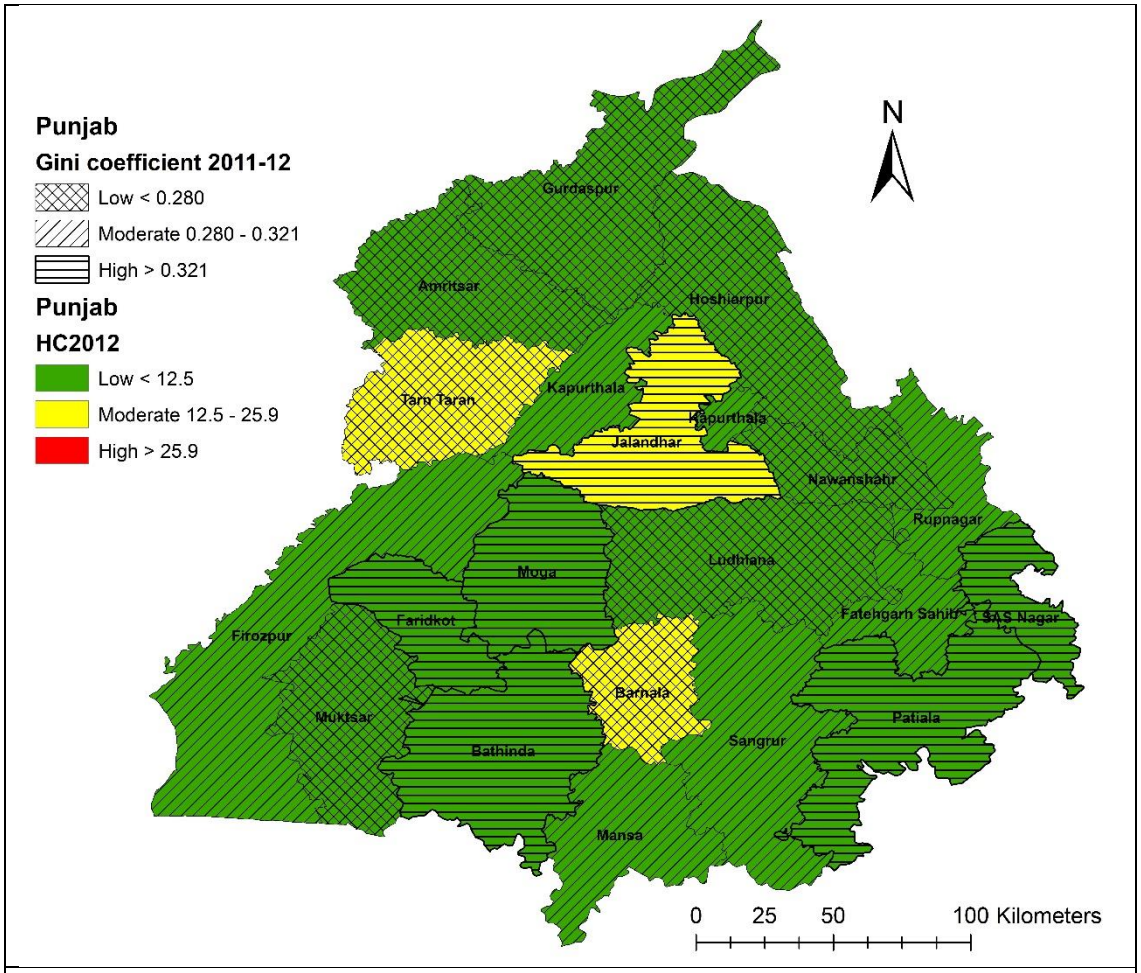
Table 3.11 also shows that the Gini coefficient of Punjab was 0.30 in 2011-12. However, district Mansa has the Gini coefficient equal to that of Punjab, that is, 0.30. District Jalandhar has the highest Gini coefficient of 0.38 as compared to all other districts and also above the Punjab level. Other districts which have the Gini coefficient greater than the Punjab level followed by Jalandhar were Bathinda (0.37), Faridkot (0.35), Patiala (0.35), Moga (0.33), SAS Nagar (Mohali) (0.33), Fatehgarh Sahib (0.32) and Firozpur (0.31). However, districts Gurdaspur and Muktsar has the lowest Gini coefficient of 0.23 as compared to all other districts and also lower than the Punjab level. Other districts which have lower Gini coefficient than the Punjab level were Sangrur (0.29), Kapurthala (0.29), Rupnagar (0.29), Amritsar (0.27), Nawanshahr (0.26), Hoshiarpur (0.25), Tarn Taran (0.25), Ludhiana (0.24), Barnala (0.24) respectively in 2011-12.

As it can be seen in map 3.4 the districts Hoshiarpur, Kapurthala, Nawanshahr, Rupnagar, SAS Nagar, Patiala have low poverty rate of less than 12.5 per cent. Out of these districts, Kapurthala, Hoshiarpur, Nawanshahr have low Gini coefficient of less than 0.28 but districts Rupnagar, SAS Nagar and Patiala have high inequality of more than 0.321. Districts Gurdaspur, Amritsar, Tarn Taran, Ludhiana, Barnala, Sangrur, Fatehgarh Sahib, Jalandhar have moderate HCR. Out of these districts, majority of districts have low inequality; Gurdaspur and Ludhiana have high income inequality. Districts with high poverty of more than 25.9 per cent were Firozpur, Faridkot, Moga, Faridkot, Muktsar, Bathinda and Mansa. These districts were having either low or moderate inequality except Moga having high inequality during 2004-05.



Map 3.4: Poverty and Income Inequality in 2004-05

Map 3.5 depicts the situation of the poverty and income inequality in Punjab during 2011-12. It can be seen that during 2011-12, no district had high poverty although there are districts with high inequality, that is, Faridkot, Moga, Bathinda, Patiala, SAS Nagar and Jalandhar. There is moderate level of poverty in three districts Tarn Taran, Jalandhar, Barnala in which Barnala and Tarn Taran have low income inequality. Majority of the districts have low poverty in 2011-12 so that it can be said that the poverty rate is declining in many districts in Punjab as compared to 2004-05. The districts with low poverty are Firozpur, Muktsar, Bathinda, Faridkot, Moga, Mansa, Sangrur, Patiala, Faridkot, Ludhiana, Fatehgarh Sahib, SAS Nagar, Rupnagar, Nawanshahr, Kapurthala, Hoshiarpur, Gurdaspur and Amritsar.



Map 3.5: Poverty and Income Inequality in 2011-12

From the above discussion, it can be clearly understood that the districts level estimates are tremendously useful in identifying the districts of deprivation across the wide range of the state. Even in the state like Punjab with the praiseworthy growth performance in reduction in poverty, a district like Firozpur was having the high poverty during 2004-05. Such happenings would have disappeared if the trends in the study is restricted to the estimates of the state level. The results which have been obtained signify the constraint of recognizing the state as a unit of analysis for trends in employment, poverty and income inequality. The state level parameters misdirect and skip some important worrisome areas. The district level analysis help in understanding the prevailing problems relating to employment, poverty and income inequality in any part of the state and gives the true picture.

As the proceedings of this chapter are made, it is found that the LFPR was 40.9 per cent in Punjab showing 5759 persons in 2011-12. This has been due to the education level of the labour force. It serves as a measure of the level of skill of the labour force.

Looking at the overall relationship between the level of education and the LFPR, we can find a declining type curve. It shows as the level of education rises from primary and middle, the participation rate of labour force declines from 15.47 per cent to 12.64 per cent. When the education level rises to secondary and higher secondary, the participation of labour force rises to 32.47 per cent. A higher level of education to graduate, postgraduate and above leads to declining the participation of labour force to 7 per cent and 3.07 per cent. The rise in the education level raises the LFPR but a still higher education level declines the LFPR. This can be observed from the age specific composition of labour force where the age group 15-30 has the participation in labour force of 32.85 per cent. This gives impression that this segment of population is moving towards attainment of higher education. The age group 30-45 has the increase in LFPR of 36.12 per cent. This is due to the fact that this age group mostly covers the salaried employed and self-employed with LFPR of 27.21 per cent and 54.06 per cent. The share of age group 0-15 and 45-60 in LFPR is less as they are mostly the casual labour which has LFPR of 18.29 per cent. These casual workers are engaged in agriculture and non-agricultural activities in rural areas. Out of these, some of the casual labour is also found in urban areas whose LFPR is 4.25 per cent. The workforce trend across employment status indicates there is marginal rise in the growth rate of self-employed between 2004-05 to 2011-12. A more high growth rate is found among the regular employed as compared to the self-employed. However, there was large hike in the growth rate of casual workers which was 3.07 per cent. In addition, there was decline in the others employed whose growth rate was found to be negative. Furthermore, a large section of the population is found to be not working due to which the growth rate for this proportion of population (2.44 per cent) is higher than the working population (0.99 per cent). Although there is rise in the growth rate of workers but there is marginal decrease in the WPR of workers during 2004-05 and 2011-12.

3.4 Conclusion

In order to know the quality of employment, it is necessary to examine the standard of living of the workers across different employment status in the economy of Punjab. It is found that in Punjab the average MPCE of urban others group is highest (₹ 4511) showing a better living standard in comparison of the various categories of employment status in urban areas followed by urban regular employed (₹ 2780), urban self-employed (₹ 2743), urban casual labour (₹ 1613). However, the average MPCE of

rural others is highest (₹ 2894) showing an improved standard of living in comparison of the various categories of employment status in rural areas followed by self-employed in rural sector (₹ 2576), regular employed in rural sector (₹ 2144) and casual labour in rural areas (₹ 1486).

In order to have a better understanding of the standard of living, the mean consumption expenditure of employment status between districts is compared. It is found that the difference exists in the average consumption expenditure of urban others and rural others, urban others and urban regular employed, urban others and self-employed in rural sector, urban others and self-employed in urban sector, urban others and regular employed in rural sector, urban others and urban casual labour, urban others and casual labour in rural sector, rural others and self-employed in urban sector, rural others and rural regular employed, rural others and casual labour in urban sector, rural others and casual labour in rural sector, urban regular employed and urban self-employed, urban regular employed and rural regular employed, urban regular employed and urban casual labour, urban regular employed and rural casual labour, rural self-employed and urban self-employed, rural self-employed and rural regular employed, rural self-employed and urban casual labour, rural self-employed and rural casual labour, urban self-employed and rural regular employed, urban self-employed and urban casual labour, urban self-employed and rural casual labour, rural regular employed and urban casual labour, rural regular employed and rural casual labour, urban casual labour and rural casual labour. These difference in mean consumption expenditure of various categories of employment gives an impression that this is the main reason of the poverty and income inequality in districts as the standard of living of different household types is different. To overview the status, the head count ratio and Gini coefficient has been calculated for various districts and at Punjab level.

It is interesting to find that there are variations in the poverty rate of many districts. Also, the income inequality varies in different districts during 2004-05 and 2011-12. A majority of the districts had the poverty rate which was much below the state level and only some of them were very high which were actually responsible for dragging the figures of Punjab. There were some districts for which Gini coefficient was higher than the Gini coefficient at the state level. This difference has already been shown in the difference in mean consumption expenditure of different household types in which employment status determines the living standard of the people.

Thus, it becomes important to identify the factors affecting employment, income inequality and poverty in Punjab which becomes base of the discussion of next chapter on determinants of employment, poverty and income inequality in Punjab.

CHAPTER IV

DETERMINANTS OF EMPLOYMENT, POVERTY AND INCOME INEQUALITY IN PUNJAB

4.1 Introduction

Inequality in the distribution of resources hinders one group of persons over the others in the society and affect negatively so that they are classified as being poor. In the developing world, Indian economy has been among one of the rapid growing economies since 1980s. The policy makers give their due attention to the reduction of poverty and income inequality. The consideration is given not merely on high growth but to its pattern, sources and the approach which is adopted to distribute the benefits of growth. These are correspondingly important for reduction of poverty. In this backdrop, employment plays a central role (Sundaram & Tendulkar, 2002)[176]. Generating employment serves as the noteworthy link between growth and reduction in poverty and thus forms a crucial part in the determination of poverty and changes in the distribution of income (Pal & Ghosh, 2007)[177]. According to Sundaram & Tendulkar (2007)[178], "working poor is defined as members of the labour force located in households below poverty line (BPL)".

The percentage of population living below the poverty line in Punjab was 7.7 per cent in rural sector and 9.2 per cent in urban sector in 2011-12 in contrast to 14.6 per cent in rural sector and 18.1 per cent in urban sector in 2009-10 (GOI, 2014)[179]. The problem of inequality in the distribution of income is quite severe in Punjab. Gini coefficient speaks of wide range of income inequalities. The Gini coefficient in Punjab was 0.27 in

[176] Sundaram, K., & Tendulkar, S. D. (2002). The working poor in India: Employment-poverty linkages and employment policy options. *International Labour Office, Recovery and Reconstruction Department.* Discussion Paper No. 4. Retrieved from https://ipcig.org/conference/emprego/paper/india.pdf

[177] Pal, P., & Ghosh, J. (2007). Inequality in India: A survey of recent trends. *United Nations Department of Social and Economic Affairs.* Working paper No. 45. Retrieved from https://www.oecd-ilibrary.org/docserver/0af507bb-en.pdf?expires=1581490980&id=id&accname=guest&checksum=D3230B1B6A26256040329D44F52A84A1.

[178] Sundaram, K. (2007). Employment and poverty in India, 2000-2005. *Economic and Political Weekly*, *42*(30), 3121-3131.

[179] GOI. (2014). Report of the Expert Group to Review the Methodology for Measurement of Poverty. New Delhi: Planning Commission.

rural areas and 0.32 in urban areas in 2011-12 in comparison to 0.29 in rural areas and 0.36 in urban areas in 2009-10. Thus, the gap between the rich class and the poor class in rural areas is not as much as in urban areas. Thus, due to income inequality, there exists poverty in Punjab.

The unemployment rate for Punjab was 2.37 per cent in 2011-12. During the same year, the poverty rate in Punjab was 8.23 per cent and income inequality as measured by Gini coefficient was 0.30. Thus, there exists poverty due to income inequality and unemployment in Punjab. This chapter explores the factors affecting the employment, poverty and income inequality in Punjab. Section 4.1 deals with the introduction of chapter. Section 4.2 deals with determinants of employment, section 4.3 delves on determinants of poverty and section 4.4 deals with determinants of income inequality. Section 4.5 gives conclusion of the chapter.

4.2 Empirical framework and results of estimation of determinants of Employment

As seen in the previous chapter, there are variations in the LFPR and WPR in Punjab. It is interesting to know that the employment is determined by various factors. The literature points the factors affecting the employment status. The male workforce participation, female literacy, and sex ratio have significant association with the female workforce participation rate in Punjab. As the level of education increases, there is increase in the female LFPR (Kaur & Kaur, 2012)[180]. To study the factors affecting the employment, Logit model has been used. The empirical estimation of determinants is done using the following equation:

$$Emp = \beta_0 + \beta_1 Sec + \beta_2 Gen + \beta_3 AgeGrp + \beta_4 HHsize + \beta_5 RSEagr + \beta_6 RSEnagr + \beta_7 RRE + \beta_8 RCEagr + \beta_9 RCEnagr + \beta_{10} USE + \beta_{11} URE + \beta_{12} UCE + \beta_{13} UOE + \beta_{14} Hrlg + \beta_{15} Srlg + \beta_{16} STgrp + \beta_{17} SCgrp + \beta_{18} OBCgrp + \beta_{19} Tedu + \beta_{20} Einst + \beta_{21} BPedu + \beta_{22} Medu + \beta_{23} Sedu + \beta_{24} HSedu + \beta_{25} DGPGedu + u_i$$

where

Emp = A binary variable if employed = 1 otherwise 0

[180] Kaur, P., & Kaur, G. (2012). Factors affecting female labour force participation in Punjab: An inter-district analysis. *Journal of Research in Peace, Gender and Development*, *2*(4), 81-88.

Sec = Sector if person lies in rural = 1, urban = 2

Gen = Gender of person if male = 1, female = 2

AgeGrp = Age group of persons, 15-35, 35-45, 45-55 and 55-65

HHsize = household size, <3, 3-5, 5-7, >7

RSEagr = Dummy for rural self-employed in agriculture = 1, otherwise 0

RSEnagr = Dummy for rural self-employed in non-agriculture = 1, otherwise 0

RRE = Dummy for rural regular employed = 1, otherwise 0

RCEagr = Dummy for rural casual employed in agriculture = 1, otherwise 0

RCEnagr = Dummy for rural casual employed in non-agriculture = 1, otherwise 0

USE = Dummy for urban self-employed = 1, otherwise 0

URE = Dummy for urban regular employed = 1, otherwise 0

UCE = Dummy for urban casual employed = 1, otherwise 0

UOE = Dummy for urban other employed = 1, otherwise 0

Hrlg = Dummy for Hindu religion = 1, otherwise 0

Srlg = Dummy for Sikh religion = 1, otherwise 0

STgrp = Dummy for scheduled tribe = 1, otherwise 0

SCgrp = Dummy for scheduled caste = 1, otherwise 0

OBCgrp = Dummy for other backward caste = 1, otherwise 0

Tedu = Dummy for technical education = 1, otherwise 0

Einst = Dummy for education in government institute = 1, otherwise 0

BPedu = Dummy for below primary and primary education = 1, otherwise 0

Medu = Dummy for middle education = 1, otherwise 0

Sedu = Dummy for secondary education = 1, otherwise 0

HSedu = Dummy for higher secondary education = 1, otherwise 0

DGPGedu = Dummy for diploma, graduate, post graduate and above education = 1, otherwise 0

$\beta_0, \ldots, \beta_{25}$ are parameters of the model

μ_i is the error term.

In the above equation other rural employed, other religion group, general category group and not literate is taken as reference category.

Table 4.1 gives the distribution of each explanatory variable used in determining the employment of Punjab. Out of the 10088 persons, 51.82 per cent were reported in the rural sector in comparison to 48.18 per cent in the urban sector. Among the religion groups, majority of the persons were reported from Sikh religion (54.68 per cent) followed by Hindu religion (41.99 per cent) and other religion groups (3.33 per cent). The other religion groups include Islam, Christianity, Jainism, Buddhism, Zoroastrianism and others. It can be noticed from the table that the major share in the household type is occupied by the urban self-employed (23.75 per cent) followed by the urban regular employed (18.83 per cent), casual labour in urban sector (3.92 per cent) and urban others employed (1.68 per cent). However, among the rural household type, the rural self-employed in agriculture occupies the major share in distribution with 17.42 per cent. There were 10.41 per cent self-employed in non-agriculture in the rural sector. A marginal lesser share was taken over by rural regular employed (9.70 per cent) than the rural self-employed in non-agriculture. Among the casual labour, major persons were employed in non-agriculture which was 8.49 per cent than those employed in agriculture which was 4.00 per cent. A very small number of persons were employed in rural others which constituted 1.80 per cent.

Looking at the gender perspective, there were large number of males reported (51.75 per cent) as compared to females which was 48.25 per cent. The education level of the people has been categorised into groups. It can be observed from the table that there were 20.59 per cent persons who were illiterate. These include illiterate, literate through NFEC/EGC/AEC, TLC and others termed as without formal schooling. Among the literate, there was major share of persons who had secondary education (21.33 per cent) followed by below primary and primary education (18.95 per cent), higher secondary education (14.61 per cent), middle level education (13.80 per cent) and the

Table 4.1: Details of independent variables in determinants of Employment

Variable	Sub-group	Persons reported (%)
Sector	Rural	51.82
	Urban	48.18
Religion	Hindus	41.99
	Sikhs	54.68
	Other religion group	3.33
Household type	Rural self-employed in agriculture	17.42
	Rural self-employed in non-agriculture	10.41
	Rural regular employed	9.70
	Rural casual labour in agriculture	4.00
	Rural casual labour in non-agriculture	8.49
	Rural others employed	1.80
	Urban self-employed	23.75
	Urban regular employed	18.83
	Urban casual labour	3.92
	Urban others employed	1.68
Gender	Male	51.75
	Female	48.25
Education	Not literate	20.59
	Below primary and primary	18.95
	Middle	13.80
	Secondary	21.33
	Higher secondary	14.61
	Diploma, graduate, post graduate and above	10.72
Age	15-35	52.84
	35-45	18.90
	45-55	15.36
	55-65	12.89
Household size	< 3	5.37
	3 to 5	32.04
	5 to 7	39.68
	> 7	22.91
ST	No	99.77
	Yes	0.23
SC	No	68.45
	Yes	31.55
OBC	No	83.82
	Yes	16.18
Other social group	No	47.96
	Yes	52.04
Technical education	No	97.62
	Yes	2.38
Type of education institute	All others	94.42
	Government	5.58

Source: Estimations based on NSS data

smallest share was those who were having diploma, graduate, post graduate and above education with 10.72 percent respectively. The age group of the respective population has been represented under four different sub-groups. As the NSS data considers the employment status of 15-65 age group, therefore age group below 15 years and above 65 years has not been taken. The age group 15-35 represents the major share of 52.84 per cent. The age group 35-45 represents the 18.90 per cent, the age group 45-55 represents 15.36 per cent and 55-65 represents 12.89 per cent. As regarding the details of the household size of the respective selected households, there were 39.68 per cent households who were having members between 5 to 7 accompanied by 32.04 per cent of the households between 3 to 5 members, 22.91 per cent with above 7 members and 5.37 per cent with less than 3 members. Among the social groups, a very small share of population was reported by STs with 0.23 per cent in Punjab. There were 31.55 per cent of SCs and 16.18 per cent of OBCs reported in Punjab. The others social group occupied a major share of 52.04 per cent.

Among the total persons reported, only 2.38 per cent were found to have technical education. These include the technical degree in technology/ engineering/ agriculture/ medicine, etc. It also includes the diploma or certificate (below graduate level) in agriculture, engineering/technology, medicine, crafts and other subjects. The technical education also includes the diploma or certificate (graduate and above level) in agriculture, medicine, engineering/technology, crafts and other subjects. The education institute from where the persons got educated was mostly other than government institutes (94.42 per cent) and education from government institutes was merely 5.58 per cent. The other institutes include local body, private and unaided and some were not known.

Table 4.2 gives standard deviations, means, minimum and maximum values for the variables used for the estimations of regression. The descriptive statistics shows the data distribution normality and all the variables are outlier free. However, this table shows that there is no expected variable which would not be suitable to run the regression model.

Table 4.2: Description statistics of variables used in determinants of Employment

Variable	Mean	Std Dev	Sum	Minimum	Maximum
Number of observations	10088				
Emp	0.54	0.50	5468	0	1
Sec	1.48	0.50	14948	1	2
Gen	1.48	0.50	14955	1	2
AgeGrp	1.88	1.09	18995	1	4
HHsize	2.80	0.85	28259	1	4
RSEagr	0.17	0.38	1757	0	1
RSEnagr	0.10	0.31	1050	0	1
RRE	0.10	0.30	979	0	1
RCEagr	0.04	0.20	404	0	1
RCEnagr	0.08	0.28	856	0	1
ORE	0.02	0.13	182	0	1
USE	0.24	0.43	2396	0	1
URE	0.19	0.39	1900	0	1
UCE	0.04	0.19	395	0	1
UOE	0.02	0.13	169	0	1
Hrlg	0.42	0.49	4236	0	1
Srlg	0.55	0.50	5516	0	1
Orlg	0.03	0.18	336	0	1
STgrp	0.00	0.05	23	0	1
SCgrp	0.32	0.46	3183	0	1
OBCgrp	0.16	0.37	1632	0	1
OTHgrp	0.52	0.50	5250	0	1
Tedu	0.02	0.15	240	0	1
Einst	0.06	0.23	563	0	1
SCHyr	7.55	4.81	76119	0	15
NLITedu	0.21	0.40	2077	0	1
BPedu	0.19	0.39	1912	0	1
Medu	0.14	0.34	1392	0	1
Sedu	0.21	0.41	2152	0	1
HSedu	0.15	0.35	1474	0	1
DGPGedu	0.11	0.31	1081	0	1

Source: Estimations based on NSS data

Note: ORE - Other rural employed, Orlg - Other religion, OTHgrp - Other social group, NLITedu- Not literate, SCHyr - Schooling year

Table 4.3: Correlation coefficient of variables used determinants of Employment (A)

	Emp	Sec	Gen	AgeGrp	HHsize	RSEagr	RSEnagr	RRE	RCEagr	RCEnagr	ORE	USE	URE	UCE	UOE
Emp	1														
Sec	-0.07***	1													
Gen	-0.52***	-0.02**	1												
AgeGrp	0.07***	-0.004	0.02**	1											
HHsize	-0.003	-0.10***	0.04***	-0.05***	1										
RSEagr	0.08***	-0.44***	0.006	0.03***	0.12***	1									
RSEnagr	0.01	-0.32***	-0.002	-0.01	0.06***	-0.15***	1								
RRE	0.00	-0.31***	0.01	-0.001	-0.01	-0.15***	-0.11***	1							
RCEagr	0.04***	-0.19***	-0.007	-0.01*	0.006	-0.09***	-0.07***	-0.06***	1						
RCEnagr	0.02***	-0.29***	-0.001	-0.03***	-0.003	-0.14***	-0.10***	-0.1***	-0.06***	1					
ORE	-0.13***	-0.13***	0.05***	0.05***	-0.1***	-0.06***	-0.04***	-0.04***	-0.02***	-0.04***	1				
USE	-0.03***	0.57***	-0.01	0.007	0.02**	-0.25***	-0.19***	-0.18***	-0.11***	-0.17***	-0.07***	1			
URE	-0.02	0.5***	-0.007	-0.02**	-0.10***	-0.22***	-0.16***	-0.15***	-0.09***	-0.14***	-0.06***	-0.26***	1		
UCE	0.02**	0.2***	-0.02**	-0.025	-0.003	-0.09***	-0.06***	-0.06***	-0.04***	-0.06***	-0.02***	-0.11***	-0.09***	1	
UOE	-0.13***	0.13***	0.02**	0.06***	-0.16***	-0.06***	-0.04***	-0.04***	-0.02***	-0.04***	-0.01*	-0.07***	-0.06***	-0.02***	1

Source: Estimations based on NSS data

Note: *, **, and *** shows the significance level at 10, 5, and 1 percent

Table 4.4: Correlation coefficient of variables used determinants of Employment (B)

	Hrlg	Srlg	Orlg	STgrp	SCgrp	OBCgrp	OTHgrp	Tedu	Einst	SCHyr	NLITedu	BPedu	Medu	Sedu	HSedu	DGPGedu
Emp	-0.03***	0.04***	-0.008	0.002	0.02***	-0.001	-0.02**	0.04***	-0.24***	-0.05***	0.02***	0.07***	-0.03***	-0.03***	-0.05***	0.01
Sec	0.39***	-0.40***	0.03***	0.008	-0.16***	0.07***	0.09***	0.08***	-0.05***	0.17***	-0.10***	-0.04***	-0.02*	-0.002	0.04***	0.18***
Gen	-0.02**	0.02**	-0.003	-0.009	0.001	-0.006	0.005	-0.04***	-0.01	-0.08***	0.10***	-0.002	-0.04***	-0.04***	-0.03***	0.01
AgeGrp	-0.02**	0.03***	-0.03***	-0.02**	-0.04***	-0.02**	0.06***	-0.05***	-0.19***	-0.29***	0.29***	0.04***	-0.08***	-0.05***	-0.20***	-0.04***
HHsize	-0.08***	0.06***	0.03***	-0.003	0.01	0.04***	-0.03***	-0.06***	0.04***	-0.01*	0.01	-0.02**	0.02***	0.01*	0.02**	-0.06***
RSEagr	-0.30***	0.33***	-0.06***	-0.02**	-0.23***	-0.13***	0.31***	-0.03***	-0.01	0.01	-0.03***	-0.005	0.003	0.04***	0.04***	-0.06***
RSEnagr	-0.03***	0.03***	-0.02**	0.01	0.08***	0.09***	-0.14***	-0.02***	0.009	-0.04***	0.01	0.01	0.02**	0.01	-0.01	-0.06***
RRE	-0.06***	0.06***	-0.01	-0.01	0.12***	0.005	-0.11***	0.004	0.03***	0.01	-0.005	-0.02**	-0.008	0.03***	0.01	-0.01
RCEagr	-0.11***	0.10***	0.02**	-0.01	0.22***	-0.05***	-0.17***	-0.03***	0.02**	-0.17***	0.14***	0.06***	-0.01	-0.06***	-0.07***	-0.07***
RCEnagr	-0.10***	0.08***	0.06***	0.03***	0.23***	-0.009	-0.21***	-0.04***	0.04***	-0.17***	0.12***	0.06***	0.02**	-0.05***	-0.08***	-0.10***
ORE	-0.01*	0.02**	-0.009	-0.006	0.01*	-0.03***	0.009	-0.007	-0.001	0.006	-0.005	-0.01	0.01	0.004	0.005	-0.004
USE	0.19***	-0.21***	0.06***	-0.002	-0.16***	0.05***	0.11***	0.01	-0.02**	0.12***	-0.08***	-0.03***	-0.01	0.01*	0.03***	0.10***
URE	0.23***	-0.22***	-0.02**	0.02*	-0.04***	0.01*	0.03***	0.09***	-0.02**	0.13***	-0.07***	-0.03***	-0.01*	-0.004	0.03***	0.14***
UCE	0.10***	-0.10***	0.01*	-0.01	0.07***	0.04***	-0.10***	-0.02***	-0.02**	-0.11***	0.07***	0.05***	0.008	-0.04***	-0.05***	-0.06***
UOE	0.03***	-0.02**	-0.02**	-0.006	-0.06***	-0.02***	0.07***	0.01	-0.01	0.05***	-0.02**	-0.03***	-0.005	0.009	0.01*	0.04***

Source: Estimations based on NSS data

Note: *, **, and *** shows the significance level at 10, 5, and 1 percent

Table 4.3 and 4.4 shows the correlation of the variables used in determinants of employment and whether the association is significant or not. The values show that the employment status is significant and has positive association with age group, self-employed in agriculture in urban sector, casual employed in agriculture in rural sector, casual employed in non-agriculture in the rural sector, urban casual employed, other urban employed, Sikh religion, SCs, technical education, not literate, below primary and primary education. The sector is significant positively associated with self-employed in urban sector, regular employed in urban sector, casual employed in urban sector, other urban employed, Hindu religion, other religion group, OBC, other social group, technical education, schooling year, higher secondary education and diploma, post graduate and above and graduate education.

The variable gender is significantly positive associated with age group, household size, other rural employed, other urban employed, Sikh religion and not literate. The age group is significant positively associated with rural self-employed in agriculture, other rural employed, urban other employed, Sikh religion, other social group, not literate and below primary and primary education. The household size is significant and positively associated with self-employed in agriculture in rural sector, self-employed in non-agriculture in rural sector, urban self-employed, Sikh religion, Other religion groups, OBC, education institute, middle level education, secondary and higher secondary education. The rural self-employed in agriculture shows significant positive association with Sikh religion, other social group, secondary and higher secondary education.

The rural self-employed in non-agriculture is significant positively associated with Sikh religion, SC, OBC and middle education. The rural regular employed is significant positively associated with Sikh religion, SC, education institute and secondary education. The rural casual employed in agriculture is significant positively associated with Sikh religion, other religion, SC, education institute, not literate and below primary and primary education. The rural casual employed in non-agriculture is significant positively associated with Sikh religion, other religion, ST, SC, education institute, illiterate, middle education and below primary and primary education. The other rural employed is significant positively associated with Sikh religion and SC. The urban self-employed is significant positively associated with Hindu religion, other religion, OBC, other social group, schooling year, higher secondary education, secondary education and diploma, post graduate and above and graduate. The urban regular employed is

significant positively associated with Hindu religion, ST, OBC, other social group, technical education, higher secondary, schooling year and graduate, diploma, and post graduate and above. The urban casual employed is significant positively associated with Hindu religion, other religion, SC, OBC, not literate, below primary and primary education. The other urban employed is significant positively associated with Hindu religion, schooling year, other social group, higher secondary education, graduate, diploma and post graduate and above education.

As it can be seen from the table that the correlation coefficient of employment status has significant negative association with gender, sector, other rural employed, urban self-employed, Hindu religion, other social group, education institute, schooling year, middle education, secondary education, higher secondary education. The sector is significant negatively associated with gender, household size, rural self-employed in agriculture, self-employed in non-agriculture in rural sector, regular employed in rural sector, rural casual employed in agriculture, rural casual employed in non-agriculture, other rural employed, Sikh religion, SC, education institute, illiterate, below primary and primary education and middle education. The variable gender is significant negatively associated with urban casual employed, Hindu religion, technical education, schooling year, middle education, secondary education and higher secondary education. The age group is significant negatively associated with household size, rural casual employed in agriculture, rural casual employed in non-agriculture, urban regular employed, Hindu religion, Other religion group, ST, SC, OBC, technical education, education institute, schooling year, middle education, secondary education, higher secondary education, diploma, graduate, post graduate and above. The household size is significant negatively associated with other rural employed, urban regular employed, urban other employed, Hindu religion, household size, technical education, schooling year, below primary and primary education and graduate, diploma and post graduate and above education.

The rural self-employed in agriculture is significant negatively associated with self-employed in non-agriculture in rural sector, regular employed in rural sector, casual employed in non-agriculture in rural sector, other rural employed, self-employed in urban sector, regular employed in urban areas, urban casual employed, others urban employed, Hindu religion, other religion, ST, SC, OBC, technical education, not literate and graduate, diploma and post graduate and above. The rural self-employed in non-agriculture is significant negatively associated with rural regular employed, rural casual

employed in agriculture and in non-agriculture, other rural employed, self-employed in urban sector, urban regular employed, urban casual employed, other urban employed, Hindu religion, other religion, other social group, technical education, schooling year and graduate, diploma and post graduate and above. The rural regular employed is significant negatively associated with rural casual employed in agriculture, rural casual employed in non-agriculture, other rural employed, self-employed in urban sector, regular employed in urban sector, urban casual employed, other urban employed, Hindu religion, other social group and below primary and primary education. The rural casual employed in agriculture is significant negatively associated with rural casual employed in non-agriculture, rural other employed, self-employed in urban sector, regular employed in urban areas, urban casual employed, other urban employed, secondary education, Hindu religion, OBC, other social group, technical education, schooling year, higher secondary education and diploma, graduate and post graduate and above. The rural casual employed in non-agriculture is significant negatively associated with other rural employed, urban self-employed, urban casual employed, other urban employed, Hindus, other social group, urban regular employed, technical education, schooling year, secondary education, higher secondary education and graduate, diploma and post graduate and above. The other rural employed is significant negatively associated with urban regular employed, urban casual employed, other urban employed, Hindu religion, urban self-employed and OBC. The urban self-employed is significant negatively associated with urban regular employed, urban casual employed, other urban employed, Sikh religion, SC, education institute, not literate and below primary and primary education.

The urban regular employed is significant negatively associated with urban casual employed, other urban employed, Sikh religion, other religion, SC, education institute, not literate, below primary and primary education and middle education. The urban casual employed is significant negatively associated other urban employed, Sikhs, other social group, technical education, education institute, schooling year, secondary education, high secondary education, graduate, diploma and post graduate and above. The other urban employed is significant negatively associated with Sikh religion, other religion, SC, OBC, not literate, below primary and primary education.

The employment status does not have significant positive association with rural self-employed in non-agriculture, STs and diploma, graduate, post graduate and above level of education. The variable sector is not significant positively correlated with ST

group. The coefficient of gender does not have significant positive association with rural self-employed in agriculture, SC, other social group, rural regular employed, diploma, graduate, post graduate and above level of education. The age group does not have significant positive correlation with urban self-employed. The household size is not significant positively correlated with rural casual employed in agriculture, SC and not literate. The rural self-employed in agriculture is not significant positively associated with schooling year and middle education. The rural self-employed in non-agriculture does not have significant positive association with ST, education institute, not literate, below primary and primary education and secondary education. The rural regular employed is not significant positively associated with OBC, technical education, schooling year and high secondary education. The other rural employed is not significantly positive correlated with other social group, schooling year, middle education, secondary education and high secondary education. The urban casual employed does not have significant positive association with middle education. The coefficient of other urban employed does not reveal to be significant positively correlated with technical education, education institute and secondary education.

The table also points to the coefficient of employment status which does not have significant negative association with OBC, household size, urban regular employed and other religion. The sector is not significant negatively associated with age group and secondary level education. The variable gender is not significant negatively associated with rural casual employed in agriculture, rural casual employed in non-agriculture, urban self-employed, rural self-employed in non-agriculture, urban regular employed, other religion, ST, OBC, education institute and below primary and primary level of education. The age group is not significant negatively associated with rural self-employed in non-agriculture, rural regular employed and urban casual employed. The household size is not significant negatively associated with rural regular employed, rural casual employed in non-agriculture, urban casual employed and ST. The rural self-employed in agriculture is not significant negatively associated with education institute and below primary and primary education. The rural self-employed in non-agriculture is found to have no significant negative correlation with high secondary education. The rural regular employed is not significant negatively associated with other religion, ST, not literate, middle education and diploma, graduate and post graduate and above.

The rural casual employed in agriculture is not significant negatively associated with ST and middle education level. The rural casual employed in non-agriculture is not significant negatively associated with OBC. The other rural employed is not significant negatively associated with other religion, ST, technical education, education institute, not literate, below primary and primary education and diploma, graduate and post graduate and above. The urban self-employed is not significant negatively associated with ST, technical education and middle education. The urban regular employed is not significant negatively associated with secondary education. The urban casual employed is not significant negatively associated with ST. The other urban employed is not significant negatively associated with ST and middle education.

Correlation tells only the co-movement of the variables but regression tells how much impact is there due to the explanatory variables. Therefore, the negative and positive association for insignificant results is inconsiderable.

Determinants of employment in Punjab in 2011-12

Based on the literature, many factors have been identified which affect the employment. The binary logit model explains the impact of different factors on the predicted log of odds of employment. Table 4.5 presents the estimation results of the model. The dependent variable is binary response variable with 1 for employed and 0 for unemployed. The logit estimated slope coefficients shows a unit change in the explanatory variable which affects the predicted log of the odds with all the other variables held constant in the regression. The results are revealed by the estimated coefficients with standard errors and Wald Chi-square. In addition, the goodness of fit for the model is given by the log-likelihood test statistic and chi-square test. The findings of the test reveal significant results for all models with estimated coefficients of all the variables as statistically significant.

The coefficient of urban sector is negative statistically significant which shows that the probability of employed decreases as a person moves from rural to urban sector. As a person moves from rural to urban sector, the probability of employed decreases by 3.04 per cent. It implies that the person belonging to rural area not easily adjusted in urban employment profile. The coefficient of variable gender is positively statistically significant which shows that the employment of males is higher than the females by 2.83 per cent. The variable age shows negative statistically significant results. As age

increases, the value of the logit decreases due to health concerns-that is, as people move to high age-group, there are less likely to be employed. Their chances of getting employed decreases by 0.07 per cent. The variable household type is divided into rural self-employed in agriculture, self-employed in non- agriculture in rural sector, rural regular employed, rural casual employed in agriculture and rural casual employed in non-agriculture, rural others employed, urban self-employed, urban regular employed, urban casual labour and urban others employed where rural others employed and urban others employed is taken as reference category. Using step-wise logistic regression lead to moving out of the urban self-employed, urban regular employed. The variable self-employed in agriculture in rural sector, self-employed in non-agriculture in rural sector, rural regular employed, rural casual employed in agriculture, rural casual employed in non-agriculture shows negative statistically significant results. The one per cent increase in the rural self-employed in agriculture will cause the probability employed to be reduced than the rural other employed by 3.95 per cent which is significant at 1 per cent. It means the employment of rural self-employed in agriculture is less than the rural other employed.

As the results shows, that the one per cent rise in the rural self-employed in non-agriculture will cause the probability of employed to be reduced than the rural other employed by 3.39 per cent which is significant. The employment of rural regular employed is less than the rural other employed by 3.38 per cent. The one per cent rise in the rural casual employed in agriculture will cause the probability of employed to be reduced than the rural other employed by 3.83 per cent significant. In addition, the employment of rural casual employed in non-agriculture is less than the rural other employed by 3.50 per cent. The variable urban casual employed shows positive statistically significant results. It implies the employment of the urban casual employed is greater than the urban other employed by 4.25 per cent with significant result.

The variable social group is divided into ST, SC, OBC and others social group where others social group is taken as reference category. Using stepwise logistic regression lead to moving out of the ST and OBC. The variable SC shows negative statistically significant results. It points that the participation of the SC in the labour force is less than the others social group by 0.17 per cent which is significant at 5 per cent which is due to the lack of opportunities of education. The coefficient of technical

education is significant and negative statistically which shows that the chance of employment is significantly less than others due to lack of technical jobs in the state.

Table 4.5: Identification of determinants of Employment (Results of Binary logit model)

Parameter	Estimate coefficients	Standard Error	Wald Chi-Square
Intercept	1.58**	0.65	5.83
Urban sector dummy = 1, otherwise 0	-3.04***	0.32	88.19
Gender of person (male 1, female 0)	2.83***	0.06	2497.12
Age group of person	-0.07***	0.03	7.42
Dummy for rural self-employed in agriculture = 1, otherwise 0	-3.95***	0.33	144.25
Dummy for rural self-employed in non-agriculture = 1, otherwise 0	-3.39***	0.33	104.45
Dummy for rural regular employed = 1, otherwise 0	-3.38***	0.33	103.72
Dummy for rural casual employed in agriculture = 1, otherwise 0	-3.83***	0.35	119.91
Dummy for rural casual employed in non-agriculture = 1, otherwise 0	-3.50***	0.33	108.98
Dummy for casual employed in urban areas = 1, otherwise 0	4.25***	0.47	83.02
Dummy for person related to SC = 1, otherwise 0	-0.17**	0.06	7.80
Dummy for person having technical education = 1, otherwise 0	-0.52**	0.19	7.63
Dummy for person having education from private institute = 1, otherwise 0	4.27***	0.22	393.09
Dummy for person having middle level education = 1, otherwise 0	0.44***	0.08	27.39
Dummy for person having secondary level education = 1, otherwise 0	0.50***	0.07	48.80
Dummy for person having higher secondary level education = 1, otherwise 0	0.78***	0.08	87.18

Source: Estimations based on NSS data
Note: *, **, and *** shows the significance level at 10, 5, and 1 percent.

The coefficient of education from private institute is positive statistically significant which shows that the chance got employment is significantly higher by 4.27 per cent for the person who have complete his/her study from private institute. It is due to the job placement effort done by the private institute.

The variable education is divided into not literate, middle, higher secondary, below primary and primary, secondary and graduate, diploma, post graduate and above education where not literate is taken as reference category. Using stepwise logistic regression lead to moving out of the below primary and primary and graduate, diploma, post graduate and above. The coefficient of middle level education, secondary education, and higher secondary education is positive statistically significant. It shows that the chances of employed with middle education, secondary education and higher secondary education is higher than the person who is not literate by 0.44 per cent, 0.50 per cent and 0.78 per cent at 1 per cent. Due to stepwise regression various other variables got deleted from the process which includes, household size, age and religion groups.

Table 4.6: Tests results for Binary logit regression

Particulars	**Status**
Convergence criterion (GCONV=1E-8)	satisfied
Number of Observations	10088
Unemployed	4620
Employed	5468
Testing Global Null Hypothesis: BETA=0	
Likelihood Ratio test	4670.0***
Score test	3873.3***
Wald test	2779.5***
Hosmer and Lemeshow Goodness-of-Fit Test	30.66***
Residual Chi-Square Test	13.46
Association of Predicted Probabilities and Observed Responses	
Percent Concordant	85.7
Percent Discordant	13.6
Percent Tied	0.7
Pairs	25262160
Somers' D	0.72
Gamma	0.73
Tau-a	0.36
c	0.86

Source: Estimations based on NSS data
Note: *, **, and *** shows the significance level at 10, 5, and 1 percent.

The table 4.6 shows that the convergence criterion is satisfied which shows it is optimal model output. All the three global null hypothesis tests i.e., Likelihood ratio test, score test, Wald test are significant at 1 per cent. This shows that the independent variables used in the model are able to provide better results. The per cent concordant is 85.7 per cent which means it is quite high for being a better model. The confidence statistics c is 0.86 per cent. It shows a good model to proceed with the results as its value should be greater than 0.5. The model fit statistics of all three criterion is satisfied with AIC, SC, and -2log L as the AIC and SC penalizes for more number of independent variables.

Table 4.7: Model fit statistics of Binary logit regression

Criterion	Intercept Only	Intercept and Covariates
AIC	13915.57	9275.566
SC	13922.79	9391.071
-2 Log L	13913.57	9243.566

Source: Estimations based on NSS data

4.3 Empirical framework and results of estimation of determinants of Poverty

The literature signifies the poverty is affected by various factors. These factors determine whether household is poor or not poor. It determines the chances of the households being poor or not. The factors age of household head, education of household head, sector, gender of the household head, whether any member is regular earner, whether owns any land, land cultivated, household type, social group, religion group, household size determine the household being poor or not by applying Logit model. Mathematically, it can be written as:

$$Pov = \beta_0 + \beta_1 Sec + \beta_2 Gen + \beta_3 AgeGrp + \beta_4 REarner + \beta_5 SE + \beta_6 RE + \beta_7 CE + \beta_8 Hrlg + \beta_9 Srlg + \beta_{10} STgrp + \beta_{11} SCgrp + \beta_{12} OBCgrp + \beta_{13} WOL + \beta_{14} LC + \beta_{15} NT + \beta_{16} BPedu + \beta_{17} Medu + \beta_{18} Sedu + \beta_{19} HSedu + u_i$$

where

Pov = A binary variable if household is poor = 1 otherwise 0

Sec = Sector if household lies in rural =1, urban = 2

Gen = Gender of household head if male =1, female = 2

AgeGrp = Age group of household head, <35, 35-45, 45-55, 55-65 and above 65

REarner = Dummy if any regular earner in household = 1, otherwise 0

WOL = Dummy if household owns any land =1, otherwise 0

SE = Dummy if household head is self-employed = 1, otherwise 0

RE = Dummy if household head is regular employed = 1, otherwise 0

CE = Dummy if household head is casual employed = 1, otherwise 0

Hrlg = Dummy if household belongs to Hindu religion = 1, otherwise 0

Srlg = Dummy if household belongs to Sikh religion = 1, otherwise 0

STgrp = Dummy if household belongs to scheduled tribe = 1, otherwise 0

SCgrp = Dummy if household belongs to scheduled caste = 1, otherwise 0

OBCgrp = Dummy if household belongs to other backward caste = 1, otherwise 0

LC = Dummy if household cultivates land = 1, otherwise 0

NT = Dummy if household head is not literate = 1, otherwise 0

BPedu = Dummy if household head has below primary and primary education = 1, otherwise 0

Medu = Dummy if household head has middle education = 1, otherwise 0

Sedu = Dummy if household head has secondary education = 1, otherwise 0

HSedu = Dummy if household head has higher secondary education = 1, otherwise 0

$\beta_0, \ldots, \beta_{19}$ are parameters of the model

μ_i is the error term.

In the above equation other employed, other religion group, general category group and diploma, graduate, post graduate and above education is taken as reference category.

Table 4.8: Details of independent variables used in determinants of Poverty

Variable	Sub-group	Household reported (%)
Household below poverty line	Non-poor	91.73
	Poor	8.27
Sector	Rural	49.78
	Urban	50.22
Gender of household head	Male	88.17
	Female	11.83
Any member a regular earner	No	66.65
	Yes	33.35
Whether owns any land	Yes	87.75
	No	12.25
Land cultivated	No	81.11
	Yes	18.89
Age of household head	Less than 35	16.97
	35-45	24.37
	45-55	26.27
	55-65	17.80
	Above 65	14.59
Education of household head	Not literate	28.58
	Below primary and primary	21.74
	Middle	12.32
	Secondary	20.11
	Higher secondary	8.50
	Diploma, graduate, post graduate and above	8.76
Household type	Self-employed	44.84
	Regular employed	29.03
	Casual employed	19.15
	Other employed	6.99
Social group	ST	0.64
	SC	34.89
	OBC	13.95
	Other social group	50.51
Religion	Hindus	45.57
	Sikhs	50.48
	Other religion group	3.94
Household size	< 3	13.98
	3 to 5	37.04
	5 to 7	34.09
	> 7	14.88

Source: Estimations based on NSS data

Table 4.8 shows the distribution of each explanatory variable used in determining the poverty in Punjab. Out of the 3118 households, 8.27 per cent were reported to be poor household and 91.73 per cent were reported to be non-poor. For the calculation of poverty, the poverty lines of ₹ 1054 for the rural household and ₹ 1155 for the urban household during 2011-12 as per the Tendulkar methodology has been taken. However, there were 49.78 per cent households in the rural sector and 50.22 per cent in the urban sector. There were 88.17 per cent males who were household head and 11.83 per cent females reported to be household head. Among the 3118 households, there were 33.35 per cent households who were having a regular earner and 66.65 per cent households were not having any regular earner. There were 87.75 per cent households who own land and the rest 12.25 per cent did not own any land. There were merely 18.89 per cent households who had cultivated land. A larger proportion of 81.11 per cent did not cultivated land.

The table also shows that among the age group, 45-55 represents the major share of 26.27 per cent who were household head. The age group 35-45 represents the 24.37 per cent, the age group 55-65 represents 17.80 per cent and less than 35 represents 16.97 per cent. A very low share of 14.59 was found to be the household head among the age group of above 65 years. It can be observed from the table that there were 28.58 per cent household head who were illiterate. These include illiterate, literate through EGC/NFEC/AEC, TLC and others termed as without formal schooling. Among the literate, there was major share of household head who had below primary and primary level education (21.74 per cent) followed by secondary level education (20.11 per cent), middle level education (12.32 per cent), graduate, diploma, post graduate and above level of education (8.76 per cent) and higher secondary education with 8.50 percent respectively. It can be noticed from the table that the major share in the household type is occupied by the self-employed (44.84 per cent) followed by the regular employed (29.03 per cent), casual employed (19.15 per cent) and others employed (6.99 per cent). Among the social groups, a very small share of households was reported by STs with 0.64 per cent in Punjab. There were 34.89 per cent of SC households and 13.95 per cent of OBC reported in Punjab. The others social group occupied a major share of 50.51 per cent.

Among the religion groups, majority of the households were reported from Sikh religion (50.48 per cent) accompanied by Hindu religion (45.57 per cent) and other

religion groups (3.94 per cent). The other religion groups include Islam, Christianity, Jainism, Buddhism, Zoroastrianism and others. As regarding the details of the household size of the respective selected households, there were 37.04 per cent households reported to have members between 3 to 5 followed by 34.09 per cent of the households who were having members between 5 to 7, a share of 14.88 per cent with above 7 members and 13.98 per cent with less than 3 members.

Table 4.9: Description statistics of variables used in determinants of Poverty

Variable	Mean	Std Dev	Minimum	Maximum
Number of households	3118			
Pov	0.08	0.28	0	1
RSec	0.50	0.50	0	1
USec	0.50	0.50	0	1
HHsize	4.65	2.20	1	20
AgeGrp	47.78	14.13	8	95
Hrlg	0.46	0.50	0	1
Srlg	0.50	0.50	0	1
Orlg	0.04	0.19	0	1
SE	0.45	0.50	0	1
RE	0.29	0.45	0	1
CE	0.19	0.39	0	1
OE	0.07	0.26	0	1
STgrp	0.01	0.08	0	1
SCgrp	0.35	0.48	0	1
OBCgrp	0.14	0.35	0	1
OTHgrp	0.51	0.50	0	1
REarner	0.33	0.47	0	1
SCHyr	6.42	4.92	0	15

Source: Estimations based on NSS data

Note: RSec – Rural sector, USec – Urban sector, HHsize – Household size, Orlg – Other religion, OE – Other employed, OTHgrp – Other social group, SCHyr – Schooling year

Table 4.9 gives minimum and maximum values, means and standard deviations of the different variables which are used for the estimations of regression. The table shows that the average age of head of household is 47.48 year with minimum age of 8 year and maximum age 95 year. After the data exploration, it is clear that the household head with age 8 year is only single male member in that household. Decision maker role in the household done by elder aged female but under the social status she has not confirmed as a head herself. However, this table shows that there is no expected variable which would not be suitable to run the regression model.

Table 4.10 shows the raw correlation of the variables used in regression model and whether the association is significant or not. The coefficient values show that the household poverty is significant and positively associated with urban sector, household size, Hindu religion, casual employed, SC and OBC. The values of correlation coefficient show that rural sector is significant positively associated with household size, age group, Sikh religion, self-employed, casual employed, SC, OBC, other social group, regular earner and schooling year. The values of coefficient of correlation reveals that urban sector has significant positive association with ST, OBC, Hindu religion, regular employed, regular earner and schooling year.

As observed from table 4.10, the variable household size has significant positive correlation with age, Sikh religion, self-employed and OBC. The estimated values show age is significant positively associated with Sikh religion, self-employed, other employed and social group. The values reveal that Hindu religion has significant and positive association with regular employed, ST, regular earner and schooling year. Moreover, the variable Sikh religion is significant and positively correlated with self-employed and casual employed. The estimated coefficient of other religion is significant positively associated with casual employed and OBC. In addition, the figures of correlation coefficient reveal self-employed has significant positive association with OBC, other social group and schooling year. The coefficient of regular employed reveals significant positive association with ST, regular earner and schooling year. The variable casual employed is significant and positively associated with SC. Further, the estimated coefficient value of other employed is significant positively associated with other social group and schooling year. The values of coefficient of the other social group has significant and positive association with schooling year. The correlation coefficient of regular earner is significant positively associated with schooling year.

It can be observed from table 4.10 that estimated coefficient of correlation of household poverty has significant negative association with rural sector, age, Sikh religion, self-employed, other employed, other social group and schooling year. Moreover, rural sector is significant negatively correlated with urban sector, Hindu religion, regular employed and ST. In addition, the urban sector has found to have negative and significant associated with household size, age, Sikh religion, self-employed, casual employed, SC and other social group. The estimated coefficient of correlation of household size has significant negative association with Hindu religion,

Table 4.10: Correlation coefficient of variables used in determinants of Poverty

	Pov	RSec	USec	HHsize	AgeGrp	Hrlg	Srlg	Orlg	SE	RE	CE	OE	STgrp	SCgrp	OBCgrp	OTHgrp	REarner	SCHyr
Pov	1																	
RSec	-0.09***	1																
USec	0.09***	-1***	1															
HHsize	0.15***	0.12***	-0.12***	1														
AgeGrp	-0.04**	0.11***	-0.11***	0.32***	1													
Hrlg	0.09***	-0.40***	0.40***	-0.11***	-0.12***	1												
Srlg	-0.10***	0.41***	-0.41***	0.10***	0.14***	-0.92***	1											
Orlg	0.01	-0.02	0.02	0.02	-0.05***	-0.18***	-0.20***	1										
SE	-0.08***	0.04***	-0.04***	0.19***	0.16***	-0.08***	0.09***	-0.03*	1									
RE	-0.01	-0.22***	0.22***	-0.07***	-0.08***	0.16***	-0.15***	-0.01	-0.57***	1								
CE	0.14***	0.20***	-0.20***	-0.01	-0.14***	-0.08***	0.06***	0.06***	-0.43***	-0.31***	1							
OE	-0.04***	-0.01	0.01	-0.23***	0.05***	0.009	-0.01	0.003	-0.24***	-0.17***	-0.13***	1						
STgrp	0.02	-0.05***	0.05***	-0.02***	-0.004	0.03*	-0.04*	0.02	-0.01	0.03*	-0.01	-0.006	1					
SCgrp	0.16***	0.17***	-0.17***	0.01	-0.11***	0.01	0.02	-0.10***	-0.27***	0.01	0.34***	-0.02	-0.05***	1				
OBCgrp	0.03*	-0.07***	0.07***	0.03*	-0.01	-0.01	-0.02	0.10***	0.04**	-0.03**	-0.001	-0.009	-0.03*	-0.29***	1			
OTHgrp	-0.18***	-0.10***	0.10***	-0.02*	0.12***	-0.005	-0.003	0.01	0.23***	0.008	-0.32***	0.03*	-0.08***	-0.74***	-0.40***	1		
REarner	-0.01	-0.22***	0.22***	-0.02	-0.04***	0.14***	-0.13***	-0.01	-0.49***	0.90***	-0.31***	-0.17***	0.02	-0.006	-0.01	0.01	1	
SCHyr	-0.17***	-0.24***	0.24***	-0.12***	-0.15***	0.12***	-0.10***	-0.05***	0.05***	0.14***	-0.29***	0.09***	-0.01	-0.29***	-0.03*	0.30***	0.15***	1

Source: Estimations based on NSS data

Note: *, **, and *** shows the significance level at 10, 5, and 1 percent.

regular employed, other employed, ST, other social group and schooling year. Further, age is significant negatively associated with Hindu religion, other religion, regular employed, casual employed, SC, regular earner and schooling year. The coefficient of Hindu religion has significant negative association with Sikh religion, other religion, self-employed and casual employed.

The estimated figures show that variable Sikh religion is significant positively associated with other religion, regular employed, ST, regular earner and schooling year. The coefficient of other religion is significant negatively correlated with self-employed, SC and schooling year. The variable self-employed has significant negative association with regular employed, casual employed, other employed, SC and regular earner. Further, regular employed is significant negatively associated with casual employed, other employed and OBC. The estimated coefficient of casual employed has significant negative association with other employed, other social group, regular earner and schooling year. The coefficient of other employed has found to be significant and negatively associated with regular earner. The coefficient of ST reveals to have significant negative association with SC, OBC, the other social group. The estimated values of SC have significant negative correlation with OBC, schooling year and the other social group. In addition, OBC is significant negatively associated with other social group and schooling year.

Looking into table 4.10, the coefficients show that household poverty is not significant positively associated with other religion and ST. The estimated coefficient of urban sector does not have significant positive association with other religion and other employed. The correlation coefficient reveals that household size does not have significant positive association with other religion and SC. The findings of the table show Hindu religion is not significant positively correlated with other employed and SC. The estimated coefficient reveals Sikh religion is not significant positively associated with SC. The estimated coefficient of other religion is not significantly positive associated with ST, other employed and social group. The variable regular employed is not found to have significant positive association with SC and the other social group. Moreover, the coefficient of ST is not significant positively correlated with regular earner. In addition, the correlation coefficient of the other social group is not significant positively associated with regular earner.

It can be seen in table 4.10 that the coefficient of household poverty does not have significant negative association with regular employed and regular earner. The coefficient of rural sector is not significant negatively correlated with other religion and other employed. The estimated value of household size is not having significant negative correlation with casual employed and regular earner. The correlation coefficient show that age is not significant negatively associated with SC and OBC. The variable Hindu religion is not significant negatively correlated with OBC and the other social group. The coefficient of correlation of Sikh religion is not significantly negative associated with other employed, OBC and the other social group. In addition, the coefficient of other religion is not having significant negative correlation with regular employed and regular earner. The estimated coefficient of self-employed is not significant negatively correlated with ST. The values of coefficient of casual employed does not have significant negative association with ST and OBC. The other employed is not significant negatively associated with ST, SC and OBC. The coefficient of SC is not having significant negative correlation with regular earner. Further, OBC is not significant negatively associated with regular earner. Moreover, the coefficient of ST is not significant negative correlated with schooling year.

Determinants of Poverty in Punjab in 2011-12

Table 4.11 presents the estimated results of the binary logit model. The dependent variable is binary response variable with 1 for poor household and 0 for non-poor household. The logit estimated slope coefficients shows a unit change in the explanatory variable which affects the predicted log of the odds with all other variables being held constant in the regression. The results are given by the estimated slope coefficients and their standard errors with Wald Chi-square. Furthermore, goodness of fit for the overall model is presented by the log-likelihood test statistic and chi-square test. The test has revealed significant results for all models.

It can be noticed that the estimated coefficients of all the variables except of higher secondary education are statistically significant. The estimated coefficient of urban sector is negative statistically significant which shows that the movement from rural to urban sector will reduce poverty due to better living standards in urban areas. (table 4.11). As a person moves from rural to urban sector, the probability of poor household decreases by 0.96 per cent. The variable household type is divided into self-

employed, regular employed and casual employed and others employed where others employed is taken as reference category. Using step-wise logistic regression lead to moving out of the self-employed and regular employed. The variable casual employed shows negative significant results. The reduction in poverty of casual employed is less than the others employed by 0.60 per cent which is significant.

The variable religion is divided into Sikh religion, Hindu religion and other religion group where other religion group is taken as a reference category. Using stepwise logistic regression lead to moving out of the Hindu religion group and other religion group. The variable Sikh religion shows positive significant results. It shows that the poverty of Sikh religion group is more than the poor household of other religion group

Table 4.11: Identification of determinants of Poverty (Results of Binary logit model)

Parameter	**Estimate coefficients**	**Standard Error**	**Wald Chi-Square**
Intercept	4.93***	0.37	173.80
Urban sector dummy = 1, otherwise 0	-0.96***	0.17	32.99
Dummy for casual employed = 1, otherwise 0	-0.60***	0.16	14.72
Dummy for Sikh religion = 1, otherwise 0	0.48***	0.16	9.59
Dummy for SC = 1, otherwise 0	-1.01***	0.18	31.79
Dummy for OBC = 1, otherwise 0	-0.72***	0.22	10.85
Land cultivated = 1, otherwise 0	1.16***	0.41	8.18
Dummy for Not literate = 1, otherwise 0	-1.12***	0.17	42.06
Dummy for Below primary and primary education = 1, otherwise 0	-0.75***	0.18	17.53
Dummy for Middle education = 1, otherwise 0	-0.46**	0.22	4.59
Dummy for Secondary education = 1, otherwise 0	0.41*	0.25	2.73
Dummy for Higher secondary education = 1, otherwise 0	0.17	.30	0.30

Source: Estimations based on NSS data
Note: *, **, and *** shows the significance level at 10, 5, and 1 percent.

by 0.48 per cent. The variable land cultivated shows positive significant results. It shows that the poverty of household which cultivate the land is more than the poverty of household which do not cultivate the land.

The variable social group is divided into ST, SC, OBC and others social group where others social group is taken as reference category. Using stepwise logistic regression lead to moving out of the ST. The variable SC and OBC shows negative statistically significant results. The one per cent increase in the SC will cause the probability poor household to be reduced than the others social group by 1.01 per cent significant at 1 per cent. The 1 per cent rise in the OBC will cause the chances of poor household to be reduced than the others social group by 0.72 per cent. It gives the insights that reduction in poverty of SC and OBC is less than the other social group.

The variable education is divided into below primary and primary, not literate, secondary, higher secondary, middle and graduate, diploma and post graduate and above where diploma, graduate and post graduate and above is taken as reference category. The coefficient of not literate, below primary and primary education and middle level of education shows negative statistical results. The reduction in poverty of not literate is less than the diploma, graduate and post graduate and above by 1.12 per cent which is significant. The 1 per cent rise in the persons of primary and below primary education will cause the chances of poverty to be reduced than the diploma, graduate and post graduate and above by 0.75 per cent. The 1 per cent rise in the persons of middle level of education will cause the chances of poor to be reduced than the diploma, graduate and post graduate and above by 0.46 per cent.

The coefficient of secondary education is positive and significant. It shows that the chances of poor with secondary education is higher than those with diploma, graduate and post graduate and above by 0.41 per cent at 1 per cent. The variable higher secondary education shows insignificant result. Due to stepwise regression various other variables got deleted from the process which includes, regular earner, whether owns any land, gender and age.

The table shows that the convergence criterion is satisfied which shows it is optimal model output. All the three global null hypothesis tests i.e., Wald test, Likelihood ratio test and score test are statistically significant. This shows that the independent variables

Table 4.12: Tests results for Binary logit regression for identifying determinants of Poverty

Particulars	Status
Convergence criterion (GCONV=1E-8)	satisfied
Number of Observations	3118
Non-Poor	2860
Poor	258
Testing Global Null Hypothesis: BETA=0	
Likelihood Ratio test	282.2***
Score test	254.3***
Wald test	192.0***
Hosmer and Lemeshow Goodness-of-Fit Test	7.85***
Residual Chi-Square Test	6.0921
Association of Predicted Probabilities and Observed Responses	
Percent Concordant	78.9
Percent Discordant	19.4
Percent Tied	1.8
Pairs	737880
Somers' D	0.60
Gamma	0.61
Tau-a	0.09
c	0.798

Source: Estimations based on NSS data
Note: *, **, and *** shows the significance level at 10, 5, and 1 percent.

Table 4.13: Model fit statistics of Binary logit regression for identifying determinants of Poverty

Criterion	Intercept Only	Intercept and Covariates
AIC	1781.903	1521.663
SC	1787.948	1594.202
-2 Log L	1779.903	1497.663

Source: Estimations based on NSS data

used in the model are able to provide better results. The per cent concordant is 78.9 per cent which means it is quite high for being a better model. The confidence statistics c is 0.79 per cent. It shows a good model to proceed with the results as its value should be greater than 0.5. The model fit statistics of all three criterion is satisfied with AIC, SC, and -2log L as the AIC and SC penalizes for more number of independent variables.

4.4 Empirical framework and results of estimation of determinants of Income Inequality

Income inequality is taken as the percentile class which is determined by the factors as identified from the literature review. The various factors identified from the literature are gender of the head of household, sector, age of head of household, whether any member is regular earner, education of household head, whether owns any land, land cultivated, social group, household type, religion group, household size determine how a household moves from lowest to upper class group or upper to lower class group. Tobit model (Malek & Usami, 2009[181]; Adebayo et al., 2012[182]; Akpan et al., 2016[183]) is used which is mathematically written as:

$$y_i^* = x_i'\beta + \epsilon_i$$

$$y_i = \begin{cases} a \ \ if \ y_i^* \leq a \\ y_i^* \ \ if \ a < y_i^* < b \\ b \ \ if \ y_i^* \geq b \end{cases}$$

Here *a* is the lower limit and *b* is the upper limit of the regressand, subscript $i = 1, \ldots, N$ shows the observation, y_i^* is an unobserved or latent variable, x_i is a vector of explanatory variables, β is a vector of unknown parameters, and ϵ_i is a disturbance term.

$$\begin{aligned} INEQ = \beta_0 + \beta_1 Sec + \beta_2 Gen + \beta_3 AgeGrp + \beta_4 REarner + \beta_5 SE + \beta_6 RE \\ + \beta_7 CE + \beta_8 Hrlg + \beta_9 Srlg + \beta_{10} STgrp + \beta_{11} SCgrp \\ + \beta_{12} OBCgrp + \beta_{13} WOL + \beta_{14} LC + \beta_{15} NT + \beta_{16} BPedu \\ + \beta_{17} Medu + \beta_{18} Sedu + \beta_{19} HSedu + u_i \end{aligned}$$

[181] Malek, M. A., & Usami, K. (2009). Determinants of non-farm income diversification in developed villages of Bangladesh. *American Journal of Economics and Business Administration*, *1*(2), 141-149.

[182] Adebayo, C. O., Akogwu, G. O., & Yisa, E. S. (2012). Determinants of income diversification among farm households in Kaduna State: Application of Tobit regression model. *Pat*, *8*(2), 1-10.

[183] Akpan, S. B., Udoh, E. J., & Patrick, I. V. (2016). Sustaining small scale farming: Evidence of poverty and income disparity among rural farming households in south-south region of Nigeria. *International Electronic Scientific Journal. 2016, 2*(9) 9-22.

where,

INEQ = Income expenditure class as a scale variable

Sec = Sector if household lies in rural =1, urban = 2

Gen = Gender of household head if male =1, female = 2

AgeGrp = Age group of household head, <35, 35-45, 45-55, 55-65 and above 65

REarner = Dummy if any regular earner in household = 1, otherwise 0

WOL = Dummy if household owns any land =1, otherwise 0

SE = Dummy if household head is self-employed = 1, otherwise 0

RE = Dummy if household head is regular employed = 1, otherwise 0

CE = Dummy if household head is casual employed = 1, otherwise 0

Hrlg = Dummy if household belongs to Hindu religion = 1, otherwise 0

Srlg = Dummy if household belongs to Sikh religion = 1, otherwise 0

STgrp = Dummy if household belongs to scheduled tribe = 1, otherwise 0

SCgrp = Dummy if household belongs to scheduled caste = 1, otherwise 0

OBCgrp = Dummy if household belongs to other backward caste = 1, otherwise 0

LC = Dummy if household cultivates land = 1, otherwise 0

NT = Dummy if household head is not literate =1, otherwise 0

BPedu = Dummy if household head has below primary and primary education =1, otherwise 0

Medu = Dummy if household head has middle education = 1, otherwise 0

Sedu = Dummy if household head has secondary education = 1, otherwise 0

HSedu = Dummy if household head has higher secondary education = 1, otherwise 0

$\beta_0, \ldots, \beta_{19}$ are parameters of the model

μ_i is the error term.

In the above equation other employed, other religion group, general category group and diploma, graduate, post graduate and above education is taken as reference category.

Details of independent variables used determinants of income inequality

Table 4.14 shows the distribution of each explanatory variable used in determining the income inequality in Punjab. The average MPCE by class group has been divided into ten classes. The average expenditure of the lowest 10 per cent class group of income class less than 1163 is ₹988.22 and the average expenditure of the top 10 per cent class group of income class greater than 4591 is ₹7263.76. The average expenditure of other income expenditure class groups of between 1163-1417, 1417-1644, 1644-1897, 1897-2198, 2198-2538, 2538-2987, 2987-3574, 3574-4591 are ₹1290.52, ₹1537.69, ₹1765.70, ₹2044.99, ₹2366.56, ₹2765.94, ₹3260.01 and ₹4039.40 respectively. However, there were 49.78 per cent households in the rural sector in comparison to 50.22 per cent in the urban sector. There were 88.17 per cent males who were household head and 11.83 per cent females reported to be household head. Among the 3118 households, there were 33.35 per cent households who were having a regular earner and 66.65 per cent households were not having any regular earner. There were 87.75 per cent households who own land and the rest 12.25 per cent did not own any land.

The table shows that there were merely 18.89 per cent households who had cultivated land. A larger proportion of 81.11 per cent did not had cultivated land. Among the age group, 45-55 represents the major share of 26.27 per cent who were household head. The age group 35-45 represents the 24.37 per cent, the age group 55-65 represents 17.80 per cent and less than 35 represents 16.97 per cent. A very low share of 14.59 was found to be the household head among the age group of above 65 years. It can be observed from the table that there were 28.58 per cent household head who were illiterate. These include illiterate, the literate without formal school through NFEC/EGS/AEC, TLC and others. Among the literate, there was major share of household head who had below primary and primary level education (21.74 per cent) followed by secondary level education (20.11 per cent), middle level education (12.32 per cent), graduate, diploma, post graduate and above level of education (8.76 per cent) and higher secondary education with 8.50 percent respectively. It can be noticed from the table that the major share in the household type is occupied by the self-employed (44.84 per cent) followed by the regular employed (29.03 per cent), casual employed (19.15 per cent) and others

Table 4.14: Details of independent variables used in determinants of Income Inequality

Variable	Particular	Status
Income expenditure class (₹)	Less than 1163	988.22
	1163-1417	1290.52
	1417-1644	1537.69
	1644-1897	1765.70
	1897-2198	2044.99
	2198-2538	2366.56
	2538-2987	2765.94
	2987-3574	3260.01
	3574-4591	4039.40
	Greater than 4591	7263.76
Sector (%)	Rural	49.78
	Urban	50.22
Gender of household head (%)	Male	88.17
	Female	11.83
Any member a regular earner (%)	No	66.65
	Yes	33.35
Whether owns any land (%)	Yes	87.75
	No	12.25
Land cultivated (%)	No	81.11
	Yes	18.89
Age of household head (%)	Less than 35	16.97
	35-45	24.37
	45-55	26.27
	55-65	17.80
	Above 65	14.59
Education of household head (%)	Not literate	28.58
	Below primary and primary	21.74
	Middle	12.32
	Secondary	20.11
	Higher secondary	8.50
	Diploma, graduate, post graduate and above	8.76
Household type (%)	Self-employed	44.84
	Regular employed	29.03
	Casual employed	19.15
	Other employed	6.99
Social group (%)	ST	0.64
	SC	34.89
	OBC	13.95
	Other social group	50.51
Religion (%)	Hindus	45.57
	Sikhs	50.48
	Other religion group	3.94
Household size (%)	< 3	13.98
	3 to 5	37.04
	5 to 7	34.09
	> 7	14.88

Source: Estimations based on NSS data

employed (6.99 per cent). Among the social groups, a very small share of population was reported by STs with 0.64 per cent in Punjab.

There were 34.89 per cent of SCs and 13.95 per cent of OBC households reported in Punjab. The others social group occupied a major share of 50.51 per cent. Among the religion groups, majority of the households were reported from Sikh religion (50.48 per cent) accompanied by Hindu religion (45.57 per cent) and other religion groups (3.94 per cent). The other religion groups include Islam, Christianity, Jainism, Buddhism, Zoroastrianism and others. As regarding the details of the household size of the respective selected households, there were 37.04 per cent of the households who were reported to

Table 4.15: Description statistics of variables used in determinants of Income Inequality

Variable	Mean	Std Dev	Minimum	Maximum
InEQ	50.48	28.87	1	100
RSec	0.50	0.50	0	1
USec	0.50	0.50	0	1
HHsize	4.65	2.20	1	20
AgeGrp	47.78	14.13	8	95
Hrlg	0.46	0.50	0	1
Srlg	0.50	0.50	0	1
Orlg	0.04	0.19	0	1
SE	0.45	0.50	0	1
RE	0.29	0.45	0	1
CE	0.19	0.39	0	1
OE	0.07	0.26	0	1
STgrp	0.01	0.08	0	1
SCgrp	0.35	0.48	0	1
OBCgrp	0.14	0.35	0	1
OTHgrp	0.51	0.50	0	1
REarner	0.33	0.47	0	1
SCHyr	6.42	4.92	0	15

Source: Estimations based on NSS data

Note: RSec – Rural sector, USec – Urban sector, HHsize – Household size, Orlg – Other religion, OE – Other employed, OTHgrp – Other social group, SCHyr – Schooling year

have members between 3 to 5 followed by 34.09 per cent who were having members between 5 to 7, a share of 14.88 per cent with above 7 members and 13.98 per cent with less than 3 members.

Table 4.15 gives minimum and maximum values, means and standard deviations for the variables used for the estimations of regression. However, this table shows that there is no expected variable which would not be suitable to run the regression model. The table shows that the average age of head of household is 47.48 year with minimum age of 8 year and maximum age 95 year. After the data exploration, it is clear that the household head with age 8 year is only the male member in that household. Decision maker role in the household is done by elder aged female but under the social status she has not confirmed as a head herself.

Table 4.16 shows the correlation coefficient of the variables used in regression model and whether the association is significant or not. The variable income class is significantly positive associated with urban sector, age, Sikh religion, self-employed, regular employed, other employed, other social group, regular earner and schooling year. The values of estimated coefficient show that the income class has significant positive association with rural sector, household size, Hindu religion, other religion, casual employed and ST. The values of correlation coefficient show that rural sector is significant positively associated with household size, age, Sikh religion, self-employed, casual employed, SC, OBC, other social group, regular earner and schooling year. The coefficient of urban sector is significant positively correlated with Hindu religion, regular employed, ST, OBC, regular earner and schooling year. The values of correlation coefficient show that household size is significant positively associated with age, Sikh religion, self-employed and OBC. The values of correlation coefficient show that age is significant positively associated with Sikh religion, self-employed, other employed and social group.

The estimated value of Hindu religion is significant and positively correlated with regular employed, ST, regular earner and schooling year. The variable Sikh religion has significant and positive association with self-employed and casual employed. The estimated coefficient show that other religion has significant positive association with casual employed and OBC. The findings of variable self-employed shows significant

Table 4.16: Correlation coefficient of variables used in determinants of Income Inequality

	InEQ	RSec	USec	HHsize	AgeGrp	Hrlg	Srlg	Orlg	SE	RE	CE	OE	STgrp	SCgrp	OBCgrp	OTHgrp	REarner	SCHyr
InEQ	1																	
RSec	-0.12***	1																
USec	0.12***	-1***	1															
HHsize	-0.30***	0.13***	-0.13***	1														
AgeGrp	0.10***	0.12***	-0.12***	0.32***	1													
Hrlg	-0.04**	-0.40***	0.40***	-0.12***	-0.13***	1												
Srlg	0.06***	0.41***	-0.41***	0.11***	0.15***	-0.92***	1											
Orlg	-0.05***	-0.02	0.02	0.02	-0.05***	-0.19***	-0.20***	1										
SE	0.17***	0.05***	-0.05***	0.20***	0.17***	-0.09***	0.10***	-0.03*	1									
RE	0.05***	-0.22***	0.22***	-0.07***	-0.09***	0.16***	-0.16***	-0.02	-0.58***	1								
CE	-0.38***	0.21***	-0.21***	-0.01	-0.14***	-0.09***	0.06***	0.06***	-0.44***	-0.31***	1							
OE	0.17***	-0.01	0.01	-0.23***	0.05***	0.009	-0.01	0.003	-0.24***	-0.17***	-0.13***	1						
STgrp	-0.003	-0.05***	0.05***	-0.02***	-0.004	0.03*	-0.04*	0.02	-0.01	0.03*	-0.01	-0.006	1					
SCgrp	-0.39***	0.18***	-0.18***	0.01	-0.12***	0.01	0.03	-0.10***	-0.27***	0.01	0.34***	-0.03	-0.06***	1				
OBCgrp	-0.07***	-0.07***	0.07***	0.03*	-0.01	-0.02	-0.03	0.11***	0.04**	-0.04**	0.00	-0.01	-0.03*	-0.29***	1			
OTHgrp	0.42***	-0.11***	0.11***	-0.03*	0.12***	0.005	0.003	0.02	0.23***	0.01	-0.32***	0.03*	-0.08***	-0.74***	-0.41***	1		
REarner	0.07***	-0.22***	0.22***	-0.02	-0.05***	0.14***	-0.14***	-0.01	-0.49***	0.90***	-0.31***	-0.17***	0.03	-0.01	-0.02	0.01	1	
SCHyr	0.44***	-0.25***	0.25***	-0.12***	-0.15***	0.13***	-0.10***	-0.06***	0.05***	0.15***	-0.30***	0.10***	-0.01	-0.29***	-0.03*	0.30***	0.16***	1

Source: Estimations based on NSS data

Note: *, **, and *** shows the significance level at 10, 5, and 1 percent

positive correlation with OBC, other social group and schooling year. Moreover, regular employed is significant positively associated with ST, regular earner and schooling year. In addition, the coefficient of casual employed has significant and positive association with SC. It can be seen that other employed is significant positively associated with other social group and schooling year. The values of coefficient reveal that other social group is significant positively correlated with schooling year. The estimated correlation coefficient of regular earner is significant and positively associated with schooling year.

It can be observed from table 4.16 the coefficient of income class is significant negatively correlated with rural sector, household size, Hindu religion, other religion, casual employed. The estimated coefficient of rural sector has significant negative association with urban sector, Hindu religion, regular employed and ST. The coefficient of urban sector is significant negatively correlated with household size, age, Sikh religion, self-employed, casual employed, SC and the other social group. The estimated coefficient of household size is significant and negative associated with Hindu religion, regular employed, other employed, ST, other social group and schooling year. The variable age has significant negative association with Hindu religion, other religion, regular employed, casual employed, SC, regular earner and schooling year. Moreover, Hindu religion is significant negatively correlated with Sikh religion, other religion, self-employed and casual employed.

The estimated values of correlation coefficient show that Sikh religion is significant positively associated with other religion, regular employed, ST, regular earner and schooling year. The estimated coefficient of other religion is significant negatively correlated with self-employed, SC and schooling year. The values of coefficient show that self-employed has significant negative association with regular employed, casual employed, other employed, SC and regular earner. The variable regular employed is significant negatively associated with casual employed, other employed and OBC. The coefficient of casual employed has significant negative association with other employed, other social group, regular earner and schooling year. The coefficient of correlation shows that other employed is significant and negatively associated with regular earner. Moreover, ST is significant negatively associated with SC, OBC and the other social group. The estimated coefficient of SC is significant negatively correlated with OBC, schooling year and the other social group. The variable OBC has significant negative association with other social group and schooling year.

As observed from table 4.16, urban sector is not significant positively correlated with other religion and other employed. The estimated correlation coefficient of household size is not significant positively associated with other religion and SC. The correlation coefficient of Hindu religion is not significant positively associated with other employed and SC. The findings reveal the variable Sikh religion is not significant positively correlated with SC. The variable other religion does not have significant positively association with ST, other employed and social group. Moreover, the values show that regular employed is not significant positively associated with SC and the other social group. In addition, correlation coefficient of ST is not significant positively associated with regular earner. The estimated coefficient of the other social group does not have significant positive association with regular earner.

Looking into the table 4.16, it can be clearly noticed that income class does not have significant negative association with ST. The estimated coefficient show that rural sector is not significant negatively associated with other religion and other employed. The correlation coefficient of household size is not significant negatively associated with casual employed and regular earner. The variable age is not significant negatively correlated with SC and OBC. The coefficient of Hindu religion does not have significant negative association with OBC and the other social group. The coefficient of variable Sikh religion is not significant negative correlated with other employed, OBC and the other social group. The values of coefficient show that other religion is not significant negatively associated with regular employed and regular earner. The coefficient shows that self-employed is not significant negatively correlated with ST. The casual employed is not significant negatively associated with ST and OBC. The estimated coefficient shows that other employed is not significant negatively correlated with ST, SC and OBC. Moreover, the variable SC is not having significant negative association with regular earner. The estimated coefficient of OBC is not significantly negative associated with regular earner. Further, the correlation coefficient show that ST does not show significant negative association with schooling year.

Determinants of Income Inequality in Punjab in 2011-12

Table 4.17 gives the estimated results of the truncated Tobit model. The dependent variable is truncated response variable which shows increasing scale leads to improvement in economic situation. The Tobit estimated slope coefficients shows a unit

change in the explanatory variable which affects the income class with all other variables remaining constant in the regression. The findings are presented by the estimated coefficients with standard errors. Furthermore, goodness of fit for the model is presented by the log-likelihood test statistic.

Table 4.17: Estimation of determinants of Income Inequality in Punjab (Results of Truncated Tobit regression)

Parameter	Estimate coefficients	Standard Error
Intercept	73.44***	4.58
Urban sector dummy = 1, otherwise 0	3.63***	1.02
Dummy for self-employed = 1, otherwise 0	-13.63***	1.83
Dummy for regular employed = 1, otherwise 0	-15.08***	2.68
Dummy for casual employed = 1, otherwise 0	-24.16***	2.03
Dummy for Hindu religion = 1, otherwise 0	1.87	2.20
Dummy for Sikh religion = 1, otherwise 0	6.01***	2.21
Dummy for ST = 1, otherwise 0	-5.03	5.17
Dummy for SC = 1, otherwise 0	-13.16***	1.08
Dummy for OBC = 1, otherwise 0	-9.05***	1.28
Regular earner = 1, otherwise 0	1.90	2.03
Whether owns any land = 1, otherwise 0	1.09	1.42
Land cultivated = 1, otherwise 0	12.44***	1.33
Gender of person (male 1, female 0)	4.09***	1.39
Age group	0.08***	0.03
Dummy for Not literate = 1, otherwise 0	-34.18***	1.78
Dummy for Below primary and primary education = 1, otherwise 0	-28.73***	1.74
Dummy for Middle education = 1, otherwise 0	-24.80***	1.88
Dummy for Secondary education = 1, otherwise 0	-19.24***	1.70
Dummy for Higher secondary education = 1, otherwise 0	-12.47***	2.01

Source: Estimations based on NSS data
Note: *, **, and *** shows the significance level at 10, 5, and 1 percent.

It is pertained from the table that most of the estimated coefficients of the variables are statistically significant. The coefficient of urban sector is positive significant which shows that the household shifts to upper class as a person moves from rural to urban sector. As a person moves from rural to urban sector, the income class of the household improves and surely shifts to upper class of consumption expenditure by 3.63 per cent. The variable household type is divided into self-employed, regular employed and casual employed and others employed where others employed is taken as reference category. The variable regular employed, self-employed and casual employed shows negative statistically significant results. The one per cent increase in these household type will cause the income class of person to shift to lower class from the previous income class than the other employed by 13.63, 15.08 and 24.16 per cent and significant at 1 per cent.

The variable religion is divided into Sikh religion, Hindu religion and other religion group where other religion group is taken as a reference category. The variable Hindu religion shows positive not significant results. It shows Hindus do not shift to the upper income class than the other religion group. The variable Sikh religion shows positive significant results. It shows that one per cent increase in the Sikh religion will lead the income class of person to shift to upper class from the previous income class than the other religion group by 6.01 per cent.

The variable social group is divided into ST, SC, OBC and others social group where others social group is taken as reference category. The variable SC and OBC shows negative significant results. The one per cent increase in the SC will cause the income class of person to shift to lower class from the previous income class than the other social group by 13.16 per cent which is significant at 1 per cent. The one per cent increase in the OBC will take the income class of person to shift to lower class from the previous income class than the other social group by 9.05 per cent with significant result. The variable ST shows negative insignificant results. It shows ST do not shift to the lower income class than the other religion group.

The variable regular earner shows positive insignificant result. It shows regular earner do not shift to the upper income class than the not regular earner. The variable whether owns any land shows positive insignificant result. It shows household which owns land do not shift to the upper income class than the household which does not own

land. The variable land cultivated shows positive significant results. It shows that one per cent increase in the those who cultivate land will cause the income class of person to shift to upper class from the previous income class than those who do not cultivate land by 12.44 per cent.

The variable gender shows positive significant result. It shows those households whose head is male have significant chances of getting to higher income class than those household whose head is female by 4.09 per cent. The variable age group shows positive significant results. It shows increase in age have significant chances of getting to higher income class.

Table 4.18: Model Fit Summary Regression equation fitted for Income Inequality in Punjab

Model Fit Summary	
Number of Endogenous Variables	1
Endogenous Variable	InEQ
Number of Observations	3118
Log Likelihood	-14076
Maximum Absolute Gradient	0.000977
Number of Iterations	36
Optimization Method	Quasi-Newton
AIC	28195
Schwarz Criterion	28322

Source: Estimations based on NSS data

The variable education is divided into not literate, middle, secondary, higher secondary below primary and primary and graduate, diploma, post graduate and above where diploma, graduate and post graduate and above is taken as reference category. The coefficient of not literate, below primary and primary level of education and middle education, secondary education and higher secondary education shows negative statistical results. It means lower education level have more negative chances of going to higher income class by 34.18, 28.73, 24.80, 19.24 and 12.47 per cent with reference to the diploma, graduate, post graduate and above. The value of sigma 22.86 is significant at 1 per cent. It shows model is best fit.

4.5 Conclusion

The previous chapter shows the LFPR, WPR, the HCR and the Gini coefficient in Punjab. There have been wide variations in all the indicators in various districts of Punjab. There might be some reasons for these variations in indicators. These reasons had been studied in this chapter. This chapter pertains to the factors which affect the employment, poverty and income inequality in Punjab.

The coefficient of correlation show that the employment status is significant positively associated with age group, rural casual employed in agriculture, urban casual employed, urban other employed, Sikh religion, SCs, urban self-employed in agriculture, technical education, rural casual employed in non-agriculture, not literate, below primary and primary. The household size is significant positively associated with rural self-employed in non-agriculture, urban self-employed, Sikh religion, Other religion groups, rural self-employed in agriculture, OBC, education institute, middle level education, secondary and higher secondary education. The self-employed in agriculture in rural sector is significant positively associated with Sikh religion, other social group, secondary education and higher secondary education. The rural self-employed in non-agriculture is significant positively associated with Sikh religion, SC, OBC and middle education. The rural regular employed is significant positively associated with Sikh religion, SC, education institute and secondary education. The rural casual employed in agriculture is significant positively associated with Sikh religion, other religion, SC, education institute, not literate and below primary and primary education. The rural casual employed in non-agriculture is significant positively associated with Sikh religion, other religion, ST, SC, education institute, not literate, middle education and below primary and primary education. The urban regular employed is significant positively associated with Hindu religion, ST, OBC, other social group, technical education, schooling year, high secondary and graduate, diploma and post graduate and above education. The urban casual employed is significant positively associated with Hindu religion, other religion, SC, OBC, not literate, below primary and primary education.

The estimated coefficient of employment status has significant negative association with sector, gender, other rural employed, urban self-employed, Hindu religion, other social group, education institute, schooling year, middle education, secondary education, higher secondary education. The household size is significant

negatively associated with other rural employed, urban regular employed, urban other employed, Hindu religion, household size, technical education, schooling year, below primary and primary education and graduate, diploma and post graduate and above level of education. The self-employed in agriculture in rural sector is significant negatively associated with self-employed in non-agriculture in rural sector, regular employed in rural sector, casual employed in non-agriculture in rural sector, other rural employed, self-employed in urban sector, regular employed in urban sector, others urban employed, Hindu religion, other religion, urban casual employed, ST, SC, OBC, technical education, not literate and graduate, diploma and post graduate and above education. The rural self-employed in non-agriculture is significant negatively associated with rural regular employed, rural casual employed in non-agriculture, other rural employed, urban self-employed, urban regular employed, urban casual employed, other urban employed, rural casual employed in agriculture, Hindu religion, other religion, other social group, technical education, schooling year and graduate, diploma and post graduate and above education level. The rural regular employed is significant negatively associated with rural casual employed in agriculture, other rural employed, self-employed in urban sector, urban regular employed, urban casual employed, rural casual employed in non-agriculture, other urban employed, Hindu religion, other social group and below primary and primary education. The rural casual employed in agriculture is significant negatively associated with rural casual employed in non-agriculture, other rural employed, urban self-employed, urban regular employed, urban casual employed, other urban employed, Hindu religion, OBC, other social group, technical education, schooling year, secondary education, higher secondary and graduate, diploma and post graduate and above level.

The rural casual employed in non-agriculture is significant negatively associated with rural other employed, self-employed in urban sector, urban casual employed, other urban employed, Hindu religion, other social group, technical education, schooling year, secondary education, urban regular employed, higher secondary education and graduate, diploma and post graduate and above. The urban self-employed is significant negatively associated with urban regular employed, urban casual employed, other urban employed, Sikh religion, SC, education institute, not literate and below primary and primary education. The urban regular employed is significant negatively associated with urban casual employed, other urban employed, Sikh religion, other religion, SC, education institute, not literate, middle education and below primary and primary education. The

urban casual employed is significant negatively associated other urban employed, Sikh religion, other social group, technical education, education institute, schooling year, secondary education, higher secondary, graduate, diploma and post graduate and above.

The estimated results of the binary logit model show the dependent variable is binary response variable with 1 for employed and 0 for unemployed. The test revealed significant results for all models. Moreover, the estimated coefficients of all the variables are statistically significant. The 1 per cent rise in the rural self-employed in agriculture will cause the probability employed to be reduced than the rural other employed by 3.95 per cent significant at 1 per cent. It means the employment of rural self-employed in agriculture is less than the rural other employed. The one per cent rise in the self-employed in non-agriculture in rural sector will cause the probability of employed to be reduced than the rural other employed by 3.39 per cent which is significant. The 1 per cent increase in the rural regular employed will cause the probability of employed to be reduced than the rural other employed by 3.38 per cent with significant result. It means the employment of rural regular employed is less than the rural other employed by 3.38 per cent.

One per cent rise in the rural casual employed in agriculture will cause the probability of employed to be reduced than the rural other employed by 3.83 per cent significant at 1 per cent level. The one per cent rise in the casual employed in non-agriculture in rural sector will cause the probability of employed to be reduced than the rural other employed by 3.50 per cent and is significant. The 1 per cent increase in the urban casual employed will cause the probability employed to be increased than the urban other employed by 4.25 per cent with significant result. It implies the employment of the urban casual employed is greater than the urban other employed by 4.25 per cent with significant result. The one per cent rise in the SC will cause the chances of employed to be reduced than the others social group by 0.17 per cent significant at 5 per cent. It points that the participation of the SC in the labour force is less than the others social group by 0.17 per cent which is due to the lack of opportunities of education. The coefficient of technical education is negative statistically significant which shows that the chances of employed person with technical education is higher than the person with no technical education by 0.52 per cent at 5 per cent.

The probability of employed person with middle education, secondary and higher secondary education is higher than the person who is not literate by 0.44 per cent, 0.50 per cent and 0.78 per cent at 1 per cent level. Due to stepwise regression various other variables got deleted from the process which leads to robust results. The convergence criterion is satisfied which shows it is optimal model output. All the three global null hypothesis tests i.e., Likelihood ratio test, score test, Wald test are statistically significant. The model fit statistics of all three criterion is satisfied with AIC, SC, and -2log L as the AIC and SC penalizes for more number of independent variables.

In the second part of the chapter estimation regarding determinants of poverty are analysed. The household poverty has significant positive association with urban sector, household size, Hindu religion, casual employed, SC and OBC. The estimated values of coefficient show that household size is significant positively associated with age, Sikh religion, self-employed and OBC. The coefficient of self-employed is significant positively associated with OBC, other social group and schooling year. The findings show the values of correlation of regular employed which is significant and positively associated with ST, regular earner and schooling year. The estimated coefficient reveals that casual employed is significant positively associated with SC. The estimated coefficient of household poverty has significant negative association with age, rural sector, Sikh religion, self-employed, other employed, other social group and schooling year. The variable household size is significant negatively correlated with Hindu religion, regular employed, other employed, ST, other social group and schooling year. The correlation coefficient of self-employed has significant negative association with regular employed, casual employed, other employed, SC and regular earner. The variable regular employed reveals to have significant negative association with casual employed, other employed and OBC. The casual employed has significant negative association with other employed, other social group, regular earner and schooling year.

The estimated results of the binary logit model show the dependent variable is binary response variable with 1 for poor household and 0 for non-poor household. Estimated coefficients of all the variables except of higher secondary education are significant. The reduction in poverty of casual employed is less than the others employed by 0.60 per cent which is significant. The coefficient of not literate, below primary and primary education and middle level of education shows negative statistical results. The reduction in poverty of not literate is less than the diploma, graduate and post graduate

and above by 1.12 per cent which is significant. The 1 per cent rise in the persons of primary and below primary education will cause the chances of poverty to be reduced than the diploma, graduate and post graduate and above by 0.75 per cent. The 1 per cent rise in the persons of middle level of education will cause the chances of poor to be reduced than the diploma, graduate and post graduate and above by 0.46 per cent. The coefficient of secondary education is positive and significant. It shows that the probability of poor with secondary education is higher than the person who has diploma, graduate and post graduate and above by 0.41 per cent. The variable higher secondary education shows insignificant result. Due to stepwise regression various other variables got deleted from the process which gives the robust results. All the three global null hypothesis tests i.e., score test, Likelihood ratio test, Wald test are statistically significant.

In the last part of this chapter, the estimation results of determinants of income inequality are discussed. The coefficient of the income class reveals significant positive association with urban sector, age, Sikh religion, self-employed, regular employed, other employed, other social group, regular earner and schooling year. The estimated coefficient reveals that the income class is significant positively correlated with rural sector, household size, Hindu religion, other religion, casual employed and ST. The variable household size has significant positive association with age, Sikh religion, self-employed and OBC. The coefficient of self-employed is significant positively correlated with OBC, other social group and schooling year. The correlation coefficient of regular employed is significant positively associated with ST, regular earner and schooling year. The variable casual employed is significant and positively associated with SC. The variable income class is significant and negatively associated with rural sector, household size, Hindu religion, other religion, casual employed. The estimated coefficient of household size is significant negatively correlated with Hindu religion, regular employed, other employed, ST, other social group and schooling year. In addition, the self-employed has significant negative association with regular employed, casual employed, other employed, SC and regular earner. The variable regular employed is significant negatively associated with casual employed, other employed and OBC. The coefficient show that casual employed has significant negative association with other employed, other social group, regular earner and schooling year.

The estimation results of the truncated Tobit model show the dependent variable is truncated response variable which shows increasing scale leads to improvement in

economic situation. The variable regular employed, self-employed and casual employed shows negative statistically significant results The one per cent increase in these household type will cause the income class of person to shift to lower class from the previous income class than the other employed by 13.63, 15.08 and 24.16 per cent and is significant. The variable land cultivated shows positive significant results. It shows that one per cent increase in the those who cultivate land will cause the income class of person to shift to upper class from the previous income class than those who do not cultivate land by 12.44 per cent.

The coefficient of below primary and primary education, not literate and middle level of education secondary education and higher secondary education shows negative statistical results. It means lower education level have more negative chances of going to higher income class by 34.18, 28.73, 24.80, 19.24 and 12.47 per cent with reference to the diploma, graduate, post graduate and above. The value of sigma is 22.86 and found to be significant at 1 per cent. It shows model is best fit.

CHAPTER V

RELATIONSHIP BETWEEN EMPLOYMENT, POVERTY AND INCOME INEQUALITY IN PUNJAB

5.1 Introduction

Employment, poverty and income inequality are the key elements in the growth process. Increasing income inequality regardless of high growth rate has been widely debated by the researchers. Plenty of the debate has been focussed on whether the central point should be placed on inequality or/and poverty or growth (Fosu, 2010[184]; Berg et al., 2014[185]; Berg & Ostry, 2017[186]). Indian economy attained the high rate of growth historically. However, this high growth phase has been debated by studies whereby focussing on the extent of reduction in the number of poor people in the country due to high growth (Mehta & Shah, 2003[187]; Dev & Ravi, 2007[188]; Kannan & Raveendran, 2011[189]). Theoretical viewpoint is that trickledown effect should reduce the number of poor people. This consensus has been pointed by Ravallion (2001)[190] whereby high growth rate leads to rapid reduction in poverty. Thus, rate of economic growth really matters for the reduction in poverty.

The results in the literature are mixed in which most of the studies are arguing the slow speed of poverty reduction. Kapoor (2013)[191] witnessed the varying poverty reduction of the states with growth rate of nine to ten per cent on average. Thus, reduction

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[185] Berg, A., Ostry, J. D., Tsangarides, C. G., & Yakhshilikov, Y. (2018). Redistribution, inequality, and growth: New evidence. *Journal of Economic Growth*, *23*(3), 259-305.

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[189] Kannan, K. P., & Raveendran, G. (2011). India's common people: The regional profile. *Economic and Political Weekly*, *46*(38), 60-73.

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[191] Kapoor, R. (2013). Inequality matters. *Economic and Political Weekly*, *48*(2), 58-65.

in poverty is not due to high growth alone. As Bruno et al. (1998)[192] argued that it can be expected that growth leads to reduction in poverty, but it is also pointed that there can be changes in the poverty due to change in the distribution of income. Importantly, poverty is sensitive to income inequality.

It appears from the literature that the link of growth with reduction in poverty is weak and inequality seems to be one of the factors explaining its role for differences in the reduction of poverty. This has been the central point of studies of Kapoor (2013)[193] whereby inequality plays a role of mediator between growth and poverty. Employment act as an indirect link between poverty and growth. Bourguignon (2004)[194] refers to this relationship as poverty growth-inequality triangle.

Based on this backdrop, this chapter proceeds with the discussion and analysis of the triangular base of employment-poverty-income inequality discussing each of the variable depending on the other variables by controlling the other variables in Punjab.

5.2 The concept of Working Poor

The concept of 'working poor' (Sundaram & Tendulkar, 2002[195]) which includes those labour force members which are living in households below the threshold line of poverty. Thus, employment plays central role in income inequality and poverty. Employment leads to reduction in poverty and increase in income inequality. The earnings of the employed persons lead to shifting to higher income class which increases the gap of lower income class and higher income class. However, doorway to employment does not act as sufficient condition to reduce income inequality and poverty. But the quality of work and type of work also acts an important in determining the

[192] Ravallion, M., Squire, L., & Bruno, M. (1999). *Equity and growth in developing countries: Old and new perspectives on the policy issues*. The World Bank. Policy Research Working Papers. Retrieved from https://elibrary.worldbank.org/doi/abs/10.1596/1813-9450-1563.

[193] Kapoor, R. (2013). Inequality matters. *Economic and Political Weekly*, *48*(2), 58-65

[194] Bourguignon, F. (2004). The poverty-growth-inequality triangle. *Indian Council for Research on International Economic Relations,* New Delhi. Working paper No. 125. Retrieved from https://www.econstor.eu/bitstream/10419/176147/1/icrier-wp-125.pdf.

[195] Sundaram, K., & Tendulkar, S. D. (2002). The working poor in India: Employment-poverty linkages and employment policy options. *Issues in Employment and Poverty*. Discussion Paper No. 4. Retrieved from http://www.ilo.int/wcmsp5/groups/public/---ed_emp/documents/publication/wcms_121232.pdf.

reduction in income inequality and poverty. The thrust to provide decent jobs has been the major agenda of the government of a country.

Table 5.1 pertains to the average MPCE, WPR and the incidence of poverty across household type in Punjab. It is interesting to know that the highest incidence of poverty is 25.1 per cent which pertains to the rural casual labour in non-agriculture with WPR of 42.1 per cent and average MPCE of ₹ 1506 followed by urban casual labour with poverty rate of 24.4 per cent, WPR of 52.2 per cent and average MPCE of ₹ 1802; rural casual labour in agriculture with poverty rate of 20.9 per cent, WPR of 46.5 per cent and average MPCE of ₹ 1416. This shows that casual labour in urban and rural sector are more prone to be poor with low standard of living. The incidence of poverty of all other household type is less with better standard of living.

Table 5.1: Average MPCE, Work Force Participation Rate and Incidence of Poverty across Household Type

Household Type	MPCEmrp (₹/per capita)	WPR (%)	Incidence of Poverty (%)
Rural: self-employed in agriculture	2968	50.3	2.2
Rural: self-employed in non-agriculture	2010	40.3	7.9
Rural: regular wage/salary earning	2161	42.2	12.1
Rural: casual labour in agriculture	1416	46.5	20.9
Rural: casual labour in non-agriculture	1506	42.1	25.1
Others	3499	2.7	2.4
Urban: self-employed	2686	42.9	8.8
Urban: regular wage/salary earning	2701	49.4	11.2
Urban: casual labour	1802	52.2	24.4

Source: Estimations based on NSS data

In order to have a better understanding of the standard of living of various categories of employment status of households, the mean difference of the incidence of poverty between household type is compared. As it can be seen from table 5.2 that the mean disparity in the poverty between urban casual labour and rural casual labour in

Table 5.2: Analysis of Variance Mean difference of Incidence of Poverty across Household Type

Household Type	Mean difference
Ucl- Rcla	0.08433**
Ucl - Rclna	0.12424**
Ucl - Urw	0.21568**
Ucl - Rrw	0.22917**
Ucl - Use	0.22935**
Ucl - Rsena	0.28772**
Ucl – oth	0.3222**
Ucl - Rsea	0.33631**
Rcla - Ucl	-0.08433**
Rcla - Rclna	0.03991
Rcla - Urw	0.13135**
Rcla - Rrw	0.14484**
Rcla - Use	0.14502**
Rcla - Rsena	0.2034**
Rcla - oth	0.23788**
Rclna - Ucl	-0.12424**
Rclna - Rcla	-0.03991
Rclna - Urw	0.09144**
Rclna - Rrw	0.10493**
Rclna - Use	0.10511**
Rclna - Rsena	0.16348**
Rclna - oth	0.19796**
Rclna - Rsea	0.21207**
Urw - Rclna	-0.09144**
Urw - Rrw	0.01349
Urw - Use	0.01367
Urw - Rsena	0.07204**
Urw - oth	0.10652**
Urw - Rsea	0.12063**
Rrw - Urw	-0.01349
Rrw - Use	0.00018
Rrw - Rsena	0.05855**
Rrw - oth	0.09304**
Rrw - Rsea	0.10714**
Use - Rrw	-0.00018
Use - Rsena	0.05837**
Use – oth	0.09286**
Use - Rsea	0.10696**
Rsena - Use	-0.05837**
Rsena - oth	0.03448
Rsena - Rsea	0.04859**
oth - Rsena	-0.03448
oth - Rsea	0.01411
Rsea - oth	-0.01411
F statistics	25.89**
Number of observations	3118

Source: Estimations based on NSS data
Note: ** shows significant at 5 % level

Urban: casual labour-Ucl, Rural: casual labour in agriculture-Rcla, Rural: casual labour in non-agriculture-Rclna, Urban: regular wage/salary earning-Urw, Rural: regular wage/salary earning-Rrw, Urban: self-employed-Use, Rural: self-employed in agriculture-Rsea, Rural: self-employed in non-agriculture-Rsena, others-oth.

Table 5.3: Analysis of Variance Mean difference of Work Force Participation Rate across Household Type

Household Type	Mean difference
Use - Urw	-4.864**
Use - Ucl	-6.788**
Use - Rsena	-0.777
Use - Rsea	-7.961**
Use - Rrw	-2.227
Use - Rclna	0.236
Use - Rcla	-7.085**
Use - oth	38.922**
Urw - Use	4.864**
Urw - Ucl	-1.924
Urw - Rsena	4.087**
Urw - Rsea	-3.097**
Urw - Rrw	2.636
Urw - Rclna	5.1**
Urw - Rcla	-2.221
Urw - oth	43.786**
Ucl - Urw	1.924
Ucl - Rsena	6.011**
Ucl - Rsea	-1.173
Ucl - Rrw	4.56**
Ucl - Rclna	7.024**
Ucl - Rcla	-0.297
Ucl - oth	45.71**
Rsena - Ucl	-6.011**
Rsena - Rsea	-7.184**
Rsena - Rrw	-1.451
Rsena - Rclna	1.012
Rsena - Rcla	-6.308**
Rsena - oth	39.698**
Rsea - Rsena	7.184**
Rsea - Rrw	5.733**
Rsea - Rclna	8.196**
Rsea - Rcla	0.876
Rsea - oth	46.882**
Rrw - Rsea	-5.733**
Rrw - Rclna	2.463
Rrw - Rcla	-4.858**
Rrw - oth	41.149**
Rclna - Rrw	-2.463
Rclna - Rcla	-7.321**
Rclna - others	38.686**
Rcla - Rclna	7.321**
Rcla - others	46.007**
oth - Rcla	-46.00**
F statistics	94.59**
Number of observations	3118

Source: Estimations based on NSS data

Note: ** shows significant at 5% level

Urban: casual labour-Ucl, Rural: casual labour in agriculture-Rcla, Rural: casual labour in non-agriculture-Rclna, Urban: regular wage/salary earning-Urw, Rural: regular wage/salary earning-Rrw, Urban: self-employed-Use, Rural: self-employed in agriculture-Rsea, Rural: self-employed in non-agriculture-Rsena, others-oth.

agriculture is 0.084 and this difference is positive and significant. It implies there is disparity in the mean between incidence of poverty of these household types. It is found that there is deviation in mean in the poverty incidence between urban casual labour and rural casual labour in non-agriculture and this difference is positive statistically significant. Furthermore, there is mean difference in incidence of poverty between rural casual labour in agriculture and urban casual labour and this difference is negative statistically significant. The value of F statistics is significant showing best fit model.

Table 5.3 pertains to the mean difference of WPR between household type. The value of F statistics is significant showing best fit model. The mean difference of WPR between rural casual labour in non-agriculture and urban casual labour; rural casual labour in agriculture and casual labour in non-agriculture in rural sector is positive and significant. It implies there is disparity in the mean between WPR of these household type. However, there is mean difference in WPR between rural casual labour in agriculture and urban casual labour; rural casual labour in non-agriculture and urban casual labour and this difference is negative statistically significant.

5.3 Theoretical Model Specification

Economic growth is the sine qua non for every economy. Theoretical literature has pointed to the link of growth with poverty, employment and income inequality. The

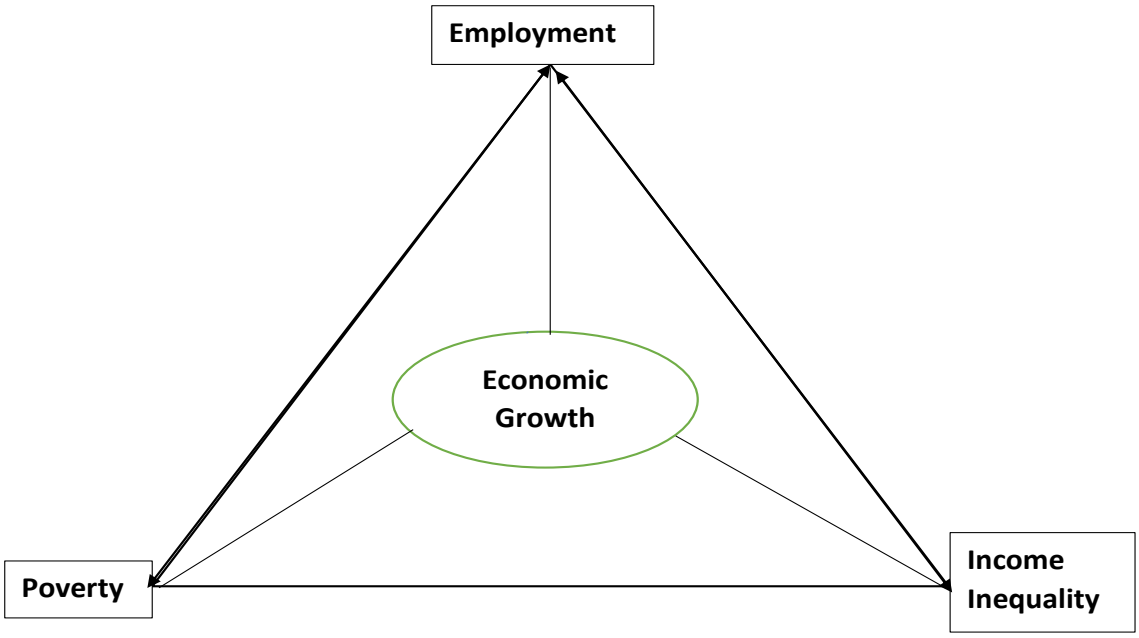

Figure 5.1: Employment, Poverty and Income Inequality triangle

study aims to explore this triangular relationship for growth of Punjab. This theoretical model can be shown with the figure as given above.

5.4 Empirical Framework and Estimated Results

The studies have pointed to the relation between variables employment, poverty and income inequality. In such a case, the one way or the unidirectional cause and effect relationship is not meaningful. Obviously, in such a case, the single equation model strategy of OLS estimates may not be appropriate as it may lead to biased statistical results. To consider the relationship of employment, poverty and income inequality forming a triangular base more than one regression equation is needed where set of variables is lumped that can be determined simultaneously. Such regression models in which the relationship of more than one variable is studied are known as simultaneous equation regression model (Madnani, 2005[196]; Gujarati, 2005[197]; Gujarati & Porter, 2010[198]; Nikam et al. 2019[199]). Each of the three variable acts as an instrument in the model and three stage least square method is used. The three stage least square method involves successive application of the OLS technique which removes the association between the error term and the independent variables in the model.

In the present model, there exists the exogenous and endogenous variables. Endogenous variables are those variables whose values are determined within the model. These are the regressand employment, income inequality and poverty in the model. These variables also act as instruments. Exogenous variables are the variables entering from and determined from outside the system being studied. These are the pre-determined or the independent variables in the system. These variables are employment, poverty and income inequality, household size, scheduled castes-scheduled tribes, agricultural land, schooling year, age, and illiterate. The simultaneous equation model can be written as:

$$Employment = \beta_0 + \beta_1 Poverty + \beta_1 Income\ Inequality + \beta_1 Age + \beta_1 HH_{Size} + \beta_1 Illiterate + \epsilon$$

[196] Madnani, G.M.K. (2005). *Introduction to econometrics: Principles and applications (7th ed.)*. New Delhi, India: Oxford and IBH Publishing, New Delhi.

[197] Gujarati, D. N. (2005). *Basic econometrics (4th ed.).* New York: McGraw-Hill Publications.

[198] Gujarati, D. N., & Porter, D. C. (2010). *Essentials of econometrics (4th ed.)*. New York: McGraw-Hill Publications.

[199] Nikam, V., Jhajhria, A., & Pal, S. (2019). *Quantitative methods for social sciences*. New Delhi, India: ICAR-National Institute of Agricultural Economics and Policy Research.

$$Poverty = \beta_0 + \beta_1 Employment + \beta_2 Income\ Inequality + \beta_3 HH_{Size} + \beta_4 SC\_ST + \epsilon$$

$$Income\ inequality = \beta_0 + \beta_1 Poverty + \beta_2 Employment + \beta_3 Agr\_l + \beta_4 Sch\_y + \beta_4 SC\_ST + \epsilon$$

where

Employment = total number of work force participant out of households

Poverty = a binary variable shows household consumption below the poverty line = 1 otherwise 0;

Income inequality = household lies under expenditure class 1-100 are endogenous variables in the model.

These are also the independent variables which are used as instruments in the other equations in the models. Likewise, the effect of the other variables i.e.,

Age = age of the household head;

HH_{Size}= number of persons living in household

Illiterate = a dummy variable for household head if illiterate = 1 otherwise 0;

SC_ST = a dummy variable of scheduled castes and scheduled tribe household = 1 otherwise 0;

Agr_l = a dummy variable for household if household having agricultural land = 1 otherwise 0;

Sch_y = number of schooling years attended by household head

is controlled in the simultaneous equations.

5.5 Measurement of variables used in simultaneous equation model

The overview of the variables used in the model is done with the estimation of descriptive statistics calculating the mean and standard deviation.

Table 5.4 presents the descriptive statistics of the variables used in simultaneous equation regression model. These distributions provide the priori expectations about the variables. The mean and standard deviation is more for WPR, income class and age but

lesser for the other variables used in the regression model. However, this table shows that there is no expected variable which would not be suitable to run the regression model.

Table 5.4: Descriptive Statistics for variables used in Simultaneous Equation Model

Variable	Mean	Std Dev	Minimum	Maximum
Poverty	0.13	0.33	0	1
Income class	50.49	28.87	1	100
WPR	41.54	25.26	0	100
HH_Size	4.61	2.08	1	17
SC_ST	0.33	0.47	0	1
Agr_l	0.19	0.39	0	1
Sch_y	6.44	4.92	0	15
Age	47.89	14.28	9	98
Illiterate	0.28	0.45	0	1
Number of observations	3118			

Source: Estimations based on NSS data

Table 5.5 shows the correlation of the variables used in regression model and whether the association is significant or not. The correlation coefficient (r) reveals that the WPR is significantly positive associated with income class. The variable household size has significant positive association with poverty. The estimated coefficient of SC_ST has significant positive association with poverty. It can be seen that agricultural land has significant and positive association with income class, WPR and household size. The variable schooling year has significant and positive association with income class. The values of correlation reveal that age of the member is significant positively associated with income class, household size and agricultural land. The coefficient of variable illiterate is significant and positive associated with poverty, WPR, household size, SC_ST and age of household head.

It can be observed from table 5.5 that the correlation coefficient of income class is significant negatively associated with poverty. The coefficient of WPR has significant and negative association with poverty. The variable household size is significant and negatively correlated with household size and WPR. Moreover, SC_ST has significantly negative association with income class. The estimated coefficient of agricultural land has significant negative correlation with poverty and SC_ST. Further, schooling year is

Table 5.5: Correlation coefficient for variables used in Simultaneous Equation Model

	Poverty	Income_class	WPR	HH_Size	SC_ST	agri_land	schooling_year	Age	illiterate
Poverty	1								
Income_class	-0.57***	1							
WPR	-0.09***	0.09***	1						
HH_Size	0.18***	-0.31***	-0.21***	1					
SC_ST	0.17***	-0.37***	-2E-05	0.01	1				
agri_land	-0.15***	0.24***	0.14***	0.17***	-0.24***	1			
schooling_year	-0.22***	0.45***	-0.12***	-0.14***	-0.27***	-0.02	1		
Age of member	-0.08***	0.10***	-0.05***	0.29***	-0.12***	0.14***	-0.11***	1	
illiterate	0.19***	-0.33***	0.06***	0.14***	0.23***	0.01	-0.82***	0.16***	1

Source: Estimations based on NSS data

Note: *, **, and *** shows the significance level at 10, 5, and 1 percent.

significantly negative associated with poverty, WPR, household size, and SC_ST. In addition, age of the member has significant negative association with poverty, WPR, SC_ST and schooling year. The figures show that illiterate is significant and negatively associated with income class and schooling year.

It can be noticed from table 5.5 that correlation coefficient of SC_ST is not significantly positive associated with household size. The variable illiterate is not significantly positive correlated with agricultural land.

However, the estimated coefficient of SC_ST is not significant negatively associated with WPR. The variable schooling year is not significantly negative correlated with agricultural land.

Table 5.6 shows the results of the triangular base of simultaneous model of employment, income inequality and poverty without the effect of other control variables. As it can be seen that in the case where employment is dependent variable and income inequality and poverty are explanatory variables, if a household moves from poor to non-poor then they have 136.59 per cent chance of more workforce participation than the poor

Table 5.6: Results showing triangular base of Employment, Poverty and Income inequality

Dependent Variable	Employment	Poverty	Income inequality
Intercept	95.68*** (10.74)	0.51*** (0.02)	83.47*** (4.60)
Employment	NA	-0.002*** (0.0006)	-0.31*** (0.0998)
Poverty	-136.59*** (24.24)	NA	-160.001*** (6.97)
Income inequality	-0.73*** (0.15)	-0.005*** (0.0002)	NA
Adjusted R^2	0.11330	0.15411	0.15117
F Statistics	18.86***	284.93***	278.55***
Number of observations	3118	3118	3118

Source: Estimations based on NSS data

Note: *, **, and *** shows the significance level at 10, 5, and 1 percent.

household. Similarly, if the household shifts to higher income class, then their employment will reduce by 0.73 per cent. This is due to high income they prefer leisure to work. The value of F statistics is significant showing a good model fit. In the other case, where poverty is dependent variable and employment and income inequality are independent variables if there is 1 per cent chance of the household to be employed then the poverty will reduce by 0.002 per cent. Similarly, if the household has 1 per cent chance to move to higher income class, then their poverty will reduce by 0.005 per cent. The value of F statistics is significant showing a good model fit. Furthermore, the case where income inequality is dependent variable and employment and poverty are independent variables, the increase in WPR will cause shift to lower income class by 0.31 per cent. Similarly, if the household has 1 per cent chance to move from poor to non-poor household then their chance of moving to higher income class are 160.001 per cent. The value of F statistics is significant showing a good model fit. Therefore, this table shows the three variables are related to each other as each of them impacts the other variables.

Table 5.7: Cross Model Correlation

Cross Model Correlation			
	Poverty	**Inequality**	**Employment**
Poverty	1	0.96	0.98
Inequality		1	0.90
Employment			1

Source: Estimations based on NSS data

Table 5.7 presents the correlation between the three variables. These show there is high degree of positive correlation between poverty and income inequality, poverty and employment, income inequality and poverty, income inequality and employment. Therefore, the model can be proceeded further.

Table 5.8, 5.9 and 5.10 shows the simultaneous equation three stage least square model of the three variables employment, income inequality and poverty with the effect of control variables. It can be seen in table 5.9 that if there is 1 per cent chance of the household to move from poor to non-poor then they have 248.56 per cent chances of more workforce participation than the poor household. Similarly, if the household has 1 per cent chance to move to higher income class, then their employment will reduce by

1.53 per cent. The value of variables age and household size and is not significant but illiteracy has significant impact on employment.

Table 5.8: Results of Parameters Estimates of Dependent Variable Employment

Variable	Parameter	Standard Error
Intercept	150.97***	9.58
Poverty	-248.56***	23.33
Income_class	-1.53***	0.12
Age	-0.06	0.04
HH_Size	0.21	0.55
Illiterate	3.45**	1.41

Source: Estimations based on NSS data
Note: *, **, and *** shows the significance level at 10, 5, and 1 percent.

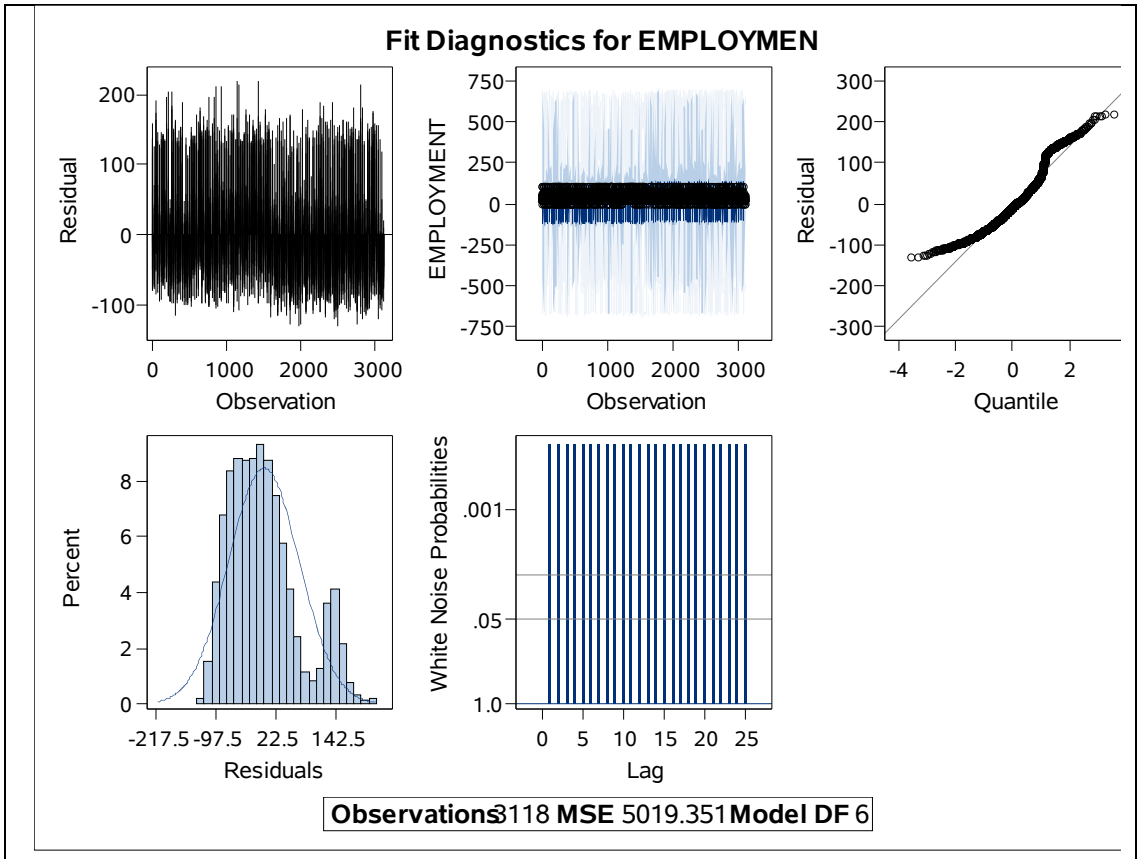

Figure 5.2: Fit Diagnostics of Employment

The figure 5.2 depicts the residuals of the employment follows the assumptions of normality and there are no outliers in the data.

Table 5.9: Results of Parameters estimates of Dependent Variable Poverty

Variable	Parameter	Standard Error
Intercept	0.59***	0.0372
Income_class	-0.006***	0.0003
WPR1	-0.003***	0.0004
HH_Size	0.002	0.0025
SC_ST	-0.001	0.0030

Source: Estimations based on NSS data
Note: *, **, and *** shows the significance level at 10, 5, and 1 percent.

It can be seen in table 5.9 that if there is one per cent chance of the household to be employed then the poverty will reduce by 0.003 per cent. Similarly, if the household has 1 per cent chance to move to higher income class, then their poverty will reduce by

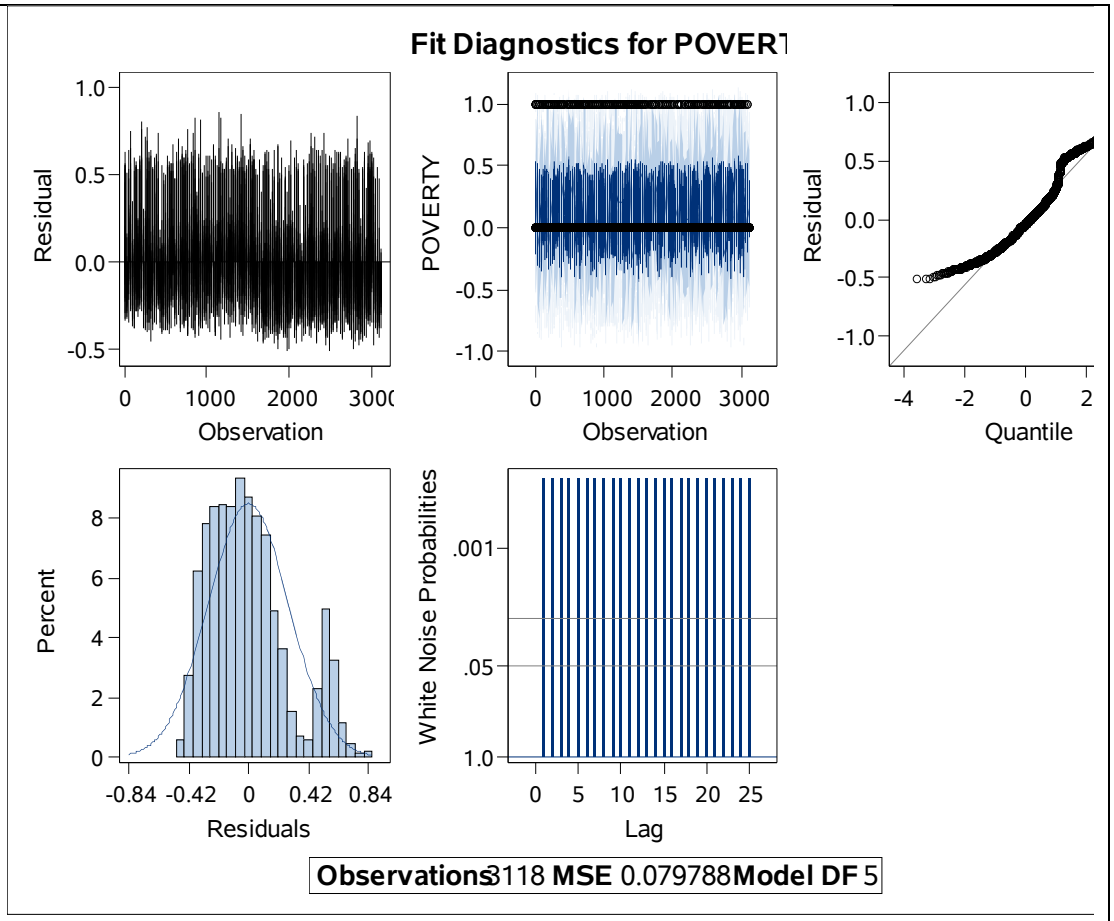

Figure 5.3: Fit Diagnostics of Poverty

0.006 per cent. The value of household size and SC_ST is not significant.

The figure 5.3 depicts the residuals of the poverty follows the assumptions of normality and there are no outliers in the data.

Table 5.10: Results of Parameters Estimates of Dependent Variable Income Inequality

Parameter Estimates		
Variable	**Parameter**	**Standard Error**
Intercept	89.36***	3.88
Poverty	-147.05***	5.44
WPR	-0.50***	0.07
agri_land	1.33	1.24
schooling_year	0.08	0.09
SC_ST	-1.55**	0.73

Source: Estimations based on NSS data
Note: *, **, and *** shows the significance level at 10, 5, and 1 percent.

Table 5.10 shows if there is 1 per cent chance of the household to be employed then their chance of moving to lower income class are 0.50 per cent. Similarly, if the household has 1 per cent chance to move from poor to non-poor household then their chance of moving to higher income class are 147.05 per cent. The value of agricultural land schooling year and is not significant but SC_ST has significant impact on income inequality.

Thus, it depicts even if control variables are taken the triangular relationship of the three variables exists simultaneously.

The figure 5.4 depicts the residuals of the income inequality follows the assumptions of normality and there are no outliers in the data. The residual plot is bell shaped symmetrical, the residual and inequality also lies within range. The quantile of regression shows around the regression line.

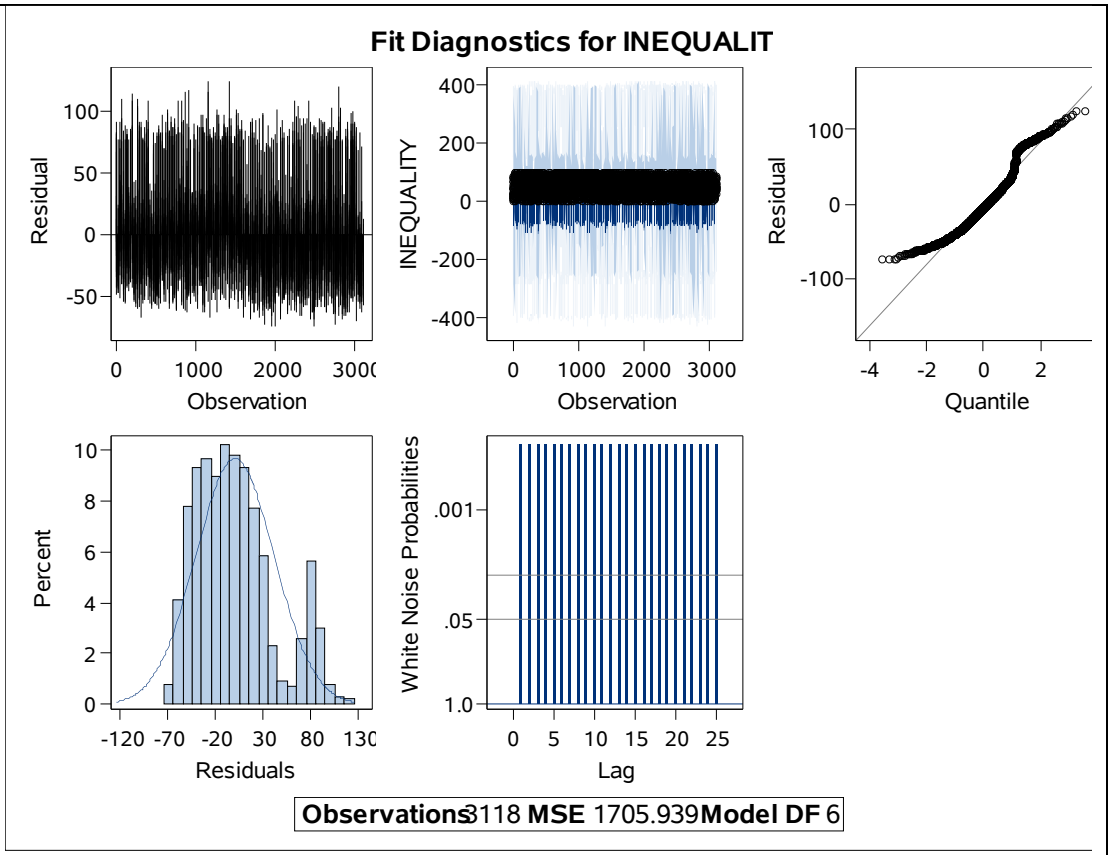

Figure 5.4: Fit Diagnostics of Income Inequality

5.6 Conclusion

Employment, poverty and income inequality are the key elements in the growth process. Bourguignon (2004)[200] mentioned this relationship as poverty growth-inequality triangle. This chapter proceeds with the discussion and analysis of the triangular base of employment-poverty-income inequality discussing each of the variable depending on the other variables by controlling the other variables in Punjab.

The mean difference in poverty incidence between urban casual labour and rural casual labour in agriculture is 0.084 and this difference is positive statistically significant. It is found that there is mean disparity in poverty incidence between urban casual labour and rural casual labour in non-agriculture and this difference is positive significant. There is mean difference in the poverty between rural casual labour in agriculture and urban

[200] Bourguignon, F. (2004). The poverty-growth-inequality triangle. *Indian Council for Research on International Economic Relations,* New Delhi. Working paper No. 125. Retrieved from https://www.econstor.eu/bitstream/10419/176147/1/icrier-wp-125.pdf.

casual labour; rural casual labour in non-agriculture and urban casual labour and this difference is negatively significant. The value of F statistics is significant showing best fit model. The mean difference of WPR between urban casual labour and rural casual labour in non-agriculture; rural casual labour in agriculture and rural casual labour in non-agriculture is positively statistically significant. It implies there is difference in the mean between WPR of these household type. Furthermore, there is mean difference in WPR between urban casual labour and rural casual labour in agriculture; urban casual labour and rural casual labour in non-agriculture and this difference is negatively significant. The value of F statistics is significant showing best fit model.

To consider the relationship of employment, poverty and income inequality forming a triangular base more than one regression equation is needed where set of variables is lumped that can be determined simultaneously. Such regression models in which the relationship of more than one variable is studied are known as simultaneous equation regression model.

The estimated coefficient of WPR is significantly positive associated with income class, household size; SC_ST is significantly positive associated with poverty; agricultural land is significant and positive associated with income class, WPR and household size; schooling year has significant and positive association with income class; age of the member shows positive association and with income class and is significant, household size and agricultural land; illiterate is significantly positive associated with poverty, WPR, household size, SC_ST and age of household head. The correlation coefficient of income class is significant and negatively associated with poverty; WPR is significantly negative associated with poverty; household size is significantly negative associated with household size and WPR; SC_ST is significantly negative associated with income class; agricultural land is significant and negative associated with poverty and SC_ST; schooling year is significant and has negative association with poverty, WPR, household size, and SC_ST; age of the member is significant and negative associated with poverty, WPR, SC_ST and schooling year; illiterate is significant and negative associated with income class and schooling year.

The results of the triangular base of simultaneous model of employment, poverty and income inequality without the effect of other control variables shows the three variables are related to each other as each of them impacts the other variables. There is

positive high degree of correlation between poverty and income inequality, poverty and employment, income inequality and poverty, income inequality and employment.

The results of simultaneous equation three stage least square model of the three variables employment, income inequality and poverty with the effect of control variables also have been given. if there is 1 per cent chance of the household to move from poor to non-poor then they have 248.56 per cent chances of more workforce participation than the poor household. Similarly, if the household has 1 per cent chance to move to higher income class, then their employment will reduce by 1.53 per cent. The value of variables age and household size and is not significant but illiteracy has significant impact on employment. if there is one per cent chance of the household to be employed then the poverty will reduce by 0.003 per cent. Similarly, if the household has 1 per cent chance to move to higher income class, then their poverty will reduce by 0.006 per cent. if there is 1 per cent chance of the household to be employed then their chance of moving to lower income class are 0.50 per cent. Similarly, if the household has 1 per cent chance to move from poor to non-poor household then their chance of moving to higher income class are 147.05 per cent. The value of agricultural land and schooling year and is not significant but SC_ST has significant impact on income inequality. Thus, it depicts even if control variables are taken the triangular relationship of the three variables exists simultaneously.

CHAPTER VI

CONCLUSION AND POLICY RECOMMENDATION

6.1 Introduction

Employment, poverty and income inequality have come out to form a triangular base each of which is associated to one another. The issue comes to shed light on how growth leads to employment and how new and better job opportunities translates into reducing the incidence of poverty. The essential ingredient between poverty and income inequality is the employment. It brings growth with equity in distribution of income and also fights with the issue of poverty. The issue of "working poor" has been observed in many developing countries where people have to live and work on less than $2 per day. Employment, in such economies, becomes the heart of various policies of global agenda where both quality and quantity of work has to be improved.

The distribution of income enlarges the inequality between the persons of different strata in a country. This occurs because the lower income class in the society had to work more and they are being less paid for their jobs. These generally include the casual workers in agriculture and non-agriculture activities and self-employed in rural areas. In contrast, the higher income class in the society work less and they are being paid more for their jobs. They prefer leisure instead of work when their income is high. This causes widening the gap between the income of the lowest and the highest income group. Alongside, when the employment increases there is reduction in poverty in the country. This occurs because some households living below the threshold level move above the threshold level while others remain below the threshold poverty line. They generally include the casual workers and self-employed who are poor. Therefore, there is reduction in poverty and not complete eradication of poverty. This exists due to the working poor in the economy. Thus, increase in employment reduces the poverty but increases the income inequality in the country.

According to the World Development Indicators, the number of poor at $1.90 a day (2011 PPP) were 734.5 million in 2015 in the World and 382.5 million in 2009 in India. The income share held by the lowest 10 per cent was 3.5 per cent and of highest 10 per cent was 30.0 per cent in 2009 in India. The WPR of combined rural and urban areas of working age group 15-64 was 66.87 per cent in World and 54.19 per cent in India

in 2019. However, the gross domestic annual growth rate was 3.1 per cent in World and 1.1 per cent in India in 2017 and 3.0 per cent in World and 1.1 per cent in India in 2018. The framework of MDGs in India includes eradication of extreme poverty and hunger as the first and foremost aim of development agenda. In addition, it stressed on providing the productive employment opportunities and decent work to the people.

Kuznets' inverted U-curve of increasing and then decreasing inequality, however, does not hold true in many economies. The hypothesis implies that as the economy industrializes, there is shift of rural labourers to the urban areas for better paid jobs. This results into increasing the income gap of the households. But this inequality decreases when a certain level of development is reached. Thus, increase in per capita income decreases the economic inequality. However, the economy of Punjab is experiencing the increasing income inequality. The people with high paid jobs prefer leisure to work causing reduction in workforce participation rate. This widens the gap of inequalities in the income in Punjab. The lower income class has to work more with low paid jobs. But the high share income group class do not work due to the income from the assets they receive without work. This is the main cause of reduction in employment in the high share income class. There has not been eradication of poverty although there is reduction in poverty due to low paid jobs for people living below the poverty line. They have been deprived of the benefits of growth attained due to increase in employment by the government as well as the poverty alleviation programmes do not reach to the targeted people in Punjab. Thus, one can get the picture that the three issues viz., employment, poverty and income inequality are interrelated to each other in Punjab. The progress of one proceeds with solving the problem of the other two in Punjab.

6.2 Main findings

- The findings reveal that in Punjab LFPR was 40.05 per cent, WPR was 39.1 per cent proportion unemployed was 0.95 per cent and unemployment rate was 2.37 per cent and not in labour force was 59.95 per cent during 2011-12. But district analysis conveys that there were some districts which were having figures higher than the state level which were actually dragging the figures of Punjab and many districts were having estimates which was lower than the state level. District Mansa has the highest LFPR of 50.43 per cent and highest WPR of 50.21 per cent, lowest not in labour force of 49.57 per cent in Punjab level. However, district

Tarn Taran was found to have lowest LFPR of 33.12 per cent and highest not in labour force of 66.88 per cent. District Rupnagar has the lowest WPR of 32.2 per cent, highest proportion unemployed of 2.62 per cent, highest unemployment rate of 7.52 per cent. Ludhiana has the lowest proportion unemployed of 0.12 per cent and lowest unemployment rate of 0.32 per cent.

- There is marginal rise in the growth rate of self-employed between 2004-05 to 2011-12. Interestingly, the findings reveal some rise in the growth rate among the regular employed as compared to the self-employed. However, there was large rise in the growth rate of casual workers which was 3.07 per cent. In addition, there was decline in the others employed whose growth rate was found to be negative. Furthermore, a large proportion of the people is found to be not working due to which the growth rate for this proportion of population (2.44 per cent) is higher than the working population (0.99 per cent). Although there is rise in the growth rate of workers but there is marginal decline in the WPR of workers during 2004-05 and 2011-12.
- Majority of the districts have the high growth rate between 4-6 per cent in rural sector but out of those districts merely few of the districts have low consumption expenditure of less than ₹ 1997 per month and most of the districts have moderate and high consumption expenditure. On the contrary, in the urban areas, many districts have low growth rate but their consumption expenditure is either moderate or high, i.e., it lies between ₹ 2472 to ₹ 2835 per month or more than ₹ 2835 per month. Thus, growth rate determines the change in living standard and the behaviour of their consumption expenditure.
- Majority of the districts in Punjab converge in terms of MPCE with the negative growth. It implies when growth rate in districts declines below the growth rate of Punjab, the districts are able to maintain their consumption expenditures showing the convergence in both urban and rural districts in Punjab. Thus, the growth rate implies the districts are catching up to the advanced districts, but it does not ensure that the standard of living being less or more in the districts. Therefore, to sum up, the regions which have lagged behind have high consumption expenditure than the advanced regions. So, they are catching up or converging due to high growth.
- There is decline in poverty in north region of Punjab as well as the south west region where the poverty has declined from high to moderate and low in many

districts of Punjab. In the south east part of the state, the poverty rate has declined from moderate to low during the period 2004-05 to 2011-12 in combined urban and rural areas in Punjab. This is due to the fact that the declining share of agriculture and rising share of tertiary and secondary sector in the national income. There has been relatively slower growth of agricultural sector vis-a-vis the non-agriculture sector.

- The poverty rate of Punjab was 21.5 per cent in 2004-05 and 8.23 per cent in 2011-12. During 2004-05, district Muktsar was having the highest poverty rate of 47.6 per cent and district Nawanshahr had the lowest poverty rate of 6.28 per cent. During 2011-12, district Barnala had the highest poverty rate of 17.53 per cent and district Mansa had the lowest poverty rate of 2.57 per cent.
- The Gini coefficient of Punjab was 0.32 in 2004-05 and 0.30 in 2011-12. During 2004-05, district Fatehgarh Sahib had the Gini coefficient equal to the Punjab, that is, 0.32. District Rupnagar has the highest Gini coefficient of 0.36. However, districts Amritsar, Nawanshahr and Tarn Taran has the lowest Gini coefficient of 0.23 during 2004-05.
- During 2011-12, district Mansa has the Gini coefficient equal to the Punjab, that is, 0.30. District Jalandhar has the highest Gini coefficient of 0.38. However, districts Gurdaspur and Muktsar has the lowest Gini coefficient of 0.23. This difference has already been depicted in the difference in mean consumption expenditure of different household types in which employment status determines the standard of living of the people.
- During 2011-12, no district had high poverty although there are districts with high inequality, that is, Faridkot, Moga, Bathinda, Patiala, SAS Nagar and Jalandhar. There is moderate level of poverty in three districts Tarn Taran, Jalandhar, Barnala in which Barnala and Tarn Taran have low inequality. Majority of the districts have low poverty in 2011-12 so that it can be said that the poverty rate is declining in many districts in Punjab as compared to 2004-05. The districts with low poverty were Firozpur, Muktsar, Bathinda, Faridkot, Moga, Mansa, Sangrur, Patiala, Faridkot, Ludhiana, Fatehgarh Sahib, SAS Nagar, Rupnagar, Nawanshahr, Kapurthala, Hoshiarpur, Gurdaspur and Amritsar.
- The estimated values of coefficient of employment status is significant and positively associated with age group, urban self-employed in agriculture, casual employed in agriculture in rural sector, casual employed in non-agriculture in

rural sector, urban casual employed, other urban employed, Sikhs, SCs, technical education, illiterate, below primary and primary education. Further, employment status is significantly negatively associated with sector, gender, other rural employed, urban self-employed, Hindus, other social group, education institute, schooling year, middle education, secondary education, higher secondary education. However, employment status is not significantly positively associated with rural self-employed in non-agriculture, STs and graduate, diploma, post graduate and above level of education. In addition, employment status is not significantly negatively associated with household size, urban regular employed, other religion and OBC.

- It has been analysed that the household poverty is significantly positively associated with urban sector, household size, Hindus, casual employed, SC and OBC. However, household poverty is significantly negatively associated with age, rural sector, Sikhs, self-employed, other employed, other social group and schooling year. It was found that household poverty is not significantly positively associated with other religion and ST. The estimated coefficient of household poverty is not significantly negative associated with regular employed and regular earner.
- The findings reveal the coefficient of income class is significant and positively correlated with urban sector, age, Sikhs, self-employed, regular employed, other employed, other social group, regular earner and schooling year. The analysis show that the income class is significantly positively associated with rural sector, household size, Hindus, other religion, casual employed and ST. However, the income class is significantly negatively associated with rural sector, household size, Hindus, other religion, casual employed. The variable income class is not significantly negative associated with ST.
- The different variables which positively significantly affect employment are the gender, urban casual employed, education from private institute, middle education, secondary education and higher secondary education. Furthermore, urban sector, age, self-employed in agriculture in rural sector and self-employed in non-agriculture in rural sector, casual employed in agriculture and non-agriculture in rural sector, SC caste and technical education have negative significant effect on employment.

- The findings of the determinants of poverty reveal that variables which affect poverty positive significantly were Sikhs religion, land cultivated, secondary education. However, higher secondary education was having positive but not significant effect on poverty. Variables which have negative significant effect on poverty were urban sector, casual employed, SC, OBC, illiterate, middle education and below primary and primary education.
- The results of the regression reveal that the variables urban sector, Sikhs religion, regular earner, whether owns land, land cultivated, gender and age have positive significant effect on income inequality. Furthermore, self-employed, regular employed, casual employed, SC, OBC, below primary and primary education, not literate, middle education, secondary education and higher secondary education were having negative significant effect on income inequality. However, Hindus religion have positive but not significant effect on inequality. ST caste have negative but not significant effect on income inequality.
- There is highest incidence of poverty of 25.1 per cent which pertains to the rural casual labour in non-agriculture with WPR of 42.1 per cent and average MPCE of ₹1506 per month followed by urban casual labour with poverty rate of 24.4 per cent, WPR of 52.2 per cent and average MPCE of ₹1802 per month; rural casual labour in agriculture with poverty rate of 20.9 per cent, WPR of 46.5 per cent and average MPCE of ₹1416 per month. This shows that casual labour in urban and rural sector are more prone to be poor with low standard of living. The incidence of poverty of all other household type is less with better standard of living.
- The mean difference in poverty incidence between urban casual labour and rural casual labour in agriculture has been found as 0.084 which is positively significant. It implies there is difference in the mean between incidence of poverty of these household types. It is found that there is average difference in poverty incidence between urban casual labour and rural casual labour in non-agriculture and this difference is positively statistically significant. Further, there is difference in mean in the poverty between rural casual labour in agriculture and urban casual labour; rural casual labour in non-agriculture and urban casual labour and this difference is negative significant.
- The mean difference of WPR between urban casual labour and rural casual labour in non-agriculture; casual labour in agriculture in rural sector and casual labour

in non-agriculture in rural sector is positively statistically significant. It implies there is difference in the mean between WPR of these household type. There is mean difference in WPR between rural casual labour in agriculture and urban casual labour; rural casual labour in non-agriculture and urban casual labour and this distinction is negatively statistically significant.

- The findings of correlation show that the WPR is significantly positively associated with income class. Moreover, the correlation coefficient of income class is significant and negative associated with poverty. Further, WPR is significantly negative associated with poverty.
- There is negative significant impact of poverty and income inequality on employment, negative and significant impact of employment and income inequality on poverty and negative significant effect of employment and poverty on income inequality without the effect of other control variables.
- These show there is high positive correlation between poverty and income inequality, poverty and employment, income inequality and poverty, income inequality and employment.
- The results of simultaneous three stage least square model shows that considering the effect of other control variables there has been negative significant effect of poverty and income inequality on employment. However, being illiterate has the positive significant effect on employment. Age has the negative non-significant and household size has the positive non-significant effect on employment.
- The analysis of simultaneous model further reveals that including the effect of other variables, it has been found that income inequality and employment have the negative and significant impact on poverty. However, household size has the positive and non-significant and scheduled caste scheduled tribe has the negative non-significant effect on poverty.
- The model further gives the negative and significant effect of poverty, employment and scheduled caste scheduled tribe on income inequality. However, agricultural land and schooling year has the positive non-significant effect on income inequality.
- There exists a strong triangular relation between employment, poverty and income inequality with or without the other variables in the analysis.

6.3 Policy Recommendation

The analysis of the economy of Punjab during 2004-05 and 2011-12 points to the low LFPR. This is due to the declining LFPR of females and lack of the decent and productive jobs for the entrants in the labour market. A major concern has been identified for those who leave agriculture sector. Child labour, casualisation of workers, youth unemployment, low standard of living with high poverty and income inequality have been identified in Punjab. These issues need the policy intervention. The various suggestions for the above findings are given below:

- The government should attack on the conservative attitude towards females which restrict them from entering the labour force. Provision of childcare facilities and proper functioning of such facilities will ensure the increase in female participation in labour. Guarantee of the job and paid maternity leave will positively affect the female participating in the labour force. The different schemes should be covered in the informal sector also which covers a large part of work force.
- Educated youth unemployment is also one of the major concerns in Punjab. As the education level of the labour force is improving with time, the educated labour force looks for the work which is compatible with their skills and education. A suitable policy is required for the skilled workers to get high tech jobs. Pradhan Mantri Kaushal Vikas Yojana is one of the such programme for the training and skill development of the youth. Punjab Skill Development mission provides the training at each district. The rural poor youth of the age group 15-35 years are eligible to get training at various centres managed by private training partners. This scheme can prove to be very useful for the demographic dividend of Punjab. Education should be improved with general education programmes be modified to technical education to produce skilled workers in rural and urban areas across districts.
- The data of composition of age group of the workforce shows the existence of child labour in Punjab. Suitable policy measures should be undertaken by the government to strictly restrict the child labour in Punjab and providing the education to the children.
- The casual jobs in Punjab are not very productive and moreover they are low paid. The rural and urban casual labour has the high incidence of poverty with less per

capita consumption expenditure. This means the quality of jobs in Punjab is deteriorating which also increases the inequality. There should be sufficient wages to the labour in the casual jobs in Punjab. The minimum wages of the workers be increased under MNREGA. National Food for Work Programme intensifies the wage employment and provides foodgrains in backward districts with unskilled work. Jawahar Rozgar Yojana was replaced by Jawahar Gram Samridhi Yojana merged with Sampoorna Gramin Rozgar Yojana for creating the infrastructure in rural areas and improving the standard of living of the people.

- As the districts with high consumption expenditure are catching up the advanced districts with growth rate being negative, the government should aim at improving the standard of living of the people in Punjab providing the necessary food items at fair price shops. Twenty Point Programme was started by the government to eradicate the poverty and improve the standard of living of the people. Government should enhance such programmes which aim at improving the living standard of the people.
- The selection of the target group for the benefits received from the government should be done in impartial way and there should be non-interference of the political hand in it.
- As the results point that education significantly affect the employment so more of secondary and higher secondary education should be provided along with skill development for decent jobs.
- The education policy should be reviewed by the government which could help the downtrodden section of society acting as a means for their development.
- The government should provide more regular jobs instead of casual work and policies be formulated to increase the per capita income of the state. Self-employment to the educated unemployed youth was started to provide assistance for self-employment to the youth. Such programmes will encourage the casual workers for self-employment and enhance their incomes and reduce income inequality. Government should focus on enhancing such programme in Punjab.
- Special policies for different social and religion groups who are lagging behind must be formulated and implemented in a proper way. MNREGA provides the security of livelihood to people in the rural areas in Punjab by providing atleast 100 days wage employment to the workers. The government should target the weaker sections including SC and OBC by providing wage employment ensuring

them minimum wages which will reduce income inequality among the different groups in the society.

- There are spatial differences in the poverty across the districts and among the sections of different groups in Punjab. There is need to consider the local causes of poverty and inequality in those districts.
- Agro-based industries should be started in the rural areas to solve the problem of unemployment, poverty and inequality.

6.4 Scope for future research

1. The current study focusses on exploring the relationship between employment, poverty and income inequality in Punjab. The future researchers can make use of the new data sets to generate new evidence for the supporting relationship empirically tested in this study.

2. The study can further be done for whole nation to know whether the results replicates for the trends and determinants and three-way relationship exists in the same way or not.

3. The findings of the study may be validated taking the analysis of relationship suitably in the form of primary survey. In that case, other variables such as political, cultural and infrastructural can be considered. The results will become more robust.

4. The study can be extended to the multidimensional aspects of poverty and inequality.

5. The methodology as that given by Rangarajan can be taken and the results of the current study be compared with that of the new one to understand the differences.

6. The study can be further extended to study the relationship of these variables post covid-19. As the economy is experiencing a downfall, the results are unpredictable in the current scenario.

7. The status of different categories of the workers with regard to poverty and inequality be studied in the post covid-19 scenario.

The present thesis will, however, serve as a useful benchmark study for all the above extensions.

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