A STUDY ON CONSUMPTION PATTERN AND INTENSITY OF POVERTY OF THE INFORMAL WORKERS OF INDIA

THESIS SUBMITTED FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY (ARTS)

OF

JADAVPUR UNIVERSITY

2023

BY

RAJYASRI ROY

DEPARTMENT OF ECONOMICS

JADAVPUR UNIVERSITY, KOLKATA-700032

WEST BENGAL, INDIA

Certified that the Thesis entitled

'A STUDY ON CONSUMPTION PATTERN AND INTENSITY OF POVERTY OF THE INFORMAL WORKERS OF INDIA' submitted by me for the award of the Degree of Doctor of Philosophy in Arts at Jadavpur University is based upon my work carried out under the Supervision of Professor Amit Kundu, Department of Economics, Jadavpur University, and that neither this thesis nor any part of it has been submitted before for any degree or diploma anywhere/elsewhere.

Countersigned by the
Supervisor: **Candidate:**
Dated: **Dated:**

Certified that the Thesis entitled

"A STUDY ON CONSUMPTION PATTERN AND INTENSITY OF POVERTY OF THE INFORMAL WORKERS OF INDIA"

submitted by me for the award of the Degree of Doctor of Philosophy in Arts at Jadavpur University is based upon my work carried out under the Supervision of Prof. Amit Kundu, Department of Economics, Jadavpur University

And that neither this thesis nor any part of it has been submitted before for any degree or diploma anywhere / elsewhere.

Countersigned by the Supervisor : Prof. Amit Kundu
Dated : 9/10/2023

PROFESSOR
DEPARTMENT OF ECONOMICS
JADAVPUR UNIVERSITY
KOLKATA - 700 032

Candidate : Rajasri Roy
Dated : 09/10/2023

Acknowledgement

I would like to express my sincere gratitude to all those who have contributed to the successful completion of this thesis. First, I would like to express my heartfelt appreciation toward Prof. Amit Kundu, Department of Economics, Jadavpur University for his valuable guidance, unwavering support and insightful feedback throughout my research work. I remain heavily indebted to him for his constant encouragement and belief in my abilities which serve as a driving force towards my work.

I would like to express my gratitude towards Prof. Panchanan Das, a member of my Research Advisory Committee and Head of the Department of Economics, at University of Calcutta for devoting his valuable time and guidance to facilitate my work. I am also indebted to prof. Saikat Sinha Roy, another member of Research Advisory Committee and Head of the Department of Economics, at Jadavpur University for providing his valuable inputs in my research work. I am also immensely grateful to Prof. Chayanika Mitra, faculty member of St Xavier's University and an alumni of Presidency University for helping me selflessly while extracting NSSO data. I would also like to thank the Department of Economics, Jadavpur University for allowing me to carry out my Ph.D. Programme.

Last, but not least, my special thanks are extended to my mother, father and husband without their inspiration and moral support, this thesis could not have been completed. I would like to specially thank my sons whom I have deprived a lot for carrying out the research work. Additionally, I am also indebted to all my colleagues from department of Commerce and Economics of Sivanath Sastri College for encouraging and inspiring me all the time.

RAJYASRI ROY
DEPARTMENT OF ECONOMICS
JADAVPUR UNIVERSITY,
KOLKATA-700032

Executive Summary

India being an over-populated country with a hefty amount of surplus labour, the problem of unemployment and creating employment opportunities has been a major challenge. However, the problem of unemployment is not only limited to failure to find new jobs but also to achieving better quality of employment. A large number of our population who are unable to find employment opportunities are forced to join substandard jobs with worse payments and long working hours. Hence more than 90 percent of our workers are forced to work as informal workers. The period of economic reforms further added fuel to the fire by initiating privatisation of the public enterprises and opening up of domestic economy to the rest of the world. Facing competition with the rest of the world, domestic firms initiated cost-cutting strategy by laying off workers. Besides, they also started employing casual and contractual workers which was again a part of cost reduction strategy. Hence, the informalisation of employment enhanced after the period of economic reforms.

In this research work, we have considered those workers as informal workers who are engaged in remunerative works (i.e. both self-employment and wage employment) that is not registered, regulated or protected by existing legal or regulatory frameworks. Besides, informal workers hardly get secure employment contracts, work benefits, social protection or workers' representation(17th ICLS at the ILO, 2003). The concept of informal sector must be differentiated from the concept of informal employment. Informal sector is a group of production units comprising of unincorporated enterprises owned by households, including informal own-account enterprises and enterprises of informal employers (typically small and non-registered enterprises). (15th ICLS at the ILO, 2000). Therefore, informal sector employment indicates all jobs in the informal sector enterprises irrespective of the fact that in which status they are employed in and whether they are attached in the main and secondary job. According to many scholars and economic researchers (Unni, 2005; Sahoo et al., 2015), informal workers are vastly heterogeneous. Therefore, in this research paper, informal workers are broadly classified into three major types----

Self Employed Workers

Employees of Informal Sector

Informal Workers in the Formal Sector

In this research work, our target has been to look into the economic situation of the informal workers by investigating their poverty and wage inequality. Besides, we have also looked into the consumer behaviour of the informal workers to understand the pattern of demand among them. Last but not the least, the expenditure on health and education have also been estimated. Since informal workers are forced to spend longer working hours in unhealthy environment, it is very important to understand how much they spend in health. Again, spending on education has been a very important indicator of the workers' efficiency and skill. So, we have investigated how much they have spent in education.

In the fourth chapter we have tried to investigate the consumption nature of the informal workers as well as we have tried to validate Engel's law among them. Since Indian labour market comprises most of informal workers, it is very important to investigate the nature of consumption among informal workers and determine the budget share among them. The Working-Leser model is used to identify the necessary and luxury goods among Indian informal workers. The budget share of food and non-food items among them will help us to validate Engel's law. Informal workers are divided into three categories: self-employed workers, employees in the informal sector, and informal employees in the formal sector. Using the 68th round of the National Sample Survey data on Indian Employment and Unemployment for 2011–2012, we find food items, addictive items (e.g., alcohol and tobacco products), entertainment items, fuel, lights, and other non-food items are necessary, while health, education, jewellery and personal transport are luxury items for all types of informal workers in India. Engel's law is therefore validated among the informal workers. The policy recommendation is that the government needs to spend more on health and education for informal workers. Spending more on these would not only improve the skills and efficiency of workers but also reduce their vulnerability.

In the fifth chapter, we tried to analyse the incidence of poverty as well as the acuteness of poverty among the informal workers of India. In this chapter, we have used 68^{th} round National Sample Survey of India data on Employment and Unemployment for 2011-2012 and the Periodic Labour Force Survey for the period 2018-2019 to find out the determining factors of incidence of poverty as well as the acuteness of poverty among them. It is shown that the percentage of poverty has been lowest among the self-employed workers and highest among the informal workers in the formal sector in the rural area, while in the urban area, the result is just the opposite during the former period. On the other hand, during the latter period, the percentages of the poverty population have been the lowest for all three

types of informal workers. Although percentage of poverty-stricken workers has been higher in the rural areas compared to that of the urban, the acuteness of poverty has been the other way around. The determining factors of the incidence of poverty and acuteness of poverty among the informal workers are general educational qualification, social groups, and sectors. These determining factors can be considered important policy variables to reduce the incidence and acuteness of poverty among the informal workers of India. Moreover, our analysis suggests that the percentage of the poverty population has definitely reduced over the years.

In the sixth chapter, we have tried to put some light on the recent trends of wage-income and its inequality among the informal workers in India. Using the 68th round of National Sample Survey data on Employment and Unemployment for 2011-2012 and the Periodic Labour Force Survey for the years 2018-2019 and 2019-2020 we find that there is a gradual increase in employment share among the informal workers in the Indian labour market. Mean nominal wage income has increased, while real mean wage income has decreased in 2018-19 as compared with 2011-12. It is observed that wage income inequality has been higher in the rural sector in the initial period of the decade while the same is higher in the urban sector during the latter period. Out of the overall estimate of the Gini index, the contribution of the overlap index has been the highest signifying that the factors determining wage inequality have been negligible. It is proved that a significant enhancement of wage income inequality was observed among all types of informal workers between 2011-12 and 2018-19. The enhancement is maximum among urban female informal workers. But between 2018-19 and 2019-20, the enhancement of wage-income inequality is observed only among urban male and female informal workers but no change is observed among rural male and female informal workers.

In seventh chapter we have tried to find out the extent of out-of-pocket health expenditure among the informal workers and tried to figure out whether health expenditure has always been catastrophic or not. In the scenario of rapid proliferation of informal employment in India during the post-reform period, out-of-pocket healthcare payments are the principal source of healthcare financing. In this chapter, we have also tried to investigate determinants of health expenditures across heterogeneous groups of informal workers in India on the basis of the 68th round of National Sample Survey data on Employment and Unemployment for 2011-2012. Across types, statuses and location of informal workers, mean health expenditure has been highest among “employees of informal sectors”, “regular salaried

workers" and "workers working in their own office" respectively. The determining factors for the health expenditure are social group, household head and number of dependencies. It is also found out that health expenditure is not always catastrophic among informal workers. The result obtained is that health expenditure has been catastrophic for almost 30 per cent of informal workers across various heterogeneous groups. Using the probit model, the influencing factors responsible for the incidence of catastrophic health expenditure are age and sex of the household head, number of senior citizens in the family, possession of assets and expenditure on fuel and electricity.

In eighth chapter we have tried to figure out some relevant public policies which are required for accumulation of human capital among informal worker households of India. Since informal workers occupy the lion's share of the total Indian labour force even today, the major percentage of households depend on informal work lying below the poverty line and consider expenditure for investment in human capital as a luxury item. Lack of proper investment in human capital for their children in their childhood again makes those children informal workers again in their adulthood. This paper on the basis of NSSO's 68^{th} round survey has identified a few public policies necessary for the accumulation of human capital among the children of the informal worker households which can enhance the proportion of formal workers out of the total Indian labour force with better wages in future. Using Heckman's Two-step model it is proved that public policies like Jana Dhan Yojana, offering fuel and electricity at subsidized rates, efficient distribution of nutritious food through the public distribution system, offering cycles to the students to reduce their private transport costs, and sufficient incentive-based scholarship arrangements during higher education are very much necessary to encourage the informal workers to invest in human capital accumulation for their next generation. Besides that awareness programmes about the importance of investment in human capital for their children's benefit from the household level should be arranged for the parents depending on informal work. This is required for those parents not to think of investment in human capital as a merit good.

Contents Page No

List of Tables

Chapter One: Introduction

Chapter 1

Introduction

1.1 Brief Introduction

It is a well-known fact that India is an overpopulated country with surplus labour. Accordingly, the problem of unemployment is the crux of economic development. However, the issue of unemployment is not only reflected in the percentages of

involuntary unemployed youth in our country but also in the quality of employment opportunity that is being created. Remaining unemployed and sitting at home idle is a luxurious thing for a large number of the youth population of our country. The reason is that these youth population coming from poor backgrounds having hardly any assets and higher education are forced to get attached to any job that comes in their way with the objective of running their family. Thus, the lion's share (more than 90 percent) of the the Indian total labour force depends on informal employment to earn their living (Sengupta et al.,2009).

Informalisation of employment increased during the post-reform period mainly because of structural transformation in the domestic economy (Kochhar et al. (2006), Islam (2008), Papola and Sahu (2012), Krishna (2015)). The structural transformation was undoubtedly new economic policies that was initiated during July 1991 in India. Economic reforms included libearlisation, privation as well as globalization. During this period Indian economy was opened up for the rest of the world and accordingly import substitution industrialization strategy was disrupted. On the one hand, the Indian economy was exposed to a large market with the enormous increase in demand from all the parts of the world. This definitely helped the big farms and the skilled labourers to enhance their income earning possibilities. On the other hand, small, marginal and nascent farms suffered enormous competition from the rest of the world. So, the prior objective of these firms was to reduce costs and hence enhance their profit margin. With this motto, they started laying off unskilled workers. In this scenario, unskilled, semi-skilled workers were the most vulnerable. As a part of the cost-cutting strategy, these firms reduced formal regular salaried employment and started employing informal jobs (Siggel,2010). As a result, casual and contractual employment is enhanced with hardly any social security benefits and proper job contract. Process of informalization of employment was initiated during the time which undoubtedly worsened the quality of work among the informal workers (Mehrotra et al.,2013). Hence, firms started employing both formal and informal workers within their enterprise. Unskilled workers are mostly employed as informal workers (Ramaswamy, 2008). Theprocess of privatization of the loss-making public enterprises added much more fuel to the fire in the quality of work among the informal workers. Not only that, informal jobs are less remunerative and stable with unacceptable working conditions and unfavorable job opportunities compared to the formal workers (Dickens et al.,(1985); Taubman et al., (1986)).

1.2 Definition of informal workers

At the very beginning we must properly differentiate the concepts of informal sector and informal employment. Informal sector is a group of production units comprising of unincorporated enterprises owned by households, including informal own-account enterprises and enterprises of informal employers (typically small and non-registered enterprises). (15th ICLS at the ILO, 2000). Therefore, informal sector employment indicates all jobs in the informal sector enterprises irrespective of the fact that in which status they are employed in and whether they are attached in the main and secondary job. Informal employment on the other hand includes all the informal jobs in both the formal as well as informal sector enterprises and households (17th ICLS at the ILO, 2003). In other words, informal employment is defined as all remunerative work (i.e. both self-employment and wage employment) that is not registered, regulated or protected by existing legal or regulatory frameworks.Besides, informal workers hardly get secure employment contracts, work benefits, social protection or workers' representation.

According to the National Commission on Employment in the Unorganised Sector (NCEUS,2007)[1], it is defined that "unorganized workers consist of those working in the unorganized enterprises or households, excluding regular workers with social security benefits, and the workers in the formal sector without any employment/ social security benefits provided by the employers".

Based on the above definitions given by the experts, we can come to the conclusion that the term "informal" and "unorganized" have been used interchangeably. Informal workers are attached in either of both the formal sector and informal sector without getting any social security benefit. However, the indicators of social security benefit vary a lot across various economic literature. Insurance facilities, provident fund contributions or gratuity have been considered as a proxy of social security benefit(NCEUS,2007; Sastri, 2004). However, unavailability of paid leave (Unni et al, 2003) or a written job contract indicates informality of employment. In order to make our analysis simple we have indicated informality on the basis of availability of social security benefit. In other words, those workers are considered as informal who

[1]GOI, (2007).

are attached to either of formal or informal sector but are hardly getting any one or all of the following:

1. Provident fund/ Pension (including GPF, CPF, PPF etc.)
2. Gratuity,
3. Health Benefits and Maternity Benefits

Thus, an unorganized/informal worker not only includes informal workers of both the formal as well as informal sectors (unfortunate enough to have been denied any kind of social security benefit), but also it consists of self-employed workers as well (Unorganized Workers' Social Security Act, 2008). Henceforth, in our thesis we have looked into the details of these three types of informal workers. Hence, these three types of informal workers are classified as

1. Self-employed workers (SE)
2. Informal workers of the formal sector (IEFS)
3. Employees of informal sector (EIS)

1.3 **Chapter Planning**

This thesis has been structured in the following manner: Chapter 2 provides a brief discussion about the existing literature about the informal employment in Indian economy as well as international economy. We have provided several literatures relating to the incidence of informalization of Indian economy. We have also provided some literature which have discussed about an important issue that whether informal employment is joined on the basis of compulsion or out of choice. Chapter 3 focuses on the gap in the existing literature that our study is expected to fill up. Besides,objective of the study as well as our research methodology are also explained properly in this Chapter. Chapter 4will deal with the consumption nature of the informal workers in India. We have tried to prove Engel's law among different types of informal workers of India. In this chapter we have tried to focus on budget share of the food and non-food items among the formal and informal workers of India. We have tried to confirm whether Engel's law is applicable in determining budget share of the food and non-food items among them. That is, we have tried to investigate whether informal workers have tried to spend higher amount share of their income in the consumption of food items vis-a-vi to non-food. On the other hand, we have tried to look into the fact that whether the opposite is true in case of formal workers. We shall try to investigate the same across different types of informal workers of India.

Besides, we have also tried to identify which good is necessary and which good is luxury among different types of informal workers of India. We have tried to prove whether food items and non-food items are necessary or luxurious good for different types of informal workers of India. In Chapter 5, we have analysed poverty among the informal workers of India. We have tried to estimate the percentages of poverty-stricken informal workers across different states during the pre Covid period. We have tried to make a comparative study about which type of informal workers are more impoverished in comparison to the other types. Hence, we have tried to identify the determining factors of incidence of poverty across diversified groups of informal workers. Apart from that, their intensity of poverty has also been measured. That is, we have tried to estimate the depth of poverty across different types of informal workers of India. The depth of poverty is nothing but the amount of income necessary for the person to become non-poor. If the person's income is much less than the official estimates of poverty line, then the person is chronically poor while if it is little bit lower than the official estimates of poverty line, then the person is marginally poor. We have tried to identify the determining factors of marginal poor as well as chronic poor across heterogeneous groups of informal workers of India. Recent Trends of wage-income and its inequality amonginformal workers of India has been shown in Chapter 6. In this chapter we have tried to provide the comparative analysis of the wage income inequality among the informal workers across different states in India. We have used Gini Index as a tool of measuring inequality among the informal workers of India. We have also decomposed Gini Index into within group inequality, between group inequality as well as group overlap inequality to identify the reason of the wage -income inequality among the informal workers across states. Not onlychapter 7 shows us the determinants of health expenditure among the informal workers of India and whether it is always catastrophic or not. Besides, we have tried to estimate mean health expenditure among different heterogeneous groups of informal workers of India. Apart from that we have also tried to figure out the percentages of different types of informal workers whose out-of-pocket health expenditure is catastrophic. Chapter8 provides us the picture of relevant public policies required for the accumulation of human capital among informal worker households of India.We know that enhancing educational qualification enhances efficiency and skill of the workers. So, we have tried to identify relevant public policies which can enhance educational expenditure among different types of informal workers of India. Chapter 9 provides the overall conclusion of our thesisand also tries to put some light on some of the important government policies which are capable of reducing

impoverishment, wage income inequality and in turn enhances educational expenditures among the informal workers of India.

Chapter Two: Brief Review of Literature

Chapter 2

Brief Review of Literature

Our main aim of this chapter is to review the extent of informal employment in Indian labour market as well as the labour market of the foreign countries. India being a highly populated labour surplus country with majority of the workers depending on informal employment for their livelihood, most of the literature that we have reviewed talks about Indian economy. Most of the literature talks about the significant escalation of the incidence of informal employment during the post reform period. According toLabour and Employment Report (2014), the percentage share of contract workers in organized manufacturing sector has increased from 13 percent in 1995 to 34 percent in 2011. Moreover, the growth of regular job has been very much slow. The share of regular salaried worker increased from 11.8 percent in 2004-05 to 17 percent in 2011-2012. Besides, Bhoite (2016) analyzed the changing pattern of employment in the private organized manufacturing sector in India and in Pune region of Maharashtra using data from Maratha Chamber of Commerce, Industries and Agriculture during 2012-13. The study found that there was visible reduction of employment of regular and permanent workers during the period 1990-91 to 2012-13 in some of the major large-scale companies in Pune. Unlike the post reform period, during the pre-reform period there was a considerable dominance of permanent and full-time workers in most of the companies. Shyamsunder (2011), examined the changing employment composition in the Indian organized manufacturing sector using data from Annual Survey of Industry (ASI) during the year 1993-94 to 2006-07 and found that the share of non-regular workers particularly contract workers, increased significantly.

Goldar et al. (2010) using ASI data also observed radical increase in informal employment in the registered manufacturing sector in the post reform period through the process of subcontracting. The share of contract workers increased from percent 14 percent in 1995-96 to 29 percent in 2005-06. Sanyal et al.(2009) analysed the estimates by the National Commission for Enterprises in the Unorganised Sector (2007) and found that the formal sector jobs in India declined marginally from 33.7 million to 33.4 million, while the informal jobs in the formal sector, consisting of regular, casual and contract workers without any job security and social security benefits increased by 8.5 million during the period from 1999-2000 and 2004-05. Srivastava (2016) also confirmed that percentages of the workers without written job contracts and high job insecurity increased from 2004-05 to 2011-12 in most of the industries.

It is highlighted in various literature that there has been a prominent surge in the percentage of informal employment in the formal sector during this time (NCEUS,2007) and these informal workers hardly get any type of social security benefit.It is shown that share of informal employment in the formal sector has increased from 32 percent during 1999-2000 to 54 percent in 2004-05 to 67 percent in 2011-2012 (Mehrotra et al,2013). It is further said that with the enhancement of informal employment in the formal sector, it is a tough challenge for the policy makers to achieve inclusive growth (Mehrotra et al,2012).

Street hawkers and domestic workers (including security guard, cook as well as domestic help) comprise a major share of the informal workers. Street vending has a long historical and cultural heritage for several cities as a profession and it exists for hundred years (Hasan et al.,2015). Vendors are self-employed independent entrepreneurs who provides employment opportunities to others many times (Adringa et al.,1989).This accounts for 20 percent of the entire employment in a developing country (Sally, 2008). Various researches have been carried out to investigate the economic condition of the street hawkers. In Mumbai street vending has a long historical heritage providing essential service to majority of the population and provides employment opportunities to nearly 3 lakh people (Bhowmick,2003). Various economists also pointed out that street vending is considered a nuisance, a source of chaos or a real menace (Steel, 2012; Sarpong et al.,2015; Kim, 2016). Though most of the governmental authorities hardly considered street vending as a valid business and considered this to be impediments to the city's development (Indira, 2014). However, various economists including Nirathron (2006) and Njaya (2014) revealed vending is a significant factor for economic development creating employment opportunities for the very poor and backward section of the population. In Hyderabad, Pakistan, it is found that street hawkers contribute heavily to the socio-economic upliftment of the masses but they have very little capital to invest (Dharejo et al., 2022). In the city of Dhaka, women street vendors are rising in Dhaka because they have no other alternative way to meet their basic needs and support their families. It is also found that there has been a huge earning gap between male and female street vendors (Khanam, 2008). According to Roy et al. (2021), in Bangladesh, it found that only 26 percent of the vendors have access to pure drinking water and only 9.8 percent have proper hygienic facility and 84 percent hardly get proper medical treatment. More than 23 percent of them are completely illiterate. Almost 50 percent of them work for more than 10 hours a day. This study also revealed that more than 60 percent of them have more than four dependents. 35 percent of them suffer from security issues while

74 percent of them enjoy their jobs and 90 percent of the respondents feel that they are not socially acceptable. Besides, it is also found that female street vendors have worse economic condition than the male street vegetable vendors in Ranchi. Female street vendors mostly come from scheduled tribe families. Their capital investment is very low and are forced to work as vendor due to extreme poverty and lack of proper income from the male family members in the family. They hardly have proper toilet facilities and suffer from security issues as well (Banerjee, 2014).

Furthermore, considerable discussions are carried out regarding the fact that whether informal workers join this sector out of competitive choice or it is a result of labour market segmentation. We have hardly come across profusion of literature which discuss the above issue. However, the only literature discussing this aspect in Indian context have been discussed below. Unlike Latin American countries where workers joining of this sector is a result of competitive choice, Indian economy witnessed a completely contrary picture. The decision to join informal sector in India may be a result of labour market segmentation (Narayan, 2017). The hypothesis of competitive choice in the informal sector says that before joining the informal sector, a worker compares the cost and benefit aspect of joining informal employment (Fields,1990 & Maloney, 2004). According to this hypothesis, while joining informal employment workers consider various non-wage benefits like tax evasion and flexible working hours. However, according to many economists, informal workers in India have to undergo long working hours in nasty and horrible working environment. According to Fields (1990), informal workers consist of two tiers. The upper tier comprises of the self-employed informal workers who voluntarily join this sector by quitting formal jobs. On the contrary informal workers in the lower tier are the most vulnerable and disadvantageous who join in this sector out of compulsion. According to Packard (2016), self-employment has not been residual sector in Chile during the year 1998-99 as it is portrayed in economic literature so far. In the same paper it has been further shown that self-employment has not been a free entry sector rather free entry exists in employment without proper job contract. In Cote d'Ivoire the decision to join informal employment has been a result of both the contrasting popular theories i.e. a result of competitive market forces and a labour market segmentation. Some workers who earn sufficiently high from this sector join this sector out of their will. By contrast, some workers who are fired out of the formal sector are forced to join the informal sector (Gunther et al.,2012). Besides, in Tanzania's construction industry, determinants of informal employment have been investigated using logistic regression model. It is revealed

that given the professional status, if any worker gets higher earning in informal settings rather than formal settings then he will willingly join the former. Besides, lack of capital availability and lack of education compels the workers to start micro and small enterprises rather than big firms. Moreover, it is also unearthed that firms generally tend to employ informal employment for initiating the cost cutting strategy. Besides, the findings also show that females are mostly informally employed than men mostly in the jobs of office handling and clerical matters (Aikaeli et al.,2014).

Economic demonetization is a way to identify the black money, fake currency, reduce hyperinflation and initiate digitalization. Various countries have initiated economic demonetization from time to time. Ghana, Myanmar, Australia, Iraq, Russia have already initiated economic demonetization to control hyperinflation. Various other countries have also initiated this policy to curb black money, reduce corruption and ensure various other economic changes. For instance, the countries of European union have initiated this policy to create a common currency for the EU. Most recently Indian economy witnessed economic demonetization during November, 2016. In this policy, government suddenly declared that INR 500 and INR 1000 would be suddenly scraped and instead introduced new INR 500 and INR 2000 (Lahiri, 2016). All scraped notes would be allowed to be exchanged in the banks until the end of December, 2016. Cash could be withdrawn from ATM with a maximum of INR 4000 per card per day until mid of November. Due to this there was a sudden cash crunch that was faced by every sector of the economy. This sudden cash shortage affected the vulnerable section of the population such as farmer, casual workers, micro and small traders as well as low-income households (Viswanathan et al. 2021). The informal sector was adversely affected the most because they mostly deal with liquid cash (Jawed et al.,2019). Hence, those informal workers who hardly has any bank account could not new notes for the old notes. Hence, they lost their hard-earned money. Not only that, the informal workers including self-employed hawkers whose transactions are mostly in cash lost their business to a great extent and rapidly during that time. As a result, a large number of informal workers were fired. Thus, informal workers were impacted more adversely than the formal workers. Due to economic demonetization, income of the informal workers more drastically than formal workers. Further it was also found that the savings of the informal workers diminished abruptly. So, they were in a liquidity constraint which forced them to borrow money from dishonest money lenders at a high rate of interest. Hence, they fell under a debt trap and their economic condition further deteriorated (Prasad et al.,2023). After economic demonetization,

the informal market for Pune witnessed a major crisis. Several waste shop dealers which are solely informal sectors shut their shops within one month of economic demonetization. The waste pickers whose livelihoods are mostly dependent on the collection, segregation and sale of recyclables were in terrible shock after this (Shankar et al.,2018).

Chapter Three: Objective of the Study, Research Gap and Methodology of the Study

Chapter 3

Objective of the Study, Research Gap and Methodology of the Study

3.1 Objective of the study and research gap

Since informal workers correspond a very large percentage of Indian labour force, it is very essential to look into the pattern of consumption among themselves. In other words, it is essential to look into consumer behaviour among the informal workers. This would not help us to have some idea about the calorie intake and the nutritious food intake among them but also to have some idea about the type of product demanded by them. It isnecessary to look into the economic condition of the informal workers. Since informal workers are too much exploited, it is also essential to look into the extent of poverty and wage inequality among themselves. Furthermore, informal workers also work in unhealthy environment for hours. So, it is also important to discuss their health conditions. It is also essential to discuss the extent of health expenditure among the informal workers of India. Last but not the least, informal workers are unable to get decent jobs due to lack to investment in human capital and skill. Hence, it is also very crucial to prescribe new and effective policies which can induce the informal workers to invest in human capital. We hardly find plethora of literature regarding the above-mentioned aspects of the informal workers. The following objectives of the study are based on the above-mentioned research gaps.

In the fourth chapterwe have tried to address the consumer behavior among different types of informal workers of India and also tried to validate Engel's law among them. We have tried to observe the changes in demand of different types of consumption goods as a result of changes in income of the workers. By finding out the income elasticity of demand we can identify which good is necessary and which good is luxury among different types of informal workers of India. Besides, the budget share of the food and non-food items among different types of informal workers are also estimated. It is very necessary to identify the pattern of demand among different types of informal workers of India. Since informal workers contributes major chunk in Indian labour market, understanding demand decisions among them would help to take right business decisions in the business world.

In the fifth chapter, our target is to investigate extent of poverty across different groups of informal workers. Apart from identifying the pattern of demand of different types of informal workers, it is very necessary to estimate the extent of well-being among them. During the

post reform when privatization and casualization of employment took place to a great extent, incidence of informal employment also enhanced. However, job security among them reduced since these workers have been deprived of various benefits. So, it is important to identify the incidence of poverty among the informal workers. Besides, acuteness of poverty is also investigated to understand whether the workers are chronic poor or marginal poor. Apart from that, we have also tried to identify the determining factors of incidence of poverty as well as depth of poverty.

In the sixth chapter we have analyzedchanges in wage inequality among the informal workers of India. Since, informal workers hardly get various benefits from their organization, so, it is necessary to compare the remunerations among the informal workers. Besides, we have also investigated the inequality in wages among the informal workers across states. Lastly, we have observed whether there has been change in wage inequality over the year or not.

In the seventh chapter we have tried to put some light on the changes of the health expenditure across different types, status and location of informal workers of India. It is a well-known fact that informal workers are forced to work under long working hours without proper hygiene, sanitation and nasty environment, so, there is some need to look into the health expenditure among them.

In eighth chapter we have tried to estimate educational expenditure among the informal workers and also recommend relevant public policies so that educational expenditure among them can be increased.Educational attainment plays a major role in determining the quality of jobs and hence economic condition of the informal workers. So, our discussion would be incomplete if we hardly discuss the extent of educational expenditure among them.

3.2 Data and Methodology

This study uses the 68th round NSSO data on employment and unemployment for the period 2011-2012, Periodic Labour Force Survey (PLFS) data for 2018-19 and 2019-2020.In 2019-20, the data in the rural area is collected only on the first visit while that of the urban area is collected on the first visit and revisit. Data in the urban period is collected during the period July-September, 2019, October- December, 2019, January- March,2020 and April- June, 2020.The extract contains only own account workers (SE), regular salaried workers and casual workers in public as well as private sectors (indicating IEFS and EIS). To do this we

have subtracted all samples whose principal activity status is employer (because this is formal in nature), student, housewife, beggar, retired and handicapped. Thus, the total number of extracted samples are 117,172, 183,272 and 185,599 during 2011-2012, 2018-19 and 2019-20 respectively. Total extracted samples are sub-divided into three types of informal workers, SE, EIS and IEFS types of workers. SE workers are own account workers in our data set. EIS are workers of proprietary enterprises, partnership enterprises, domestic enterprises and other enterprises where number of workers are less than 10. On the other hand, in our data set, IEFS are workers of public enterprises, private enterprises and co-operative enterprises who hardly get any social security benefits.In our data set 15.56 percentages of workers are formal and 84.44 percentages of workers are informal during 2011-2012. During 2018-2019, 12.50 percentages of workers are formal and 87.50 percentages of workers are informal. During 2019-2020, 11.06 percentages of workers are formal and 88.94 percentages of workers are informal.The distributions of these three types of informal workers in our data set during 2011-2012 are such that 28.30 percentages are SE, 61.34 percent are EIS while 10.36 percent are IEFS. During the year 2018-2019, the distribution of three types of informal workers that is SE, EIS as well as IEFS are 14.66 percentages, 74.96 percentages and 10.38 percentages respectively. On the other hand, during the year 2019-2020, the distribution of three types of informal workers are 14.18 percentages, 76.32 percentages and 9.50 percentages respectively.

Chapter four: Consumption Nature of Indian Informal Workers: Engel's Law Revisited

Chapter 4:

Consumption Nature of Indian Informal Workers: Engel's Law Revisited

4.1.**Introduction**

The theory and the determinants of consumer behaviour have been an area of interest among various researchers and economists. It is well known that consumer behaviour and consumer wealth are highly interrelated.According to Stavkova (2006), the determining factors of purchase decisions are consumers' needs and the quality of the product. According to Say's law, supply creates its own demand. Thus, firms must introduce a variety of products to the market to generate consumer demand (Prokeinova, Dobes, Mura, &Buleca, 2017). Moreover, preferences, resources, individual behaviour of consumers as well as social institutions are important determinants of consumer behaviour.

Change in consumer behaviour due to variations in consumers' income is narrated by Engel curves (Engel, 1857). The variations in income, in turn, are reflected in the values of income elasticity of demand for different types of commodities and services. Thus, the shapes of Engel curves vary a lot for different types of consumer demand (Lades, 2013; Lewbel, 2008). This chapter attempts to verify Engel's law among different types of informal workers in India.

There has been a huge reduction in the average calorie intake among rural populations during the years of economic reform, while a lesser reduction has occurred in urban areas, even at the period of accelerated real consumption expenditure (Basu&Basole, 2012; Deaton &Dreze, 2009). In a country such as India with a high rate of malnutrition, the deterioration in the intake of calories is concerning. Moreover, the performance of the Indian economy in anthropometric measures[2] has been very poor and worse than most of the countries in the world, including various impoverished African countries (Mehta & Venkatraman, 2000). Furthermore, it is also found in the literature that the per capita calorie consumption is lower than the official estimates of the prescribed poverty line calorie consumption in rural areas as well as current standards as set out by the Indian Council of Medical Research (ICMR). Recent literature has further pointed out that the decline in calorie intake goes hand in hand

[2]Anthropometric measures include height-for-age, weight-for-height and weight-for-age among children. In short, it indicates the BMI measures of the human body.

with the increase in under nutrition coupled with a reduction in headcount ratio during the post-reform period (Patnaik, 2007; Ray, 2007; Smith, 2013). However, many other studies have also pointed out that there has been an immense growth in the prevalence of hardship and scarcity among informal workers in India during the years of globalization, privatization and liberalization (Heintz & Vanek, 2007; Papola, 2008). Roy and Kundu (2020) found that more than 20% of informal workers are living below the poverty line. The obvious result of economic liberalization is flexibility in the Indian labour market in the form of informalization of employment (Unni & Rani, 2010). In the presence of increased international competition and enhanced privatization, there has been an attempt to reduce wage costs by denying trade union rights to employees. A significant proportion of regular workers also lost their jobs and were largely replaced by casual workers during this time (Das, Dasgupta, & Biswas, 2009). Thus, the proportion of informal employment, which was already immense in India during the pre-reform period, increased significantly during the post-liberalized era. Since the incidence of poverty has grown during the post-reform period, it is not only essential to investigate the calorie intake of the majority of workers in India (i.e., informal workers), but also their choice of consumer goods.

Since the discrepancy among informal workers is evident (Sahoo &Neog, 2016; Unni, 2005), we further classify informal workers into three major types: (i) self-employed workers (SE), ii) employees of the informal sector (EIS), and (iii) informal employees of the formal sector (IEFS). We intend to scrutinize the extent of the discrepancy in the selection of consumer goods among the three groups of informal workers mentioned above.

This chapter has been structured in the following manner: Section 2 provides a theoretical background of consumption patterns among informal workers; Section 3 reviews some of the important literature relating to the application of Engel's law to determine the pattern of consumption among different types of informal workers; the research gap and objectives of the study are explained in Section 4; Section 5 details the source of the data used in the study; the proportion of expenditure on food and non-food items of total expenditure, and the verification of Engel's law are explained in Section 6; Section 7 talks about the consumption pattern of food and non-food items among different types of informal workers, and contains the comparative study of consumption patterns among a heterogeneous group of informal workers in India; and Section 8 summarizes the above discussions and concludes.

4.2. Importance of investigating Consumption Patterns among the informal workers of India

The factors influencing the purchasing decisions of consumers are not only important from a business perspective but are also relevant for the development of the economy. The improvement of business and, in turn, the development and prosperity of the economy heavily rely on the consumption pattern of consumers. We are aware of the Keynesian theory that in the time of economic recession, consumers are dubious enough to increase their purchases, which results in dwindling market demand and the economy slips into further depression. A pattern of consumer choice and purchases, therefore, plays a pivotal role in determining the trade policy and enhancement of the market. The purchasing decisions of the consumers undoubtedly depend on their tastes, preferences, food habits, psychological factors, social factors and income (Pinki, 2014; Qazaffi, 2020; Ramya & Ali, 2016). Unfortunately, in the context of India, there is a lack of literature discussing consumer behaviour and consumption decisions. In the Indian economy, the dominance of informal employment is observed in the labor market (Marjit& Kar, 2007; Naraynan, 2015; Sanyal & Bhattacharyya, 2009). The trade policy and the marketing strategy are too reliant on the economic condition, especially in the worsening quality of employment and enhanced impoverishment during the post-reform period. This chapter thus attempts to explore the consumption pattern among informal workers only, which constitutes the majority in the Indian labor market and plays an important role in determining the size of the market. Keeping in mind the heterogeneity of the informal workers, this chapter seeks to determine the consumption pattern across different types of informal workers (SE, EIS and IEFS). Roy & Kundu (2020) reported that 24.74%, 21.87% and 22.98% of SE, EIS, and IEFS, respectively, were impoverished in the Indian economy during the post-reform period. This chapter attempts to identify the consumption pattern of these three types of informal workers separately.

The Engel curve depicts the variation in demand for a particular commodity reflected by the change in consumer income. Engel's law states that with the enhancement of earnings, the proportion of expenditure on food products declines with an increase in income. Thus, Engel curves can be used to segregate the commodities into necessary as well as luxury goods. It can also be used as a tool to determine the law of demand[3] Moreover, the income elasticity of different consumer goods will also be explained with the help of the Engel curve equation.

4.3. Brief review of literature

[3]The works of Hildenbrand (1994) and Kahneman, Wakker, and Sarin (1997) contain an explanation of the Engel curve to determine the law of demand.

This section presents some of the important literature representing consumer behaviour and the shape of the Engel curve. Since this curve describes how household expenditure on a particular good or service varies with household income, it is used by many researchers to highlight the consumption nature of several foods and non-food items. Some of the relevant literature is highlighted below; however, there is a limited amount of literature which explains the nature of consumption in India. Abdulai, Jain, and Sharma (1999) tried to provide information about the elasticity of food items used majorly by Indian households. They found that out of all the types of food items, the elasticity of demand is greater than one only for dairy products, irrespective of the rural and urban sectors.

Therefore, this study examines the nature of consumption throughout the world. Burki (1997) investigated structural changes in the demand of the purchaser using Pakistan's annual time series data on various food items from 1972–1991 using both the generalized axiom of revealed preference (GARP) and the first-difference estimator. It was found that, in Pakistan, chicken is a necessary good, while chickpeas are an inferior good. It was further found in the economy of Pakistan that the families whose income is below the poverty line tend to expend a higher percentage of their income on purchasing wheat compared to non-poor households, hence making wheat a Giffen good (Malik, Nazli, & Whitney, 2015). In Bangladesh, which is another developing neighbouring country of India, a positive relationship was observed between a mother's education and empowerment with the dietary diversity of her children. Moreover, maternal education has a positive impact on the protein, iron and zinc intake of female children. Furthermore, the size of land owned plays a crucial role in determining more diverse diets and more calorie, protein and iron ingestion among male children and greater dietary diversity among female children. As expected, households owning dairy cows show a higher dietary intake among boys and a higher calorie consumption for girls (Sraboni & Quisumbing, 2018). In Nepal, the families receiving remittances disburse more on health and education compared to those families who receive no remittances (Thapa & Acharya, 2017). In the case of the Chinese economy, the poorest families where the wife is informally employed tend to reduce their expenditure on entertainment goods, whereas there is a significant enhancement if the husband is informally employed (He & Li, 2016). In Taiwan, from 1996 to 1998,a it was found that food, housing, fuel and health are necessary goods, while clothing, furniture, housekeeping, education, recreation and transportation are luxury goods (Chung, Lee, & Brown, 2002). Furthermore, Prokeinova et al. (2017) used a data set from the Slovak Statistical Office to analyze the income elasticity of demand in Russia and concluded that the food items, viz. fruits, vegetables, coffee, tea, alcohol and beverages, were

considered luxury products for those families whose head of household is in full-time employment. Even in those households whose heads of the family were self-employed, vegetables, coffee & tea, and alcoholic beverages were treated as luxury items. However, for households devoid of any children, meat, fats and oil are included in the category of inferior goods. In Jordan, family size had almost no impact on the demand for housing, transportation, and health during 2010 (Majali &Habashneh, 2014). Moreover, the consumption pattern for clothing, housing, personal care and the miscellaneous commodity group are not the same in urban and rural areas.

In this part, we look at the nature of consumption in several European countries. In the Czech Republic, the rise in the real income of the average Czech household leads to a fall in real food expenditure share (Syrovatika, 2003). In Romania, the income elasticity of demand for food and services has been greater than unity, while for non-food consumption, this is equal to unity for the 1997–2016 period (Neagu & Teodoru, 2017). Ergün (2021) analysed the results of an online survey for several European countries, including Romania, Spain and Turkey, and found a surprising result that those who predict themselves to be financially insecure in the future have a greater tendency of buying luxury goods compared to those who consider themselves to be financially secure. Moreover, it was also found that the probability of expending on conspicuous status goods is higher among low-income countries. Hartmann, Nitzko, and Spiller (2017) used data from the German economy and found that demand for luxury goods depends on hedonism, self-actualization and the quality of the product instead of prestige.

The consumption nature of several African countries is discussed in this part. The income elasticity of basic dietary food is lower than that of luxury food in Africa (primary data from 48 African countries have been used). It was further found that a rise in income not only causes a rise in nutritional diets but also an increase in excessive intakes of fats and sugar. Not only that, undernutrition can also be seen, even in situations of rising income (Colen et al., 2018). Furthermore, in Morocco, there has been an exponential growth in demand for luxury goods in spite of the rising income inequality and social and political instability (Hamelin &Thaichon, 2016). It is further pointed out in this paper that consumers tend to categorize whether the products are necessary or luxury from a psychological point of view. Jaber and Hoogerhyde (2019) tried to explain that the decision to categorize a commodity as necessary or luxury depends on the mood of the consumers. When males are in a negative mood, they consider a commodity as a luxury, whereas females do the same when they are in a positive mood.

Last, but not least, in the USA, Holcomb, Park, and Capps Jr (1995) used data from the Nationwide Food Consumption Survey (NFCS) for the period 1987–1988 and found that Engel's law is effective among consumers.

4.4. Research gap and objective of the study

The abovementioned works of literature only highlighted the pattern of consumption across different food and non-food items. However, none of the literature focuses on the consumption nature among informal workers or, more specifically, across different types of informal workers in India. In a country such as India where more than 80% of workers are engaged in informal activities, it is extremely important to look into the consumption nature of these informal workers.

1. Initially, a comparative analysis is carried out on the budget share of food and non-food items between formal workers and informal workers in India.

2. Next, a comparative analysis is conducted to investigate the budget share of food and non-food items among different types of informal workers in India.

3. Next, the pattern of consumption among the informal workers of India is investigated where all three different types of informal workers are considered separately. We also investigate whether the pattern of consumption among these workers is identical or not. Here, we employ the help of Engel's law.

4.5. Data sources

In this study, we utilize employment and unemployment survey unit-level data for India collected by the National Sample Survey Organization (NSSO) in the 68th round from 2011 to 2012. The excerpt only accommodates own account or self-employed (SE) workers, regular salaried workers and casual workers in the public and private sectors, indicating informal employees in the formal sector (IEFS) and employees in the informal sector (EIS). In order to do so, we have deducted those samples whose activity statuses (principal) are listed as employer (they represent formal workers), student, housewife, beggar, retired and handicapped. Thus, the total number of samples consisting of only informal workers is 117,172. The total number of extracted samples is segregated into three types—SE, EIS and IEFS, respectively.

The own-account workers in our data set are considered SE in this analysis. The workers of proprietary enterprises, partnership enterprises, domestic enterprises[4] and other enterprises in our data set are considered EIS. By contrast, the workers in public enterprises, private

[4]Domestic enterprises by definition are unorganized or informal in nature.

enterprises and cooperative enterprises who hardly get any social security benefits[5] are treated as IEFS.

During 2011–2012, the proportion of SE, EIS and IEFS in our data set is 28.30%, 61.34% and 10.34%, respectively.

4.6. Comparative analysis of budget share on food and non-food items among formal and informal workers in India

In order to investigate the nature of consumption among the informal workers in India, we have calculated the proportion of expenditure spent on food items as well as non-food items out of the total expenditure across formal workers and different types of informal workers in India[6]. Table 4.1 contains information regarding the expenditure on food items as a proportion of the total expenditure among formal and informal workers. It shows that the proportion of food items to total expenditure is lower among formal workers compared to that informal workers. While the opposite is true in the case of non-food items to total expenditure. Since informal workers are more poverty-stricken compared to formal workers (Papola, 2008; Sundaram, 2008), the proportional expenditure on food items is also higher among informal workers compared to formal workers. Formal workers who are comparatively less impoverished tend to spend less than 50% of their total expenditure on food grains and more than 50% of their expenditure on non-food grains. The opposite percentage figures can be found among the informal workers. Hence, in this chapter, the validity of Engel's law has been proved.

Table 4.1: Budget share of Food and Non-Food Items among the Formal and Informal Workers of India

Types of items	Formal workers	Informal workers
Food items to total expenditure	0.44	0.53
Non-food items to total expenditure	0.56	0.47

Source: Authors' own calculation from 68th round unit level data

[5] All definitions are based on the Government of India (2007).

[6]In order to do, so we have used the data set which contains both formal and informal workers.

The budget share of food and non-food items across heterogeneous groups of informal workers is expressed in Table 4.2. Among the three types of informal workers, the proportional expenditure of food items of the total expenditure is more than 50%. On the other hand, the proportional expenditure of non-food items of the total expenditure is less than 50% for all three types of informal workers. However, proportional expenditure on food items is marginally highest among SE and lowest among IEFS, while the proportional value of the EIS group lies in between. It was proved that across different types of informal workers, the prevalence of poverty has been highest among SE and lowest among EIS (Roy & Kundu, 2020). The proportions reflect the observations of Roy and Kundu (2020).

Table 4.2: Budget share of Food and Non-Food Items among different types of Informal Workers of India

Types of items	IEFS	EIS	SE
Food items to total expenditure	0.52	0.53	0.54
Non-food items to total expenditure	0.48	0.0.47	0.46

Source: Same as Table 4.1

4.7. Consumption pattern between Food and Non-Food items among Different Types of Informal Workers of India

Engel's curve is used to show consumer behavior based on consumer income. In other words, Engel's curve depicts the change in household expenditure for a particular good or service as a result of variation in household income. The Engel curve also helps to identify whether a particular good is a necessity or a luxury. Therefore, in this study, our target is to identify which goods are necessary and which goods are luxuries among the informal workers in India. However, due to the paucity of income data of the sample households at the unit level in the NSSO round, expenditure data is used as a proxy of income data. Although Engel's theory tries to investigate the proportion of expenditure of a particular good corresponding to the level of income, the approach taken in this chapter is to investigate the expenditure of the informal workers for different food and non-food items in a particular month corresponding to the monthly consumption expenditure of that particular worker.

To do this, we consider the Working-Leser model. The Working-Leser form was discussed by Working (1943) and further popularized by Leser (1963); Leser (1976). It has been further

applied in studies by Angus Deaton and Muellbauer (1980) and Majali and Habashneh (2014). One of the most important advantages of this model is that it is a good fit for cross-sectional data in a wide range of circumstances. Thus, this model is expected to provide a very reliable result because the data in use is cross-sectional. The Working-Leser model can be expressed in the following way:

MODEL 1

$W_{ji}= \alpha J+\beta J \ln Y_i+\mu_i$ (1)

Here, W_{ji} is the average monthly budget share of the j^{th} commodity of the i^{th} individual. Y_i is the average total monthly expenditure of the i^{th} household. During the time of calculation of the budget share of any particular commodity of an informal household, the total monthly expenditure of that household is used as a proxy of the total monthly income of that household. Here, α_j and β_j are estimated for each commodity 'j' consumed by that particular type of informal worker separately. Using the quadratic model of the above equation proposed by Banks, Blundell, and Lewbel (1997), we investigate how the nature of consumption of a particular commodity change to luxury from necessary with the change in total expenditure. But here, the consumption nature of the informal workers will be investigated where a large percentage of them are economically poor and living just above the poverty line (Roy & Kundu, 2020). To investigate the consumption nature of the informal workers of India, they are divided into three types for the comparative analysis, so household characteristics are not considered in Equation 1.

Equation 2 presents the expenditure elasticity of demand of the j^{th} commodity of each type of informal worker (denoted as 'k') in the context of the Working-Leser form. It is explained as:

MODEL 2

$e_{jk}=1+ \hat{\beta_{jk}}/W_{jk}$ (2)

Here, k implies SE, IEFS, and EIS separately. The results are given in Table 3.

Table 4.3: Nature of Consumption of different Food and Non- Food items among different types of informal workers of India

	Self-Employed			IEFS			EIS		
Commodity	$\hat{\beta}$	R^2	Nature	$\hat{\beta}$	R^2	Nature	$\hat{\beta}$	R^2	Nature
Cereals and Pulses	-0.06*** (0.002)	0.19	Necessary	-0.06*** (0.003)	0.2	Necessary	-0.07*** (0.0008)	0.28	Necessary

Milk	-0.07* (0.004)	0.21	Necessary	-0.01*** (0.004)	0.22	Necessary	-0.03*** (0.001)	0.25	Necessary
Oil	-0.01*** (0.0005)	0.15	Necessary	-0.01*** (0.0007)	0.2	Necessary	-0.01*** (0.002)	0.19	Necessary
Vegetables and fruits	-0.02*** (15.47)	0.13	Necessary	-0.02*** (0.001)	0.13	Necessary	-0.02*** (0.0004)	0.18	Necessary
Non-veg food	-0.01*** (0.001)	0.19	Necessary	-0.06*** (0.001)	0.19	Necessary	-0.02*** (0.0005)	0.21	Necessary
Sugar, salt and spices	-0.02*** (0.0005)	0.16	Necessary	-0.02*** (0.0006)	0.24	Necessary	-0.02*** (0.0002)	0.23	Necessary
Other food items	-0.01*** (0.0005)	0.21	Necessary	-0.01*** (0.003)	0.22	Necessary	-0.02*** (0.002)	0.24	Necessary
Addicted items	-0.02*** (0.0009)	0.25	Necessary	-0.02* (0.002)	0.22	Necessary	-0.01*** (0.0006)	0.21	Necessary
Fuel and light	-0.04*** (0.001)	0.2	Necessary	-0.03*** (0.002)	0.16	Necessary	-0.03*** (0.0006)	0.19	Necessary
Entertainment	-0.01*** (0.0006)	0.22	Necessary	-0.02*** (0.001)	0.21	Necessary	-0.02*** (0.0003)	0.29	Necessary
Other non-food items	-0.01*** (0.001)	0.27	Necessary	-0.01*** (0.001)	0.24	Necessary	-0.01*** (0.0005)	0.29	Necessary
Consumer service	0.02*** (0.002)	0.24	Luxury	0.03*** (0.002)	0.29	Luxury	0.02*** (0.0009)	0.16	Luxury
Rent, repair and tax	0.02* (0.001)	0.16	Luxury	0.07*** (0.02)	0.11	Luxury	0.02*** (0.02)	0.21	Luxury
Health	0.06*** (0.008)	0.26	Luxury	0.03*** (0.009)	0.22	Luxury	0.03*** (0.003)	0.23	Luxury
Education	0.04*** (0.003)	0.27	Luxury	0.03*** (0.004)	0.18	Luxury	0.03*** (0.001)	0.17	Luxury
Therapeutic apparatus	-0.02	0.10	Neutral	-0.01	0.01	Neutral	-0.001	0.02	Neutral

	(0.07)			(0.002)			(0.0005)		
Jewels	0.04*** (0.003)	0.18	Luxury	0.04*** (0.006)	0.15	Luxury	0.05*** (0.002)	0.13	Luxury
Personal Transport	0.01*** (0.001)	0.13	Luxury	0.01*** (0.003)	0.14	Luxury	0.01*** (0.0009)	0.15	Luxury
Durable goods	0.01* (0.006)	0.22	Luxury	0.03* (0.008)	0.32	Luxury	0.07* (0.004)	0.28	Luxury

Source: Same as table 4.1

Note: *** denotes significance at the 1% level; * denotes significance at the 10% level.

Working-Leser model was used by Majali and Habashneh (2014) to find out the income elasticity of demand for a particular commodity. In this chapter, expenditure elasticity of demand is measured following the above-mentioned formula for different food and non-food items consumed by informal workers in India separately. The expenditure elasticity of demand is the ratio of percentage changes in quantity demanded of the j^{th} product due to a 1% change in average monthly consumer expenditure. According to this model, a commodity with a negative $\beta\hat{j}$ is a necessary good and a positive $\beta\hat{j}$ is a luxury good for a particular type of working group[7].Needless to say, as the expenditure share of necessary goods declines with income (we consider expenditure as a proxy of income), then following Equation 1, we can say that increase in total monthly expenditure of a household causes the elasticity of a necessary good to fall and a luxury good to move toward unity. Thus, according to the Working-Leser model, as the consumer becomes richer, the food share of total income declines (Clements, 1985). Here, the ordinary least squares (OLS) method is applied in Equation 1 for each consumer good consumed by the informal workers in India. Table 4.3 displays the results of the Working-Leser model which will identify the nature of demand for different types of food and non-food items consumed by informal workers in India. The types of consumer goods are collected from NSSO unit-level data. The estimated values of β determine whether the good is a necessary good or a luxury good. More specifically, if the value of β is positive, then the good is necessary and if it is negative then the good is considered a luxury from the point of view of the consumer. The result of the nature of

[7]If the income elasticity of demand of a particular commodity becomes less than one, then the item is considered necessary and if it is more than one, the commodity will become a luxury. Here, monthly expenditure of a household is used as a proxy of monthly income.

consumer demand is given in Table 4.3, which emphasizes the fact that the nature of demand across different types of informal workers has been more or less the same, indicating that the pattern of consumption is the same across different types of informal workers in India. Even though there has been significant divergence among different types of informal workers as far as the incidence of poverty is concerned (Roy & Kundu, 2020), the nature of consumption has mostly been the same. In Table 4.3, the estimated values of β for all the food and non-food items are significant, except for the therapeutic apparatus, which is insignificant.7 All food items are necessary goods irrespective of the type of informal workers. Apart from food items, "other non-food items" such as personal care products, including spectacles, torches, umbrellas, lights and toiletries, are also necessary goods among SE, IEFS as well as EIS workers. It is also observed that fuel and light and addictive items are also necessary goods. Surprisingly, expenses on entertainment, including cinema, picnics, sports, club fees, video cassettes, and cable chargers, among others, are also necessary goods for all three groups. Durable goods are luxury items for all three types of informal workers. Non-food items are mostly luxury for all three types of informal workers. Health and education are luxury items among all types of informal workers in India. This explains that informal workers do not spend a sufficient amount on health and education. Here, the estimated values of $\hat{\alpha}$ for all the regressions are not mentioned in Table 4.3, but in all situations, the values are statistically significant.

4.8. Conclusion

This chapter tests the validity of Engel's law among different types of informal workers in India. Being more impoverished compared to formal workers, informal workers spend a larger proportion of their income on food items and a smaller proportion on non-food items. In this chapter, the consumption pattern of different items across different types of informal workers has been calculated and also provides a comparative study. The consumption patterns among different types of food products, fuel and light, addictive items as well as entertainment items are identified as necessary goods for the three types of informal workers. Additionally, some non-food products, such as umbrellas and torches, are also necessary. Most of the non-food items are luxury goods, except therapeutic apparatuses, which are neither a necessary nor a luxury good for all three types of informal workers. Health, education, personal transport, durable goods and jewelry are all luxury goods among all types of informal workers.

In this chapter we have discussed about the consumption pattern of different types of informal workers of India. According to Engel's law the consumption pattern plays a very important role in determining the economic condition of the particular workers. More specifically, budget share of a particular item enables us to understand the economic condition of the person. Higher budget share on the food items as opposed to non-food itemsmay indicate higher incidence of poverty and vice versa. We have concluded in this chapter that budget share of food items is higher among the informal workers as compared to the formal workers which pinpoints that informal workers are worse off compared to formal workers. Thus, it is necessary to re-examine the extent of poverty among them which will bedone in the next chapter. Hence, in the next chapter we have estimated the percentages of informal workers who are poverty-stricken as compared to formal workers as well as across heterogeneous groups of informal workers. Incidence of poverty has been analyzed on the basis of monthly per capita consumption expenditure which we have discussed in detail in the next chapter.

Chapter five: An analysis of poverty among the informal workers of India

Chapter 5:

An analysis of poverty among the informal workers of India

5.1. Introduction

Indian labour market is dominated by informal employment[8] and the incidence of informal employment has enhanced leaps and bounds in the post reform period (Marjit et al., 2007; Sanyal et al., 2008 and Narayana, 2015). What is much more striking that, there has been rapid proliferation of informal employment not only in the informal sector but also in the formal sector during this period (Sanyal et al., 2008). Apart from them, informal sector also consists of large number of self-employed (SE) workers (Mukhopadhyay, 1998). Thus, informal employment is vastly heterogeneous in nature (Unni, 2005; Sahoo et al., 2016). The heterogeneity of informal employment is classified into three major types: (i) self-employed workers (SE), (ii) employees of the informal sector (EIS) and (iii) informal employees of the formal sector (IEFS).

Post reform period witnessed informalization of employment due to flexibility of labour market (Unni et al., 2008) leading to wage cut by the employers to withstand international competition. Moreover, in order to implement structural adjustment programme and fulfil International Monetary Fund (IMF) conditionality, public enterprises became privatized. In the process, there has been enhancement of casual, contractual and informal employment (Das et al., 2012). Needless to say, these workers are "working poor"[9] with worse working conditions. Thus, it would be an absolute necessity to discuss about the incidence and depth of poverty of these Indian informal workers.

During 2016, Indian economy witnessed another setback of demonetization. Informal workers are mostly adversely affected because of demonetization. The reason is informal workers mostly run their business in cash. Due to sudden cash crunch, already poor informal workers succumbed to much more poverty (Masiero, 2017). Demonetization has a massive setback in the real estate sector, retail sector as well as all those sector who mostly transact in cash (Kushwaha et al.,2018) Thus, the unorganized self-employed workers who work as street hawkers also suffered a lot. As a result, it is even more important to investigate the

[8]Informal employment is not only generated only in informal sector. Informal employees work inboth theformal as well as informal sectors in unhealthy working conditions with long workinghours and devoid of any social security benefits (GOI, 2007; ILO, Standing, 1999).

[9]The term "working poor" has been highlighted by Papola (2008) and Heintz et al. (2007). Theyare mostly referred to as the informal workers living below the poverty line.

extent and depth of poverty among the informal workers of India during the post demonetization period. Hence, in this study we have analysed incidence of poverty as well as depth of poverty among the informal workers of India during 2018-2019 to put some light on the effect of demonetization on the poverty of the informal workers in the long run.

The chapter is organized as follows: Section 2 provides a brief discussion on the available literature related to incidence of poverty among the informal workers during the post reform period in India. The research gap and objectives of the study are spelled out in Section 3. Section 4 talks about the source of data used in the study. Section 5 provides summary estimates of incidence of poverty among the informal workers. Determinants of poverty among the informal workers with the help of Heckman's 2 step regression model will be discussed in section 6. Section 7 shows the estimates of mean poverty gap among poor informal workers across major dimensions; Section 8 describes the determinants of acuteness of poverty among the poor informal workers and the results of the regression analysis. Section 9 summarizes the above discussions and concludes.

5.2. Brief review of literature

Sundaram (2008) presented estimates of employment in the organized non-agricultural sector in India using 55th to 61st round NSSO data. He found out that head count ratio is highest among the unorganized sector workers than the corporate segment of the organized sector who have lowest head count ratio and head count ratio for the non-corporate factory sector workers which lies between the above two sectors of workers. Papola (2008) based on NSSO employment and unemployment survey concluded that incidence of poverty is highest among the casual workers followed by self-employed workers and least among regular wage earners. Similar picture is also found in the writing of Heintz et al. (2007). He concluded that informal workers are much more impoverished than the formal and regular salaried employees. Wages of the latter are not only considerably higher than the casual workers during the post reform period (Unni, 2005) but also this discrepancy enhanced further during the post reform period Dutta, 2005). Thus, all these evidences point out that incidence of poverty is very high among the informal workers in comparison to that of the formal workers.

By contrast, Post reform period enhanced the employment opportunities for the unemployed poor people. Thus, deprivation of the informal workers reduced during this time (Marjit et al., 2009). It is further shown that trade liberalization in import competitive sector increases informal wage across occupational types and expands production and employment in urban informal sectors with or without sufficient capital mobility between formal and informal

sector which reduces head count ratio of the urban informal workers (Marjit et al., 2007). Furthermore, it is also revealed that real wage and value added of the informal sector have also increased in different states during the post reform period, which in turn reduces incidence of poverty among the informal workers. Marjit (2003) with the help of a general equilibrium framework explained that enhancement of informalization of the workforce and reduction of the formal sector hardly caused impoverishment of the informal workers. Rather, informal workers are better off because of the increased informalization of the employment during the post reform period.

During the period 1999-2000, percentages of regular salaried workers who are very poor, moderately poor and poor has been 2.73 percentages, 6.59 percentages and 9.32 percentages respectively. The percentages of the same among self-employed worker has been more than double the rate of regular salaried workers. On the other hand, during this period, percentages of very poor, moderately poor and poor casual workers has been strikingly higher compared to regular salaried workers as well as self-employed workers. Not only that, incidence of poverty among the rural females has been higher than rural male workers. Just like the rural sector, percentages of poverty population among the females have been higher than the males in the urban sector among the regular salaried workers but the opposite is true among the casual workers (Sastri, 2000). Mohapatra (2012) tried to explain poverty among the informal workers using multidimensional aspect for the period for period 2011-2012 using primary data. He tried to grasp the extent of poverty among them not only on the basis of lack of income but also on the basis of some other factors like lack of assets, lack of choice, sense of powerlessness, vulnerability and insecurity. His findings are that more than 60 percent of the female rag pickers, construction labourers, coolies and domestic workers not only lead a poor working and living conditions but also lead most vulnerable living conditions. Furthermore, it is also revealed that cent percent of the women rag pickers live in kutcha house, 53.79 percentages live in less than two rooms, 1.52 percent live in roadside. On the other hand, 82.41 percent live in kutcha house, 49.07 percentages live in less than two rooms, 10.19 percent live in roadside. Tiwari et al. (2012) also found out that not only most of the informal workers of the construction industry live below the poverty line but also, they are addicted to drinking alcohol, smoking bidi, tobacco chewing etc. Not only that, their regular intake of food like rice, pulses and vegetables have been inadequate. Furthermore, Sastri in his paper has also tried to give a state level analysis regarding the extent of poverty. He found out that in the rural sector, incidence of extreme poverty among the informal workers have been highest in the state of Madhya Pradesh followed by Bihar, Assam and West Bengal where the

informal workers are illiterate. On the other in the urban sector, the incidence of extreme poverty has been highest in the states of Orissa, followed by Madhya Pradesh and Bihar where the informal workers are illiterate. Moreover, in most of the states, incidence of extreme poverty has been higher in the urban area as compared to the rural area. Hayami et al. (2007) also tried to estimate poverty and living conditions among the urban informal sector in the city of Delhi found out that most waste pickers living under the poverty line as indicated by Planning Comission of India whereas majority of the waste collectors earn marginally higher than poverty line. Not only that the waste pickers are extremely poor.

In Pakistan, informal workers are significantly better off in comparison to that of the government employees (Burki et al., 1981). Kazi (1987) also claimed that standard of living of skilled informal self-employed workers is better than the formal sector workers in Pakistan.

Thus, there has been clear contrast of opinion among the researchers and policy makers regarding the deprivation of informal workers[10] which demands further research and study. This study aims to put some light on this contrasting result.

5.3. Research gap and objective of the study

The above-mentioned literatures only highlighted the incidence of poverty among the informal workers but hardly focus on the incidence and depth of poverty among heterogeneous groups of informal workers. Additionally, the available literatures hardly talk about the possible factors responsible for incidence and acuteness of poverty among the poor informal workers. Moreover, we hardly come across a great deal of research work which try to estimate the impact of the economic conditions of the informal workers due to implementation of the demonetisation. Based on the research gaps, the objectives of the study are listed below:

i) To investigate the percentages of poor across different types of informally employed people of India and whether the percentages of poor informal workers have enhanced or not from 2011-2012 to 2018-2019 during the post demonetisation era.

ii) To investigate the possible factors responsible for the incidence poverty of the informal workers during 2011-2012.

iii) To investigate the acuteness of poverty across different types of poor informal workers and how demonetisation have impacted the acuteness of poverty among them.

[10]The casual workers, contractual workers, workers of the unorganised sectors are undoubtedlyinformal workers (by ILO definition of informal workers and GOI (2007) who mostly aredeprived of any social security benefits.

iv) To investigate the determinants of acuteness of poverty across poor informal workers during 2011-2012.

These determinants of the acuteness of poverty can give policy prescriptions which are essential to reduce the acuteness of poverty among marginal poor (their poverty gap is very low), middle poor (their poverty gap is medium) and chronic poor (their poverty gap is sufficiently large) informal workers.

5.4. Sources of data

This study uses the 68th round NSSO data on employment and unemployment for the period 2011-2012 and periodic labour force survey data for the period 2018-19. We have used these two time periods in order to shed some light on the poverty situation of the informal workers during the pre-demonetisation period and post-demonetisation. India witnessed economic demonetisation during 2016 which is supposed to impact mostly the informal workers and the informal sectors. The incidence of poverty during 2018-19 is supposed to reveal the impact of economic demonetisation. Any period later than 2018-19 (i.e., 2019-2020 and later years) can be considered a Covid-19 years and not normal year. In this chapter, our intention is only to witness the incidence of poverty among the informal workers during the pre-demonetisation period and the post demonetisation period. The extract contains only own account workers (SE), regular salaried workers and casual workers in public as well as private sectors (indicating IEFS and EIS). To do this we have subtracted all samples whose principal activity status is employer (because this is formal in nature), student, housewife, beggar, retired and handicapped. Thus, the total number of extracted samples is 117,172 for the period 2011-2012 and 183,272 for the period 2018-2019. Total extracted samples sub-divided into three types of informal workers, SE, EIS and IEFS, and then want to find out the incidence and depth of poverty among those chosen types of workers. SE workers are own-account workers in our data set. EIS are workers of proprietary enterprises, partnership enterprises, domestic enterprises[11] and other enterprises where number of workers are less than 10. On the other hand, in our data set, IEFS are workers of public enterprises, private enterprises and co-operative enterprises who hardly get any social security benefits[12]. The distributions of these three types of informal workers in our data set during 2011-2012 are such that 28.30 percentages are SE, 61.34 percent are EIS while 10.36 percent are IEFS. During 2018-19, 14.66 percentages of workers are SE, 74.96 percentages of workers are EIS and 10.38 percentages of workers are IEFS.

[11]Domestic enterprises by definition are unorganised or informal in nature.

[12]All definitions based on GOI (2007).

5.5. Discussion of poverty line across states

We briefly represent the poverty line and overall poverty percentages across states both rural and urban areas. Here incidence of poverty has been measured according to the poverty line estimates prescribed by the Tendulkar Committee report for the year 2011-2012 for respective states as well as union territories. Not only standards of living of different states are different but also it is different across rural and urban areas. Therefore, the poverty line is different across states and across rural and urban areas for the period 2011-2012. We have calculated the poverty line for the year 2018-2019 by multiplying the poverty line estimates of 2011-2012 for respective sectors, states and union territories. To calculate adjusted poverty line in different states, in 2018-19, we have considered Consumer's price index of rural workers in different states for the time period August 2018 for the rural areas and in the urban areas, the consumer price index of the industrial workers of different states for the period 2018-19 are considered.

It is found that during 2011-2012, poverty line is highest in Pondicherry both in rural and urban area while it is lowest in Orissa in the rural area and Chhattisgarh in the urban area. In the rural as well urban area, percentage of poverty of the informal workers is highest in Manipur, while this percentage is nil in Daman and Diu and islands in the rural area and only in islands in the urban area. The overall percentage of poverty has been highest in Chhattisgarh.

Just like the previous year, the poverty line is highest in Pondicherry in the rural area while in urban area, poverty line has been highest in Sikkim and it is lowest in Orissa in both the rural as well as urban areas during the latter years. Nagaland is the state in which the percentage of poverty-stricken people has been highest and quite alarming. This is true for the rural sector as well as the urban sector. Besides, there are some states in which percentages of poor people has been nil. These states are Lakshadweep and Andamaan &Nicobar Islands in the rural sector while Daman & Diu in the urban sector. Not only this, in the urban area of the islands, and rural area of Daman & Diu, percentages of poverty has been insignificant (less than 3 percent). Apart from Goa, is the state in which poverty percentage is very small. Overall percentage of poverty has been highest in Nagaland.

Table5.1: Percentages of poor and non-poor informal workers across rural, urban as well as all India level

States (2011-2012)	Poverty line (Rural)	Poverty line (Urban)	Total Sample (R+U)	Total sample (Rural)	Total sample (Urban)	Poverty Percentage (R+U)	Poverty Percentage (Rural)	Poverty Percentage (Urban)
Jammu & Kashmir	891	988	17,691	11,031	6,660	18.44	21.38	8.69
Himachal Pradesh	913	1064	8,612	7,245	1,367	15.69	16.62	8.21
Punjab	1054	1155	14,380	7,571	6,809	14.26	14.67	13.54
Chandigarh	1054	1155	1,218	295	923	19.74	4.75	15.93
Uttaranchal	880	1082	7,884	4,830	3,054	18.23	16.44	23.21
Haryana	1015	1169	12,623	7,450	5,173	13.14	14.63	9.75
Delhi	1145	1134	3,981	284	3,697	8.34	4.38	8.67
Rajasthan	905	1002	20,172	12,995	7,177	24.62	26.96	17.10
Uttar Pradesh	768	941	49,513	33,738	15,775	38.67	40.57	31.80
Bihar	778	923	23,508	17,363	6,145	41.32	42.19	33.25
Sikkim	930	1226	2,967	2,431	536	15.25	17.26	6.23
Arunachal Pradesh	930	1060	7,600	5155	2,445	41.29	45.13	24.82
Nagaland	1270	1302	4,879	3,273	1,606	22.32	23.13	20.82
Manipur	1118	1170	12,567	7,040	5,527	43.17	46.53	33.80
Mizoram	1066	1155	7,002	2,824	4,718	23.02	36.04	9.62
Tripura	798	920	7,197	5,277	1,920	14.14	15.74	5.86
Meghalaya	888	1154	6,246	4,306	1,940	12.15	12.47	10.92
Assam	828	1008	15,803	12,455	3,348	33.43	34.72	22.79
West	783	981	25,521	15,268	10,253	25.57	29.04	16.18

Bengal								
Jharkhand	748	974	12,992	8,682	4,310	37.24	41.05	23.80
Orissa	695	861	17,149	13,031	4,118	36.46	38.75	23.15
Chhattisgarh	738	849	10,075	7,037	3,038	45.49	49.92	29.37
Madhya Pradesh	771	897	21,869	12,952	8,917	38.88	43.47	25.45
Gujarat	932	1152	15,710	8,498	7,212	25.19	33.42	12.98
Daman & Diu	861	1000	575	258	317	2.83	0	9.07
Dadra Nagar Haveli	861	1000	851	470	381	26.47	41.92	7.38
Maharashtra	967	1126	35,364	18,460	16,904	23.39	34.13	10.55
Andhra Pradesh	860	1009	25,658	14,991	10,667	13.40	16.17	7.80
Karnataka	902	1089	18,092	9,561	8,531	26.44	31.78	17.14
Goa	1090	1134	1,813	683	1,130	10.31	13.12	7.46
Lakshadweep			967	325	642	11.67	7.90	15.69
Kerala	1018	987	17,957	10,659	7,298	13.82	15.65	8.86
Tamil Nadu	880	937	24,281	12,669	11,612	16.83	24.77	6.96
Pondicherry	1301	1309	2,135	509	1,626	11.66	17.22	8.33
Islands	861	1000	2,147	1,147	1,000	0	0	0
States (2018-2019)	**Poverty line (Rural)**	**Poverty line (Urban)**	**Total Sample (R+U)**	**Total sample (Rural)**	**Total sample (Urban)**	**Poverty Percentage (R+U)**	**Poverty Percentage (Rural)**	**Poverty Percentage (Urban)**
Jammu & Kashmir	1263.37	1336.65	27,881	8,955	18,926	21	25.70	15.33

Himachal Pradesh	1198.1	1402.64	9,744	6,071	3,673	11.70	14.46	3.91
Punjab	1416.38	1491.50	27,194	6,664	20,530	8.53	9.56	7.99
Chandigarh	1448.50	1513.72	3,665	234	3,431	7.76	17.39	7.61
Uttaranchal	1130.59	1411.85	13,919	4,195	9,724	19.96	22.32	17.90
Haryana	1328.99	1533.19	21,978	6,325	15,653	14.27	17.96	11.72
Delhi	1467.78	1531.99	9,994	312	9,682	11.09	46.12	10.44
Rajasthan	1197.84	1350.77	36,210	12,402	23,808	18.08	25.02	11.22
Uttar Pradesh	998.40	1267.64	73,502	28,132	45,370	25.82	25.02	26.72
Bihar	1063.27	1221.20	34,929	15,441	19,488	40.72	42.70	34.34
Sikkim	1310.86	1759.25	4,853	1,710	3,143	29.92	45.15	16.46
Arunachal Pradesh	1384.67	1578.22	12,823	4,820	8,003	16.10	19.23	10.89
Nagaland	1890.20	1757.07	8,036	2,368	5,668	62.93	86.87	43.78
Manipur	1816.20	1560.38	21,512	5,705	15,807	20.09	29.55	12.35
Mizoram	1367.05	1453.75	14,488	2,033	12,455	18.14	37.12	11.38
Tripura	1116.46	1259.09	11,551	4,619	6,932	6.33	5.94	6.89
Meghalaya	1156.84	1473.57	9,544	3,877	5,667	11.12	14.89	4.53
Assam	1115.83	1341.42	21,319	11,165	10,154	14.72	16.91	8.42
West Bengal	1051.98	1315.86	48,083	13,309	34,774	14.24	18.03	11.60
Jharkhand	1000.54	1277.33	21,730	7,923	13,807	39.24	48.07	28.80
Orissa	930.28	1122.58	23,161	11,382	11,779	25.69	32.52	14.11
Chhattisgarh	1007.23	1128.77	16,671	6,311	10,360	40.59	46.37	32.18
Madhya Pradesh	989.93	1197.15	38,399	12,287	26,112	20.80	23.97	17.83
Gujarat	1232.31	1474.34	29,973	7,391	22,582	16.26	33.59	8.65
Daman &	1270.29	1305.83	912	258	654	0.16	2.31	0

Diu								
Dadra Nagar Haveli	1063.07	1256.73	1,531	312	1,219	3.69	5.07	3.27
Maharashtra	1283.96	1448.64	66,668	15,122	51,546	21.83	41.79	12.69
Andhra Pradesh	1131.54	1347.60	26,514	7,780	18,644	7.27	8.56	6.44
Karnataka	1184.29	1502.61	34,043	7,383	26,660	24.25	30.13	21.23
Goa	1572.27	1478.61	3,557	738	2,819	0.87	2.94	0.43
Lakshadweep	1116.75	1322.33	642	226	416	3.72	0	4.98
Kerala	1351.42	1328.30	35,753	7,487	28,266	5.73	7.82	4.92
Tamil Nadu	1152.07	1260.04	46,873	11,007	35,866	5.06	6.87	4.37
Pondicherry	1706.68	1716.52	5,065	471	4,594	6.49	6.90	6.41
Islands	1138.51	1282.86	3,453	858	2,595	0.47	0	0.70
Telangana	1131.54	1347.60	21,633	4,454	17,179	15.41	22.89	11.99

Source: Authors' own calculation from 68th round NSSO data and Periodic Labour Force Survey For 2018-2019

5.6. Analysis of the incidence of poverty among the informal workers of India

Here a brief estimate of the incidence of poverty among the SE, EIS as well as IEFS aregiven. We find out the percentages of poor and non-poor informal workers attached withthree kinds of employment across major dimensions. We have also compared the incidence of poverty across two different time period 2011-2012 and 2018-2019. We have identified those workers aspoor whose MPCE is less than the poverty line estimates based on the TendulkarCommittee report as prescribed for the year 2011-2012 for respective states[13] and Unionterritories as well as rural and urban area. Accordingly, for the year 2018-2019, we

[13]We have measured poverty based on poverty line estimates as provided by Tendulkar Committeereport for respective states, union territories as well as sector. Although Tendulkar Committeeprovides poverty line estimates as a whole for India and state specific poverty line, but we havetaken the measure for respective states, union territories and sector. The reason is that if wewould have taken the estimate of poverty as a whole for all India level, then the estimate ofpoverty would have been over-estimated in some of the states and under-estimated in some otherstates.

have identified those workers as poor whose adjusted MPCE falls below the poverty line estimates that we have found out for the period 2018-2019 by doing the calculation explained above for respective states, union territory and sector. That is instead of taking a single poverty line estimates for all India level, we have taken different poverty line estimates for different states, union territories and sector as prescribed by the Tendulkar committee report during2011-2012[14].

In this part, we have compared the incidence of poverty across different states for 2011-2012 as well as 2018-19. The states where percentages of poverty-stricken workers have reduced over the period for both the sectors as well as all India level have been Himachal Pradesh, Punjab, Rajasthan, Uttar Pradesh, Arunachal Pradesh, Manipur, Assam, West Bengal, Orissa, Madhya Pradesh, Dadra Nagar Haveli, Andhra Pradesh, Goa, Lakshadweep, Kerala, Tamil Nadu and Pondicherry. On the other hand, percentages of poverty-stricken workers have enhanced from 2011-2012 to 2018-2019 in Jammu & Kashmir, Haryana, Delhi, Nagaland and Jharkhand for both rural, urban as well as all India level. There has been a slight increase in the incidence of poverty in the islands of Andamaan & Nicobar where percentages of poverty-stricken workers have been nil during the former period.

Table 5.2: Percentages of poor and non-poor informal workers across different states of India

	2011-2012			**2018-2019**		
States (2011-2012)	**Poverty Percentage (R+U)**	**Poverty Percentage (Rural)**	**Poverty Percentage (Urban)**	**Poverty Percentage (R+U)**	**Poverty Percentage (Rural)**	**Poverty Percentage (Urban)**
Jammu & Kashmir	18.44	21.38	8.69	21	25.70	15.33
Himachal Pradesh	15.69	16.62	8.21	11.70	14.46	3.91
Punjab	14.26	14.67	13.54	8.53	9.56	7.99
Chandigarh	19.74	4.75	15.93	7.76	17.39	7.61

[14]This is because poverty is a relative concept.

Uttaranchal	18.23	16.44	23.21	19.96	22.32	17.90
Haryana	13.14	14.63	9.75	14.27	17.96	11.72
Delhi	8.34	4.38	8.67	11.09	46.12	10.44
Rajasthan	24.62	26.96	17.10	18.08	25.02	11.22
Uttar Pradesh	38.67	40.57	31.80	25.82	25.02	26.72
Bihar	41.32	42.19	33.25	40.72	42.70	34.34
Sikkim	15.25	17.26	6.23	29.92	45.15	16.46
Arunachal Pradesh	41.29	45.13	24.82	16.10	19.23	10.89
Nagaland	22.32	23.13	20.82	62.93	86.87	43.78
Manipur	43.17	46.53	33.80	20.09	29.55	12.35
Mizoram	23.02	36.04	9.62	18.14	37.12	11.38
Tripura	14.14	15.74	5.86	6.33	5.94	6.89
Meghalaya	12.15	12.47	10.92	11.12	14.89	4.53
Assam	33.43	34.72	22.79	14.72	16.91	8.42
West Bengal	25.57	29.04	16.18	14.24	18.03	11.60
Jharkhand	37.24	41.05	23.80	39.24	48.07	28.80
Orissa	36.46	38.75	23.15	25.69	32.52	14.11
Chhattisgarh	45.49	49.92	29.37	40.59	46.37	32.18
Madhya Pradesh	38.88	43.47	25.45	20.80	23.97	17.83
Gujarat	25.19	33.42	12.98	16.26	33.59	8.65
Daman & Diu	2.83	0	9.07	0.16	2.31	0
Dadra Nagar Haveli	26.47	41.92	7.38	3.69	5.07	3.27
Maharashtr	23.39	34.13	10.55	21.83	41.79	12.69

a						
Andhra Pradesh	13.40	16.17	7.80	7.27	8.56	6.44
Karnataka	26.44	31.78	17.14	24.25	30.13	21.23
Goa	10.31	13.12	7.46	0.87	2.94	0.43
Lakshadweep	11.67	7.90	15.69	3.72	0	4.98
Kerala	13.82	15.65	8.86	5.73	7.82	4.92
Tamil Nadu	16.83	24.77	6.96	5.06	6.87	4.37
Pondicherry	11.66	17.22	8.33	6.49	6.90	6.41
Islands	0	0	0	0.47	0	0.70
Telangana				15.41	22.89	11.99

5.6.1. Incidence of poverty among the informal workers

Table 5.3 has displayed the percentages of poor informal workers during 2011-2012 and 2018-2019 in rural,urban as well as all India level. It is found that during both the time period, concentration of poor people has been higherin the rural areas compared to the urban areas across all types of informal workers. Due to lack of sufficient employment opportunity and infrastructural development, it is found that incidence of poverty has been higher in the rural areas as compared to the urban area. However, incidence of poverty has reduced by some percentages from the 2011-2012 to 2018-2019 across all types of informal workers and in sector as well as all India level.

Comparing the incidence of poverty across different types we find that during the former period in the rural areas IEFS contains highest percentages of poor people, which is followed by EIS. SE are the least poor category in the rural area. On the other side in both the urban area and all India level, highest percentages of poverty-stricken people work as SE, while lowest percentages of poverty-stricken people work in IEFS in the urban area andEIS in the all-India level. Again, during the latter period, we find that percentages of poor people have been least among IEFS across both the sectors as well as all India level. In the rural sector as well as all India level, prevalence of poverty-stricken informal workers has been highest among EIS followed by SE.We find that there has been reduction in poverty of all types of

informal workers from the period 2011-2012 which indicate the demonetisation has hardly adversely affected on the poverty of the informal workers.

Table 5.3: Percentages of poor and non-poor informal workers across rural, urban as well as all India level

	2011-2012						2018-2019					
Type of employment	**Rural**		**Urban**		**All India**		**Rural**		**Urban**		**All India**	
	Poor	**Non poor**	**Poor**	**Non poor**	**Poor**	**Non poor**	**Poor**	**Non poor**	**Poor**	**Non poor**	**Poor**	**Non poor**
SE	24.96	75.04	18.94	81.06	24.74	75.26	22.09	77.91	14.05	85.95	18.35	81.50
EIS	26.29	73.71	17.06	82.94	21.87	78.13	22.31	77.69	16.24	83.76	18.50	81.65
IEFS	29.57	70.43	9.81	90.19	22.98	77.02	19.33	80.67	9.27	90.73	12.87	87.59

Source: Same as table 5.1

Note: Poor and non-poor workers add up to 100

5.6.2. Incidence of poverty among the informal workers across social groups

The results of percentages of poor workers across different social groups for the period 2011-2012 and 2018-2019 are displayed in table 5.4. It is found that across different types of informal workers in the rural sector incidence of poverty has been highest among STs and the second highest position in terms of percentages of poor workers have been held by SCs followed by OBCs and the least is held by others (represents general workers). This is observed during both the time periods. On the other hand, among the urban workers who are working as SE, prevalence of poverty has been highest among SC workers during both the time period. The second highest position in terms of poverty has been occupied by ST workers followed by OBC and the least among others category of workers. Among the urban

EIS workers, incidence of poverty has been highest among ST workers followed by SC, OBC and the least among general workers for both the period. Among urban IEFS workers during the former period, percentages of poverty have been highest SC followed by ST, OBC and the least among others. By contrast among the urban IEFS workers during the latter period we percentages of poverty has been highest among ST followed by SC, OBC and the least among others. Thus, we say that ST and SC groups of workers are the most poverty-stricken.

Table 5.4: Percentages of poor and non-poor informal workers across different social groups

			2011-2012				2018-2019			
	Social groups		**ST**	**SC**	**OBC**	**Others**	**ST**	**SC**	**OBC**	**Others**
Rural	**SE**	**Poor**	44.38	29.91	24.34	15.5	37.14	23.72	20.68	16.43
		Non-Poor	55.62	70.09	75.66	84.5	62.86	76.28	79.32	83.57
	EIS	**Poor**	42.78	29.22	24.18	17.22	38.37	24.86	20.41	15.83
		Non-Poor	57.22	70.78	75.82	82.78	61.63	75.14	79.59	84.17
	IEFS	**Poor**	51.72	36.73	24.56	14.4	37.23	18.52	16.47	15.57
		Non-Poor	48.28	63.27	75.44	85.6	62.77	81.48	83.53	84.43
Urban	**SE**	**Poor**	33.72	38.85	18.11	12.27	19.81	22.38	16.82	8.30
		Non-Poor	66.28	61.15	81.89	87.73	80.19	77.62	83.18	91.70
	EIS	**Poor**	30.72	25.1	17.18	11.28	32.10	24.81	16.70	10.58
		Non-Poor	69.28	74.9	82.82	88.72	67.90	75.19	83.30	89.42
	IEFS	**Poor**	12.55	18.21	10.05	7.33	16.33	14.62	9.41	6.23
		Non-Poor	87.45	81.79	89.95	92.67	83.67	85.38	90.59	93.77

Source: Same as table 5.1

Note: Poor and non-poor workers add up to 100

5.6.3. Incidence of poverty among the informal workers across different states

Table 5.5 indicates incidence of poverty across all the states and union territories of India for both the time period.The top five most poverty-stricken states during 2011-2012 are Manipur, Jharkhand and Chhattisgarh. InManipur more than 57 percent, 41 percent and 48 percent of SE, EIS and IEFS are poverty-stricken respectively. Jharkhand follows Manipur in terms of

incidence of poverty whererepercentages of poor SE, EIS and IEFS are 41.29, 31.34 and 30.3 respectively. InChhattisgarh, 38.57 percent of SE, 38.55 percent of EIS and 37.73 percentages of IEFS livebelow the poverty line estimates. In this state, percentages of poor among the SE workershave been lower compared to the other two states while that of EIS and IEFS have beenhigher than Jharkhand. On the other hand, in the states of Chandigarh, Delhi, Daman andDiu, Lakshadweep, Pondicherry and islands, percentages of poor SE workers are nil. Apartfrom that, among the EIS and IEFS, incidence of poverty has been lowest in the Islands. Infact, among these workers, incidence of poverty is zero in the islands. Incidence of povertyhas been highest among the SE in the states of Sikkim, Arunachal Pradesh, Nagaland,Manipur, Tripura, Meghalaya, Assam, Chhattisgarh, Gujarat, Dadra Nagar Haveli andMaharashtra. While incidence of poverty has been highest among the EIS in the states ofPunjab, Chandigarh, Uttaranchal, Haryana, Delhi, Uttar Pradesh, Bihar, Meghalaya,Daman and Diu, Goa and Kerala. Again, incidence of poverty has been highest among theIEFS in the states of Jammu and Kashmir, Himachal Pradesh, Rajasthan, Mizoram, WestBengal, Orissa, Madhya Pradesh, Andhra Pradesh, Karnataka, Lakshadweep, Tamil Naduand Pondicherry.

During 2018-2019, incidence of poverty has been highest in Nagaland across SE, EIS as well as IEFS. Among SE and EIS, percentages of poverty population have been lowest in Daman Diu, followed by islands, Dadra Nagar Haveli. Among IEFS, incidence of poverty has been nil in islands. Among the SE and EIS workers incidence of poverty has been highest in Chhattisgarh followed by Jharkhand apart from Nagaland. Besides, percentages of poverty population have been more than 30 percent in Bihar and Sikkim among SE. Among EIS, incidence of poverty has been very high in Bihar. Compared to SE, incidence of poverty has been very high among EIS in the states of Jharkhand and Chhattisgarh. Among IEFS, percentages of poverty-stricken population have been highest Nagaland closely followed by Bihar where more than 40 percent of workers are immersed into poverty. Compared to EIS, percentages of poverty population have been higher in the states like Bihar, Sikkim, Arunachal Pradesh, Manipur, Tripura, Madhya Pradesh, Daman & Diu, Dadra Nagar Haveli, Goa, Lakshadweep and Kerala among IEFS.

Table 5.5: Percentages of poor and non-poor informal workers across different states

	2011-2012						**2018-2019**					
	SE		**EIS**		**IEFS**		**SE**		**EIS**		**IEFS**	
States	**Poor**	**Non-**	**Poor**	**Non-**	**Poor**	**Non-**	**Poor**	**Non-**	**Poor**	**Non-**	**Poor**	**Non-**

		poor		**poor**		**poor**		**poor**		**poor**		**poor**
Jammu & Kashmir	14.99	85.01	16.22	83.78	20.96	79.04	21.19	78.81	23.93	76.07	13.28	86.72
Himachal Pradesh	13.4	86.6	12.49	87.51	14.14	85.86	10.71	89.29	11.60	88.40	10.91	89.09
Punjab	2.26	97.74	16.48	83.52	6.9	93.1	4.83	95.17	8.37	91.63	7.20	92.80
Chandigarh	0	100	22.08	77.92	15.21	84.79	9.28	90.72	13.01	86.99	3.48	96.52
Uttaranchal	12.59	87.41	19.16	80.84	12.38	87.62	18.39	81.61	22.04	77.96	18.32	81.68
Haryana	4.75	95.25	17.29	82.71	7.91	92.09	8.73	91.27	12.58	87.42	9.99	90.01
Delhi	0	100	8.78	91.22	6.48	93.52	5.20	94.80	11.42	88.58	9.13	90.87
Rajasthan	17.7	82.3	20.14	79.86	29.85	70.15	16.85	83.15	18.28	81.72	11.10	88.90
Uttar Pradesh	27.7	72.3	37.06	62.94	30.41	69.59	22.83	77.17	27.74	72.26	12.55	87.45
Bihar	27.32	72.68	35.94	64.06	34.84	65.16	34.57	65.43	36.62	63.38	46.13	53.87
Sikkim	26.87	73.13	7.56	92.44	10.66	89.34	33.01	66.99	22.32	77.68	23.08	76.92
Arunachal Pradesh	50.24	49.76	26.79	73.21	41.81	58.19	19.99	80.01	11.47	88.53	16.94	83.06
Nagaland	34.24	65.76	23.51	76.49	4.97	95.03	78.83	21.17	71.48	28.52	46.78	53.22
Manipur	57.13	42.87	40.52	59.48	48.53	51.47	21.96	78.04	19.70	80.30	23.52	76.48
Mizoram	31.9	68.1	10.77	89.23	39.52	60.48	20.64	79.36	16.72	83.28	7.21	92.79
Tripura	16.13	83.87	10.1	89.9	15.65	84.35	3.36	96.64	5.39	94.61	15.29	84.71
Meghalaya	8.5	91.5	9.84	90.16	5.26	94.74	12.83	87.17	11.15	88.85	8.30	91.70
Assam	30.6	69.4	28.38	71.62	23.27	76.73	12.54	87.46	13.84	86.16	7.49	92.51
West Bengal	13.83	86.17	20.97	79.03	21.48	78.52	11.80	88.20	13.09	86.91	11.93	88.07
Jharkhand	41.29	58.71	31.34	68.66	30.3	69.7	38.07	61.93	43.41	56.59	22.54	77.46
Orissa	32.	67.	29.	70.	38.	61.	23.	76.7	27.6	72.3	16.8	83.1

	03	97	83	17	58	42	25	5	3	7	8	2
Chhattisgarh	38.57	61.43	38.55	61.45	37.73	62.27	40.01	59.99	43.71	56.29	36.44	63.56
Madhya Pradesh	31.08	68.92	34.06	65.94	45.35	54.65	16.37	83.63	20.65	79.35	23.59	76.41
Gujarat	28.72	71.28	15.51	84.49	10.64	89.36	17.12	82.88	13.45	86.55	13.33	86.67
Daman & Diu	0	100	6.34	93.66	0.9	99.1	0.34	99.66	0.13	99.87	0.27	99.73
Dadra Nagar Haveli	34.54	65.46	26.52	73.48	9.64	90.36	2.00	98.00	0.56	99.44	6.44	93.56
Maharashtra	26.28	73.72	15.13	84.87	10.73	89.27	22.03	77.97	20.34	79.66	11.78	88.22
Andhra Pradesh	11.61	88.39	11.06	88.94	16.12	83.88	5.77	94.23	7.71	92.29	3.97	96.03
Karnataka	25.04	74.96	21.84	78.16	28.11	71.89	24.32	75.68	26.17	73.83	14.13	85.87
Goa	3.6	96.4	11.98	88.02	8.27	91.73	0.05	99.95	0.04	99.96	2.79	97.21
Lakshadweep	0	100	6.62	93.38	8.82	91.18	20.71	79.29	9.69	90.31	14.27	85.73
Kerala	5.32	94.68	14.08	85.92	10.53	89.47	3.20	96.80	4.62	95.38	4.93	95.07
Tamil Nadu	13.24	86.76	11.23	88.77	24.99	75.01	3.66	96.34	5.05	94.95	2.70	97.30
Pondicherry	0	100	9.54	90.46	92.26	7.74	9.04	90.96	8.66	91.34	4.09	95.91
Islands	0	100	0	100	0	100	1.12	98.88	0.42	99.58	0	100
Telangana							18.10	81.90	16.18	83.82	14.32	85.68

Source: Same as table 5.1

Note: Poor and non-poor workers add up to 100

5.6.4. Descriptive statistics of the informal workers

The values of mean, standard deviation, maximum value as well as minimum values are illustrated in table 5.6 for the period 2011-2012 as well as 2018-2019. During the former period, average age of the informal workers has been 39.09 years. Minimum age has been 5 years which indicate that child labourers are also working as informal workers. Maximum value has been 102 years which indicates that aged people are also working. Mean years of education among the informal workers has been 3.32 years. Non-technical education, female

headed household and rural sector, financial exclusion as well as alternate job seekers have been dummy variable. Mean non-technical education has been 0.96 years which indicates that most of the workers have not received technical education. Mean female headed household has been 0.04 which means most of the household is male headed. Mean rural sector has been 0.69 which indicates that more than 50 percent of the workers comes from rural sector. Mean financial exclusion have been 0.04 which indicates that most of the informal workers have opened their bank account. Last but not the least, mean alternate job seekers have been 0.05 which indicates that most of the workers are not looking for alternate jobs. That is most of the workers are satisfied.

During the latter period, average age of the informal workers has been 39.94 years. Minimum age has been 5 years which indicate that child labourers are also working as informal workers. Maximum value has been 96 years which indicates that aged people are also working. Mean years of education among the informal workers has been 4.98 years. Non-technical education, female headed household and rural sector has been dummy variable. Mean non-technical education has been 0.95 years which indicates that most of the workers are hardly technical educated. Mean female headed household has been 0.04 which means most of the household is male headed. Mean rural sector has been 0.45 which indicates that almost half of the workers are coming from rural sector.

Table 5.6: Descriptive statistics of all the informal workers taken together

	2011-2012				2019-2019			
Variable	**Mean**	**Standard deviation**	**Minimum value**	**Maximum value**	**Mean**	**Standard deviation**	**Minimum value**	**Maximum value**
Age	39.09	12.86	5	102	39.94	12.40	5	96
Years of education	3.32	2.66	0	9	4.08	2.71	0	9

Non-technical education	0.96	0.19	0	1	0.95	0.23	0	1
Financially exclusion	0.04	0.18	0	1				
Female headed household	0.04	0.19	0	1	0.04	0.19	0	1
Alternate job seekers	0.05	0.22	0	1				
Rural	0.69	0.47	0	1	0.45	0.5	0	1

Source: Same as table 5.1

Note: The variables such as financial exclusion and alternate job seekers are not available during 2018-2019.

5.6.5. Incidence of poverty among the informal workers across heterogeneous groups

In order to grasp the heterogeneity of the informal employment and incidence of poverty among them, we try to estimate the incidence of poverty among the informal employment across workers' status as well as location of work. Status of the informal employment may be subdivided into self-employed employed (SE), regular salaried workers (RS), casual workers in the public sector (CP) and casual workers in another sector (CO). Again, location of the workers may be subdivided into workers working without any fixed location (WWFL), workers working in own household (WWIOH), workers working in own office (WWIOF), workers working in employers' household (WWIEH), workers working in employers' office (WWIEF), workers working in street with fixed location (WWISFL) and workers working in other location (WWIOL). Tables 5.7 and 5.8 provide information on the incidence of poverty across informal workers based on their status of employment and location of employment respectively for both the period. We find incidence of poverty declined unanimously over the years from 2011-2012 to 201-2019 across different status of employment and informal workers across different locations.

It is found that just like different types of informal workers, incidence of poverty across different status of employment has been higher in the rural area compared to that of urban area for both the period. Needless to say, that incidence of poverty among the casual workers has been highest while that of regular salaried workers has been lowest for both the periods. More specifically, incidences of poor workers have been highest among the casual workers in the public sector during the former period and casual work in the other sector during the latter

period. This is true for rural, urban as well as all India level. Furthermore, it is also found that incidence of impoverishment among the SE workers has been higher than the RS workers but it is lower than that of the casual workers in both public and other sectors during the former period and latter period excepting the rural sector of the latter period where the incidence of poverty across SE have been higher than RS and CP but lower than CO.

Additionally, informal employment has been measured on the basis of location of the workers for both the periods. It is found that incidence of poverty among the informal workers has also been different on the basis of location of the workers. In the rural area, incidence of poverty has been highest among the WWFL during the former period and WWISFL during the latter period. While in the urban area and in the all-India level, incidence of poverty has been highest among the WWIOL during both the period. On the other hand, incidence of poverty has been lowest among the WWIOF during former period across different sectors. During the latter period, percentage of poverty population have been least among WWIOF in the countryside and WWIEF in the cities and all-India level. Just like before, irrespective of all locations, incidence of poverty has been higher in the rural area than urban area.

Table 5.7: Percentages of poor informal workers across status of employment

	2011-2012						**2018-2019**					
Status of employment	**Rural**		**Urban**		**All India**		**Rural**		**Urban**		**All India**	
	Poor	**Non-Poor**	**Poor**	**Non-Poor**	**Poor**	**Non-Poor**	**Poor**	**Non-Poor**	**Poor**	**Non-Poor**	**Poor**	**Non-Poor**
SE	24.27	75.73	16.11	83.89	22.21	77.79	22.09	77.91	14.05	85.95	18.50	81.50
RS	17.4	82.6	10.97	89.03	13.18	86.82	13.93	86.07	8.08	91.92	9.26	90.74
CP	47.71	52.29	39.94	60.06	46.99	53.01	14.00	86.00	26.51	73.49	17.30	82.70

CO	38.99	61.01	34.34	65.66	38.33	61.67	32.15	67.85	28.44	71.56	30.88	69.12

Source: Same as table 5.1

Note: Poor and non-poor workers add up to 100

Table 5.8: Percentages of poor informal workers across location of employment

	2011-2012						2018-2019					
Location of employment	*Rural*		*Urban*		*All India*		*Rural*		*Urban*		*All India*	
	Poor	Non-poor	Poor	Non-poor	Poor	Non-poor	Poor	Non-poor	Poor	Non-poor	Poor	Non-poor
WWFL	33.45	66.55	24.64	75.36	27.61	72.39	22.87	77.13	21.14	78.86	21.70	78.30
WWIOH	21.76	78.24	17.07	82.93	19.99	80.01	17.01	82.99	14.14	85.86	15.28	84.72
WWIOF	17.73	82.27	11.19	88.81	13.98	86.02	15.05	84.95	9.05	90.95	10.72	89.28
WWIEH	26.89	73.11	18.61	81.39	21.67	78.33	20.11	79.89	17.97	82.03	18.44	81.56
WWIEF	24.77	75.23	13.85	86.15	18.71	81.29	15.21	84.79	8.31	91.69	9.82	90.18
WWISFL	27.65	72.35	24.89	75.11	26.17	73.83	23.02	76.98	19.10	80.90	20.26	79.74
WWIOL	33.09	66.91	25.17	74.83	31.3	68.7	29.02	70.98	24.66	75.34	27.10	72.90

Source: Same as table 5.1

Note: Poor and non-poor workers add up to 100

5.7. Determinants of incidence of poverty among the informal workers in India

Initially we want to find out the determining factors of incidence of poverty among the informal workers in India. Here we consider both household specific and individual specific factors. Sample is drawn from the NSSO 68th[15] round where we have the information of both formal and informal workers. But here we want to identify the factors which are responsible for the incidence of poverty among the informal workers only. Hence there may be some quantitative or qualitative factors responsible for a factor to be informal in nature according to our definition. So, for this investigation we have to take the help of Heckman 2 step regression model to tackle the sample selection bias situation. We have to consider two equations simultaneously; the original equation and the selection equation. In the original equation, the dependent variable y_i* is taking binary values 1 and 0 where 1indicates that the

[15]Satisfaction and financial inclusiveness of the i^{th} worker are considered as important explanatory variables in our model. But data of these variables are only provided in 68^{th} round NSSO data and not in PLFS data. So, the exercise is considered only on the basis of NSSO data.

informal worker is poor while 0 indicates that the informal worker is non-poor[16]. However, statistical analysis based on non-randomly selected samples consisting of informal workers only can lead to erroneous conclusions and poor policy. Thus, we use Heckman corrections which is a two-step statistical approach provides a means of correcting the non-randomly selected samples and sample selection bias.

It is true that we have subdivided informal employment into three major types viz. SE, EIS and IEFS and would like to focus on the determinants of poverty among these three types of informal workers. However, this chapter also aims to capture the heterogeneity of informal employment in Indian labour market. To do so, we have further subdivided informal employment based on work status and work location. Based on work status informal employment is divided into four major types viz. RS, SE, CP and CO. Based on work location informal employment is divided into WWFL, WWIOH, WWIOF, WWIEH, WWIEF, WWISFL and WWIOL. This chapter aims to endeavour the determinants of poverty among different types of informal workers based on work status and work location as well. However, the problem of multicollinearity would arise if we accommodate these three divisions of informal employment in a single model. In order to avoid this problem, we use Model 3, Model 4 and Model 5[17] separately after considering informal employment based on workers types, status and location respectively. Besides, we do not consider the regression analysis separately for rural and urban area. Rather workers' sector has been considered as an explanatory variable in the following models.

Model 3

$y_i^* = F(techedu_i, agei, hh_i, caste_i, bank_i, satisfied_i, rural_i, \text{informal workers types}_i,)$

(Eq. 3)

Model 4

$y_i^* F(techedu_i, age_i, hh_i, caste_i, bank_i, satisfied_i, rural_i, \text{informal workers status}_i)$

(Eq. 4)

Model 5

$y_i^* = F(techeduiage_i, hh_i, caste_i, bank_i, satisfied_i, rural_i, \text{informal workers location}_i)$

(Eq. 5)

Here "$techedu_i$" represents the technical education among the i^{th} informal worker. It istreated as dummy variable. Incidence of poverty of a technically educated people may beless because

[16]Here poor and non-poor is identified on the basis of Tendulkar Committee Report for respectivestates, union territories as well as sector.

[17]All the three models are original equations which are required to estimate and analyze incidence of poverty among the informal workers.

technical education helps a prospective worker to work as a skilled formal worker in his working age and earn better wage.

The second explanatory variable is the "age_i" of the i^{th} informal workers. Age, which is generally considered as a proxy of experience, is found to have a negative relationship with the poverty. Thus, this chapter endeavours to find out whether experiences reduce incidence of poverty.

"Hh_i" represents household head of the i^{th} informal worker. We create its dummy variable. This chapter thus aims to investigate the influence of poverty among the i^{th} female-headed household, where male headed household is the reference group.

"$Caste_i$" represents the social group of the i^{th} informal worker. This chapter thus seeks to investigate the incidence of poverty among different social groups. Three dummy variables are separately constructed for scheduled tribe (ST), scheduled caste (SC) and other backward classes (OBC). General category worker is in the reference group.

"$Finan_i$" represents financial inclusion of the i^{th} worker. We shall try to investigate whether financial inclusion has any impact on poverty of the i^{th} worker.

"$Satisfied_i$" represents the i^{th} informal workers who hardly seek for alternative job whereas "Unsatisfied"[18] worker is the reference group. Our aim is to find out that whether "Satisfied" informal workers have lower incidence of poverty.

"$Rural_i$" represents rural sector in which the i^{th} informal worker works. Urban area is the reference group. Since there are lesser employment opportunities in the rural area, incidence of poverty is presumed to be higher in the rural area. This chapter thus aims to investigate incidence of poverty among the i^{th} informal worker who lives in the rural are acompared to that of the urban area.

"Informal workers $types_i$" represents of types of informal employment of the i^{th} informal worker. We have constructed dummy variables each for SE and IEFS whereas EIS is the reference. Since informal worker is not homogeneous, incidence of poverty among different groups of informal workers may vary a lot.

"Informal workers $status_i$" represents heterogeneity of the i^{th} informal workers in terms of their work status. Three dummy variables are constructed. These are RS, CP and CO while regular salaried SE is the reference group. Our objective is to find out incidence of poverty

[18]Whenever a worker is ready and available for alternative job that means he is unsatisfied with his present work.

among the i^{th} informal workers who are working as SE, or CP or CO compared to RS workers.

"Informal workers location$_i$" again represents heterogeneity of the i^{th} informal workers in terms of location of work. We have constructed six dummy variables. These are WWIOH,WWIOF, WWIEH, WWIEF, WWISFL and WWIOL. The reference group is WWFL. This chapter endeavours to find out the incidence of poverty among the i^{th} informal workers working in each of the location compared to the reference groups.

Now we present the selection equation that helps to identify the determining factors for the workers to join informal employment. The selection equation is given by

$\mathbf{I_i}^* = F(Edu_i, rel_i, voc_i)$ (Eq. 4)

Where **I**i* represents type of employment (i.e. formal/informal) of the i^{th} worker which is dummy in nature.Here $\mathbf{I_i}^*$ is the dependent variable which is taking binary values 0 and 1. Here, 0 indicates that the worker is a formal worker and 1 indicates that the worker is an informal worker.

Here "Edui" represents years of education among the i^{th} worker. "reli" represents religion of the i^{th} worker. "voc$_i$" represents vocational training of the i^{th} worker.

Initially we have to estimate the selection equation on the basis of Probit model, On the basis of the estimation, we can have estimated value of Inverse Mill's ratio represented by $\hat{\lambda}$ of each sample 'i'. In the Heckman two step estimation, this $\hat{\lambda}$ is to be treated another explanatory variable of the original Equation, mentioned in Model-1, Model-2, Model-3.If it is observed that the parameter estimates of $\hat{\lambda}$ is statistically significant, then we can become sure that Heckman two step estimation procedure is appropriate to address our research problem.

Table 5.9: Factors responsible for poverty of the informal workers

	MODEL 1	MODEL 2	MODEL 3
Workers Characteristics	**Coefficient**	**Coefficient**	**Coefficient**
Constant	0.01 (0.01)	0.02* (0.01)	0.06*** (0.01)
Non-Technical Workers	0.16*** (0.01)	0.14*** (0.01)	0.15*** (0.008)
Age	-0.002*** (0.0001)	-0.002*** (0.0001)	-0.002*** (0.0001)
Female headed household	0.001 (0.01)	0.005 (0.01)	-0.01 (0.01)
Scheduled Tribe	0.14*** (0.005)	0.12*** (0.005)	0.12*** (0.004)
Scheduled caste	0.09*** (0.004)	0.12*** (0.004)	0.13*** (0.004)
Other backward class	0.05*** (0.003)	0.07*** (0.003)	0.07*** (0.003)
Workers without bank account	0.06*** (0.01)	0.05*** (0.01)	0.06*** (0.01)

Alternative job seekers	0.05*** (0.01)	0.04*** (0.01)	0.04*** (0.01)
Rural Workers	-0.04*** (0.003)	-0.05*** (0.003)	-0.05*** (0.003)
IEFS	-0.03** (0.004)		
SE	-0.03*** (0.003)		
CP		0.14*** (0.01)	
CO		0.12*** (0.004)	
RS		-0.05*** (0.004)	
WWIOH			- 0.02*** (0.004)
WWIOO			-0.09*** (0.004)
WWIEH			0.02*** (0.008)
WWIEO			-0.06*** (0.004)
WWISWFL			0.02 (0.009)
WWIOL			0.04*** -0.005
$\hat{\lambda}$	0.06***	0.06***	0.06***

	(0.007)	(0.007)	(0.007)
Dependent Variable: Informal Worker			
Constant	-1.27*** (0.004)	-1.27*** (0.004)	-1.27*** (0.004)
Years of Education	-0.04*** (0.0009)	-0.04*** (0.0009)	-0.04*** (0.0009)
Muslim	0.07*** (0.01)	0.07*** (0.01)	0.07*** (0.01)
Christian	-0.16*** (0.01)	-0.16*** (0.01)	-0.16*** (0.01)
Other religions	0.04*** (0.01)	0.04*** (0.01)	0.04*** (0.01)
No vocational training	0.52*** (0.005)	0.52*** (0.005)	0.52*** (0.005)
rho	0.14	0.16	0.12
Sigma	0.42	0.41	0.43
Number of observations	4,56,992	4,56,992	4,56,992
Wald $\chi 2$	2771.46	4230.74	3560.02
	0	0	0

Prob>χ2			

Source: Same as table 4.1

* => significant at 10 percent level ** => significant at 5 percent level ***=> significant at 1 percent level

5.7.1. Results and discussions

We have used Heckman 2 step regression model in order to identify the factors which can influence incidence of poverty of the i^{th} informal workers in Indian labour market. In all the models the parameter estimates of $\hat{\lambda}$ is statistically significant which establishes the fact that Heckman Two step estimation procedure is appropriate for our investigation.

Model 3is a basic model, which considers the personal characteristics of the workers including types of informal employment. It is found that compared to EIS, IEFS and SE face significantly less probability of being poor. Furthermore, technical education, reduces the chance of being poverty-stricken. Moreover, compared to the workers without bank account and unsatisfied workers, i^{th} workers with financial inclusion as well as that of satisfied workers have significantly lower chances of remaining poverty-stricken respectively. Besides, compared to that of the general workers, i^{th} workers with all other social groups have significantly higher chances of remaining impoverished. STs are the most deprived social groups followed by SC sand OBCs. Furthermore, it is also found that compared to that of the urban area, i^{th} informal workers residing in rural areas have lower chances of being poor. This is undoubtedly due tothe lack of sufficient income earning opportunities in the rural area.

To check the validity of this result across different types of heterogeneous informal workers we have used **Model 4.** We have substituted types of the informal workers with status of the informal workers. It is observed that compared to that of the i^{th} SE workers, chance of impoverishment among the i^{th} CP and CO has been significantly higher while that of i^{th} RS workers have been significantly lower. What is much more interesting is that probability of impoverishment is the most among the i^{th} CP workers. This only signifies that during the post reform there has been major deterioration in the quality of jobs in the public sector.

In **Model 5,** we have substituted status of the i^{th} informal workers by location of the workers. This again captures the heterogeneity of the informal workers in terms of their place of work. In other words, the informal workers hardly have a homogeneous place of work. A SE worker might be working in the street with or without any fixed location. Besides, a RS worker might have a place of work in the employers' household or employer's office or even street with or without fixed location. Compared to WWFL, which is the reference group,

chance of remaining poor is significantly lower across WWIOH, WWIOO and WWIEO while higher across WWIEH and WWIOL.

So far as the determinants of informal employment are considered, we find that compared to Hindus, Muslims face significantly higher chance and Christians face significantly lower chances of being informally employed. Enhancement of years of education and increase invocational training reduces the chances of being informally employed.

5.8. Analysis of the depth of poverty among the poor informal workers

Besides identifying the responsible factors for the incidence of poverty among informal workers, our next objective is to investigate the causes of poverty gap (acuteness of poverty) among the poor informal workers. In order to do so, we deal with the poor informal workers only. Initially we have deleted all non-poor informal workers from our samples. Poverty gap for i^{th} individual residing in any particular state 's' (G_{is}) is defined as the difference between the official estimates of poverty line (ps) for that state minus MPCE for i^{th} individual residing in states ($MPCE_{is}$). That is $Gis= (ps-MPCE_{is})$, ($MPCE_{is}<ps$). Clearly G_{is} shows the depth of poverty of the i^{th} worker residing in s^{th} state. Clearly, G_{is} is positive for all the poor informal workers because $MPCE_{is}<$ ps. Higher the value of G_{is}, higher is the acuteness of poverty among the poor informal workers.

5.8.1. Mean poverty gap among the poor informal workers

We shall now measure the mean poverty gap across different types of informal workers in order tocompare the acuteness of poverty across SE, EIS as well as IEFS for the period 2011-2012 and 2018-2019 and the results are displayed in Table 5.10. It is found both in the rural as well as urban areas; During the period 2011-2012 as well as 2018-2019, acuteness of poverty is almost same among the workers working as SE and in EIS while that among IEFS is higher than each of SE and EIS excepting in the urban area during the former period where acuteness of poverty among the IEFS is lower than each of SE and EIS. Acuteness of poverty has been lowest among the SE in rural India and all-India during the former period while urban India and all-India during the latter period. By contrast, the lowest value of the same have been observed among the EIS in the urban area during the former year and rural area during the latter year. Unlike the incidence of poverty, acuteness of poverty has been higher in the urban area as compared to that of the rural area for all types of workers for both the time period. Although incidence of poverty has decline over the years, we find there has been an increase in the acuteness of poverty during the latter period as compared to the former period.

Table 5.10: Mean poverty gap across types of poor informal workers

	2011-2012			2018-2019		
Poverty gap among types of informal worker(Rs)	***RURAL***	***URBAN***	**All India**	***RURAL***	***URBAN***	**All India**
SE	159.78	193.01	160.71	233.67	262.74	243.54
EIS	159.92	192.3	172.01	230.28	274.37	255.72
IEFS	174.93	189.06	176.94	247.67	287.74	268.24

Source: Same as table 5.1

5.8.2. Mean poverty gap among the poor informal workers and different social groups

We have also estimated the mean poverty gaps across different types of informal workers and social groups and the results are displayed in the following table. We find that just like the incidence of poverty, mean poverty gap has been highest among ST unanimously during both the period as well as in both the sector and all types of informal workers. In the rural sector, acuteness of poverty has been least among general category of workers across different types of informal workers in the rural sector during the former period. During the latter period the value of the same has been least among OBC workers who are working as SE, general category of workers who are working as EIS and SC workers who are working as IEFS during the rural area. In the urban sector, the value of the same has been least among OBC workers who are working as SE and general workers who are working as EIS as well as IEFS during the former period. During the latter period, this value has been least among OBC workers who are working as SE and IEFS while general category of workers who are working as EIS.

Table 5.11: Mean poverty gap across types of poor informal workers and different social groups

	2011-2012		2018-2019	
	Rural	**Urban**	**Rural**	**Urban**

Social group	SE	EIS	IEFS	SE	EIS	IEFS	SE	EIS	IEFS	SE	EIS	IEFS
ST	197.43	213.35	214.99	248.57	195	279.44	300.30	266.08	277.29	322.85	300.32	321.36
SC	158.1	154.14	167.77	219.62	209.74	186.09	216.90	233.29	209.51	265.78	299.07	276.62
OBC	150.49	145.9	156.85	178.86	192.55	202.2	215.30	220.41	247.37	249.67	260.14	289.89
Others	141.18	142.68	150.46	183.65	172.64	174.82	221.94	212.63	261.34	281.37	270.75	287.31

Source: Same as table 5.1

5.8.3. Mean poverty gap across heterogeneous groups of poor informal workers

The measurement of mean poverty gap across status of informally employed workers and location of informal employment are provided in table 5.12 and 5.13 respectively. During the former period and latter period, the estimates of mean poverty gap has been highest among CP and CP respectively in all the rural, urban as well as all India level. while estimates of the same has been lowest among SE in the rural as well as all India level and among RS in the urban sector during 2011-2012. By contrast during 2018-2019, the estimates of poverty gap have been least among CP irrespective of all the sector. In the rural sector during the latter period, the figure of the same among SE has been slightly higher than CP while in the urban sector and in all India level, the estimates of poverty gap has much higher among SE compared to CP.

So far as the estimates of poverty gap across different location of informal workers are concerned, we find that in both the rural sector, urban sector as well as all India level, poverty gap has been least among WWIOF during both the period. During the former period, the estimates of the same has been highest among WWIEH in the rural area while WWFL in the urban area and all India level. On the other hand, the extent of poverty gap has been highest among WWIOH in the rural area and WWIEH in the urban sector and all India level during the latter period.

Table 5.12: Mean poverty gap across status of poor informally employed workers

	2011-2012			2018-2019		
Poverty gap across status of poor informal worker (Rs)	***RURAL***	***URBAN***	**All India**	**Rural**	**Urban**	**All India**
SE	156	189.94	162.22	233.67	262.74	243.54
RS	158.76	175.29	166.77	243.79	265.05	258.58
CP	214.03	217.42	214.38	232.60	165.80	205.64
CO	181.23	211.39	184.79	253.44	301.31	268.59

Source: Same as table 5.1

Table 5.13: Mean poverty gap across location of poor informally employed workers

	2011-2012			2018-2019		
Poverty gap across location of informal worker (Rs)	***RURAL***	***URBAN***	**All India**	**Rural**	**Urban**	**All India**
WWFL	144.33	207.82	182.28	233.31	266.13	254.92
WWIOH	151.76	184.4	162.04	253.90	285.83	271.66
WWIOF	142.02	172.27	155.74	211.18	256.89	239.04
WWIEH	181.31	192.22	186.98	253.01	345.01	322.80
WWIEF	170.08	186.86	176.53	238.08	258.82	251.79
WWISFL	147.13	191.85	169.52	234.65	262.15	252.90
WWIOL	178.73	215.85	185.57	227.21	286.68	250.98

Source: Same as table 5.1

5.8.4. Mean poverty gap among the poor informal workers across states

In the following section we have provided comparative analysis of the extent of poverty among different types of informal workers across sector and states for the time period 2011-2012 as well as 2018-2019 and the results are displayed in table 5.14. During the former period the estimates of mean poverty gap among SE, EIS and IEFS have been highest in the states of Punjab, Chandigarh and Delhi respectively in the rural area. On the other hand, among SE, EIS and IEFS, the estimates of mean poverty gap have been least in the state of West Bengal, Tripura and Punjab in the rural sector during this time. In the urban sector, the extent of poverty gap across SE workers have been highest in Dadra Nagar Haveli and among EIS workers and IEFS workers, the extent of poverty gap has been highest in Lakshadweep. In this sector, extent of poverty gap has been least in the state of West Bengal, goa and Jammu & Kashmir for SE, EIS and IEFS workers respectively in this period.

In the rural sector, the extent of poverty gap has been highest among Pondicherry and least among Daman-Diu for all three types of informal workers during the latter period. Uttaranchal, Haryana, Delhi, Sikkim, Mizoram, Meghalaya, Jharkhand, Chhattisgarh, Daman-Diu, Dadra Nagar Haveli, Maharashtra, Andhra Pradesh, Goa and Tamil Nadu are the states in which the extent of poverty gap has been higher among IEFS compared to the EIS in the rural sector during this time. In all other states in the rural sector, the extent of poverty gap has been higher among EIS compared to IEFS during 2018-2019. Among the SE workers of the urban sector, the extent of poverty gap has been highest in Meghalaya and least in Andamaan and Nicobar Islands. Among EIS workers of this sector, the extent of poverty gap has been highest among Manipur and least in the Islands. Among the IEFS workers in the urban sector, the extent of poverty gap has been highest in Manipur while least in Tamil Nadu.

Table 5.14: Mean poverty gap among poor informally employed workers across states during 2018-2019

	Rural			Urban		
States (2011-2012)	**SE**	**EIS**	**IEFS**	**SE**	**EIS**	**IEFS**
Jammu & Kashmir	196.84	115.08	162.78	141.96	150.72	71.48
Himachal Pradesh	135.6	168.63	136.62	213.73	250.15	101.51
Punjab	337.28	172.17	68.64		181.34	171.07

Chandigarh		386.38			256.86	129.19
Uttaranchal	138.21	166.56	83.44	287.84	224.77	106.78
Haryana	182.06	178.09	182.1	90.24	214.61	179.89
Delhi		250.26	329.37		198.88	212.64
Rajasthan	183.17	238.91	176.17	112.65	184.29	138.29
Uttar Pradesh	153.25	162.79	185.07	190.90	212.61	200.41
Bihar	134.83	148.10	170.83	189.17	181.76	212.05
Sikkim	101.1	91.54	168.12	296.5	194.33	222.07
Arunachal Pradesh	217.40	239.54	191.06	296.53	275.6	258.3
Nagaland	129.41	168.47		207.97	171.24	127.5
Manipur	212.37	175.05	237.59	244.85	231.87	194.20
Mizoram	227.36	225.78	263.09	206.7	221.68	111.35
Tripura	109.04	88.79	120.63	202.65	155.4	165.53
Meghalaya	100.37	94.88	70.32	100.08	178.82	206.31
Assam	152.05	149.80	139.23	161.2	163.88	176.51
West Bengal	84.95	118.78	163.14	83.67	171.45	212.95
Jharkhand	138.39	125.74	133.81	239.32	229.41	224.7
Orissa	149.45	156.81	166.49	194.62	145.83	258.39
Chhattisgarh	155.78	152.21	143.7	125.65	174.59	210.08
Madhya Pradesh	161.26	196.48	281.17	144.62	199.42	200.38
Gujarat	213.52	187.02	112.61	216.36	185.94	163.03
Daman & Diu					235.22	73.90
Dadra Nagar Haveli	177.2	175.67	155.74	306.38	164.8	380.33
Maharashtra	187.10	199.95	289.29	183.44	218.14	206.95
Andhra Pradesh	149.98	121.34	133.43	112.87	146.53	117.49
Karnataka	144.28	140.21	102.26	245.05	231.96	253.39
Goa	1142.2	193.17	79.74		119.68	158.74
Lakshadweep		136.67			312.44	483.81
Kerala	171.53	187.48	200.56	226.8	165.4	193.35

Tamil Nadu	152.91	158.38	162.63	174.03	131.82	200.8
Pondicherry		371.24	88.20		141.27	181.63
Islands						
	Rural			Urban		
States (2018-2019)	**SE**	**EIS**	**IEFS**	**SE**	**EIS**	**IEFS**
Jammu & Kashmir	242.83	251.87	307.64	231.54	239.86	153.77
Himachal Pradesh	194.13	178.92	223.66	182.59	139.43	
Punjab	184.02	212.05	215.08	397.83	309.92	325.29
Chandigarh	335.71	438	448.50	155.55	188.72	185.35
Uttaranchal	192.98	196.22	108.52	305.15	308.99	424.94
Haryana	186.66	191.48	157.48	399.77	278.82	317.64
Delhi	264.85	343.81	332.75	184.28	257.59	271.35
Rajasthan	210.53	240.53	258.42	227.94	253.62	282.72
Uttar Pradesh	199.94	219.26	272.08	247.07	266.05	229.86
Bihar	185.08	199.79	206.71	262.14	267.38	293.04
Sikkim	228.84	210.7	148.25	264.57	255.10	264.94
Arunachal Pradesh	260.17	210.48	374.38	295.74	255.31	244.42
Nagaland	228.8	228.2	245.93	261.41	273.7	286.26
Manipur	425.31	401.67	442.85	353.49	363.24	452.78
Mizoram	398.26	419.41	405.01	475.46	362.93	376.01
Tripura	137.38	149.70	116.46	141.06	121.33	342.18
Meghalaya	355.75	288.05	274.93	520.18	297.33	306.90
Assam	201.1	208.78	218.01	117.46	172.92	219.72
West Bengal	182	200.08	226.23	228.25	248.38	174.21
Jharkhand	223.73	194.31	164.31	256.72	268.76	301.79
Orissa	184.29	184.81	227.64	243.64	244.48	216.35
Chhattisgarh	273.20	286.39	230.28	305.15	326.34	381.60
Madhya Pradesh	243.67	253.65	297.87	230.95	237.82	251.39

Gujarat	314.68	313.87	344.92	270.28	293.78	284.01
Daman & Diu	107.79	234.42	20.29			
Dadra Nagar Haveli	317.14	129.72	63.07		6.73	102.38
Maharashtra	294.61	299.06	212.42	316.46	354.12	372.96
Andhra Pradesh	185.8	208.45	103.63	257.61	213.26	419.82
Karnataka	283.94	241.70	245.53	273.83	290.27	407.66
Goa	357.99	303.29	113.70			
Lakshadweep				231.42	219.25	181.41
Kerala	265.17	221.56	315.86	303.01	231.19	209.26
Tamil Nadu	148.04	178.67	156.2	119.96	129.39	48.19
Pondicherry	470.93	476.98	525.88	338.91	350.10	438.83
Islands				82.86	82.86	
Telangana	193	221.84	307.04	300.26	284.78	211.71

Source: Same as table 5.1

Note: In some states the estimates of poverty gap have been blank. The reason is that percentages of poverty during that period at that particular sector has been nil for that particular type of informal worker.

5.9. Determinants of acuteness of poverty among marginal, medium as well chronic poor informal workers

Apart from finding out possible factors which can influence poverty of the informal workers, this chapter further endeavours to illustrate the determinants of G_{is} among the i^{th} poor informal workers. We have to identify the possible factors, which can reduce acuteness of poverty (G_{is}) among the poor informal workers of India. Initially using OLS it is tried to find out the factors which influences G_{is} among the Indian informal workers. Here, the dependant variable is G_{is} and all the explanatory variables are almost same of the previous model. However, unlike the previous model this regression also considers a quadratic relationship between age and depth of poverty. The model of OLS is given below:

$G_{is} = F (edu_i, age_i, age_i^2, hh_i, caste_i, finan_i, satisfied_i, rural_i, \text{informal workers types}_i)$ (Eq. 6)

As there has been wide disparity of G_{is}, the effectiveness of a certain policy variable will not create equal influence on G_{is}. That is the poor informal workers whose MPCE is far below the official estimates of poverty line may be regarded as chronic poor while some of the poor workers whose MPCE is just below the poverty line may be regarded as marginal poor. On

the other hand, the poor informal workers who MPCE is between the marginal poor as well as chronic poor may be regarded as medium poor. Thus, our analysis would be incomplete if we aim to investigate the determinants of G_{is} for all the poor informal workers as a whole. Rather we can get a complete picture of G_{is} if we separately discuss the determinants of G_{is} for marginal, middle and chronic poor informal workers. The reason is that the policy variables which are required to reduce G_{is} might significantly create different types of influence across marginal, medium and chronic poor people. Hence, we use "Quantile Regression"[19] to detect whether the partial effect of a regression on the conditional quantiles is same for all quantiles and differ across quantiles. We use Quantile regression for 25^{th}, 50^{th} and 75^{th} quantiles respectively. Clearly 25th quantile represents marginal poor, 50th quantile represents middle poor and 75^{th} quantile represents chronic poor. Actually, this regression allows the possibility that how important predictors may be different depending on the quantiles of the outcome variables i.e. G_{is}. It is also to be remembered that mean of the G_{is} has been consistently above than that of the median G_{is}, which undoubtedly indicates that the distribution of poverty gap has been rightly skewed. Hence, there has been an absolute necessity to investigate changes in G_{is} at different points of the distribution. It is easily understandable that it would not be enough to investigate the changes in mean when the entire shape of the distribution changes dramatically. This chapter therefore provides empirical estimation G_{is} at 25th, 50th and 75th quantiles.

Model of the Quantile regression (MODEL 6)

$$y_i = \alpha_\theta + \beta_\theta edu_i + \delta_{\theta 1} age_i + \delta_{\theta 2} age_i^2 + \mathbb{I}_\theta hh_i + €_\theta caste_i + \eta_\theta finan_i + \lambda_\theta satisfied_i + £_\theta rural_i + \mu_\theta informal\ types_i + u_i \qquad \text{(Eq.7)}^{20}$$

Where i = 1, …, N (N being total number of informal workers lying below poverty line),

θ = .25, .50, 0.75 quantiles where $\theta €$ (0,1).

[19]The Quantile Regression model estimates the differential effects of the covariates on full distribution.

[20]Some variables that we have considered as the determining factors are only available in 2011-2012 and not 2018-2019. So, we have analysed this model by using 2011-2012 data only.

Table 5.15: Determinants of poverty Gap: Estimated results using quantile regression and ordinary least square

MODEL1	25% quantile	50% quantile (median)	75% quantile	OLS
Workers' characteristics	**Coefficient**	**Coefficient**	**Coefficient**	**Coefficient**
Constant	72.3***	172.70***	291.71***	199.27***
	(15.75)	(31.36)	(22.6)	(13.67)
Years of education	-2.37***	-5.22***	-6.49***	-4.38***
	(0.69)	(0.92)	(1.21)	(0.4)
Age	-0.46	-1.23	-2.43*	-1.34***
	(0.61)	(0.1)	(0.89)	(0.31)
Age square	0	0.01	0.03*	0.01***
	(0.01)	(0.01)	(0.01)	(0)
Non-technical education	24.07*	26.09	32.14***	22.26*
	(9.86)	(24.15)	(9.06)	(11.73)
Female headed household	5.3	15.50***	-5.03	4.34
	(9.22)	(4.16)	(14)	(4.55)
Scheduled Tribe	36.67***	61.74***	85.15***	57.31***
	(5.42)	(5.2)	(9.74)	(2.85)
Scheduled caste	7.23	24.76***	25.96***	18.27***
	(4.41)	(5.49)	(7.71)	(2.55)
Other backward class	5.4	20.41***	26.79***	14.72***
	(4)	(4.66)	(6.6)	(2.33)

Workers without bank account	-3.4 (8.22)	1.79 (14.45)	-9.95 (20.37)	0.44 (3.47)
Alternative job seekers	-7.42 (7.56)	-5.07 (8.19)	-2.72 (8.9)	-3.36 (3.1)
Rural	-20.64*** (2.97)	-29.83*** (4.15)	-42.47*** (5.29)	-30.39*** (2.12)
Self-employed worker	-1.42 (4.46)	-14.56*** (4.45)	-23.28*** (5.8)	-10.93*** (3.03)
IEFS	-2.2 (4.28)	-2.98 (6.27)	-1.49 (12.33)	-0.12 (2.15)
Number of observations	24896	24896	24896	24896
Pseudo R2	0.01	0.02	0.02	
R2				0.03
Adjusted R2				0.03
Root MSE				125.72
F(13,24882)				65.1

Source: Same as table 1

* => significant at 10 percent level ** => significant at 5 percent level ***=> significant at 1 percent level.

5.9.1. Results and discussions

The results of the Quantile regression as well as ordinary least square regression have been displayed in Table 5.15. The results of 25^{th}, 50^{th} and 75^{th} quantile regression and ordinary regression differs a lot which indicates that acuteness of poverty has not been homogeneous across marginal, medium as well as chronic poor workers. It is found that in all the three situations of Quantile regression, increase in the years of education is associated with lower depth of poverty among the i^{th} worker. More specifically, with the increase of education, depth of poverty among the i^{th} worker is reduced in a greater extent among the higher

quantiles i.e. among the chronic poor. Overall depth of poverty also falls with the increase in years of education. It is also observed that age of the informal worker is a cause of his/her acuteness of poverty. Illiterate workers have significantly higher depth of poverty among the i^{th} marginal poor, chronic poor and overall poor. Compared to the male-headed household, depth of poverty has been significantly higher among the i^{th} middle poor informal workers coming from female-headed households. Compared to the general workers, depth of poverty among the i^{th} poor is significantly higher among all other castes. More specifically, for all social groups, acuteness of poverty is highest among the ith chronic poor followed by medium poor and least among the marginal poor. Among the scheduled caste and other backward classes, depth of poverty has been more or less same among the i^{th} chronic poor and middle while insignificant among the marginal poor. ST effect is stronger among ultra-poor informal workers i.e. at highest quantiles. Furthermore, it is also found that compared to that of the urban area, depth of poverty among the i^{th} poor has been lower in the rural area among all types of poor informal workers. Lastly, compared to the EIS, i^{th} SE face significantly lower acuteness of poverty among the middle, chronic as well as overall poor. But the result is insignificant among the marginal poor workers. Not only is that, compared to that of EIS, depth of poverty among the IEFS is also insignificant. Therefore, these significant determining factors may be treated as important policy variables to reduce the acuteness of poverty.

5.10. Conclusions and policy prescriptions

This chapter shows that incidence of poverty among the informal workers of India is more in the rural area as compared to that of urban area. This picture is noticed during both the time period. This is also true for all the social groups as well. Unlike the incidence of poverty, acuteness of poverty has been higher in the urban area as compared to that of the rural area. Furthermore, it is also observed that Manipur is the most poverty-stricken state where percentages of poor workers across SE, IEFS and EIS are the highest during the former period whereas Nagaland is indisputably the most poverty-stricken state during the latter period. However, we find that there has been a slight reduction in poverty during over the years from the period 2011-2012 to 2018-2019 across all types of informal workers. There has been reduction in incidence of poverty among the informal workers over the years from 2011-2012 from 2018-2019. However, economic demonetisation has taken a toll on poor informal workers because acuteness of poverty among enhanced during 2018-2019 compared to 2011-2012.

It is also found that technical education, social groups, financial inclusiveness, workers satisfaction, status of employment, types of employment and location of employment are important determinants of incidence of poverty. More specifically, it is found that compared to that of the EIS, IEFS and SE have significantly lower incidence of poverty. Besides, compared to that of the SE, CP and CO workers have significantly higher incidence of poverty while RS workers have significantly lower incidence of poverty. Furthermore, compared to WWFL, higher incidence of poverty is observed among WWIEH and WWIOL while lower among workers with all other types of location excepting WWISWFL. In both the rural and urban area, mean poverty gap has been more or less same across SEand EIS while the mean poverty gap has been highest among the IEFS. Furthermore, the acuteness of poverty has been highest among the ST followed by SC and OBC workers in the rural area while in the urban area depth of poverty of the general workers is higher than the OBC workers. Lastly, as far as the determinants of the acuteness of poverty among the poor informal workers are concerned, it is found that years of education, technical education, social groups, and sectors may be treated as the important policy prescriptions to reduce the acuteness of poverty among the poor. Moreover, it is also found that these policy prescriptions significantly vary across marginal, medium and chronic poor informal workers. Poorest workers will be benefitted most through enhancing the educational qualifications and technical qualifications. Thus, government of India must spread various schemes like "Sarba Siksha Abhijan", "Kanyasree" so that the literacy rate and educational qualifications can be increased which will in turn help in reducing chronic poverty to a great extent. Consequently, marginal poverty and middle poverty can also be reduced by enhancing educational qualifications. However, mere implementation of such educational schemes would not be enough. Government of India should take proper steps so that literacy and educational qualifications can be spread at that grass root level in order to reduce the acuteness of poverty.

In this chapter we have elaborately analysed the incidence of poverty as well as acuteness of poverty across diversified groups of informal workers. Furthermore, we have also tried to identify the determinants of incidence of poverty as well as acuteness of poverty among them. It is observed that type of informal employment has played a major role in determining both incidence of poverty as well as acuteness of poverty. It is found that educational qualification as well as technical education plays a very important role in determining the incidence of poverty as well as acuteness of poverty. Hence, we can conclude that informal workers are mostly unskilled and semi-skilled. In the period of increased

informalisation of employment quality of jobs not only deteriorated but also remuneration of the unskilled and semi-skilled workers declined a lot. With enormous technological advancement during this time new jobs were created for highly skilled and efficient workers with lucrative remuneration. Unfortunately, job quality for the unskilled and semi-skilled workers declined a lot during this time. Being unskilled, the remuneration of the informal workers suffered a major setback while that of the formal workers are more skilled and efficient enhanced considerably. Apart from that, the informal sector also witnessed extensive mishap during the period of demonetization. So, informal workers faced major hardship during this period. Thus, it is very important to look into the wage gap among the formal and informal workers which we have done in the next chapter.

Chapter six: Recent Trends of Wage-Income and its Inequality among Informal Workers in India

Chapter 6

Recent Trends of Wage-Income and its Inequality among Informal Workers in India

6.1. Introduction

The importance of ensuring equal opportunities among all individuals can hardly be ignored. Unfortunately, throughout the world, there has been notable inequality in the distribution of income. Various literature documented the dramatic increase in overall inequality and consumption expenditure in India (Tapalova, 2008). It is easily understood that wage inequality has been an important component of income inequality. Just like income inequality, wage inequality also increases rapidly during the new economic policy regime in India (Dutta, 2005, Das, 2012 & Abraham, 2017). The wage differential is quite prominent in India across various sectors and groups of workers. Even more disappointing is that there has been a remarkable discrepancy in wages among the workers not only having identical qualifications and skills but also doing almost similar kinds of work. More specifically, temporary workers are significantly ill-paid compared to their counterparts in permanent employment. (Das,2012). Thus, it is extremely crucial to examine wage inequality among the workers working in various sectors, and types of employment in order to understand the extent of deprivation among the workers. Moreover, given the differences in the wage income and standard of living across states, the requirement of calculating wage inequality across states can hardly be ignored.

India is a country where the incidence of informal employment has been rising over the years after economic reforms (Sanyal, K. & Bhattacharyya, R.Narayanan; Narayanan A., 2015) So, it is even more essential to investigate the pattern of the remuneration gap among the informal workers. The higher wage gap among them unquestionably emphasizes the prominent destitution among a large part of the workforce in India. As a patriarchal society dominates in India, looking into wage-income inequality between female and male informal workers is also required.

This chapter has been structured in the following manner: Section 2 provides some of the important literatures relating to income inequality in the Indian economy. The research gap and objectives of the study will be explained in Section 3. Section 4 will talk about the source of data used in the study. Section 5 will discuss the employment share among formal

and informal workers across gender and sector. Estimates of mean wages (weekly) among the informal workers will be explained in Section 6. Section 7 will provide a picture of the extent of wage inequality across states, sectors and gender. Actually, we have tried to calculate the extent of wage inequality among informal workers across states[21] over the years in the last decade. Section 8 puts some light on whether significant changes in wage-income inequality is observed in the last decades i.e. between 2011-12 to 2019-20. Section 9 will provide the conclusions.

6.2. Brief Review of Literature

Padhi and Motkuri(2021) on the basis of the Employment Unemployment Survey published by NSSO in 2011-12 and Periodic Labour Force Survey data (1 and 2) published in 2017-18 and 2018- 19 respectively had shown that there a mere improvement in employment in the last decade and a decline in the size of the workforce is observed. It was also mentioned that the unemployment rate among the youth remains historically high and a sizable portion of the female labour force had withdrawn themselves from the job market. In this background, it is required to investigate the wage-income inequality among the Indian workforce mostly of which are informal. The structure of wage and income inequality in India has been documented in some of the literature. Das (2019) using 68th round NSSO data on employment and Unemployment Survey had found that wage distribution in permanent employment is more unequal than in temporary employment. Furthermore, it is also observed that the incidence of wage penalties increases progressively at the top of the wage distribution. Das (2012) again using NSSO data reconfirms that workers in the informal sector are paid less than one-third of the formal sector wage. Moreover, the average wage of the private formal sector is higher than that of the informal sector. Apart from that, the incidence of wage inequality increased among regular workers between 1983 and 1999 but reduced among casual workers (Dutta, 2005). Anand et al. (2016) again claim that there has been a rise in wealth inequality during the period of high growth from 2008-2012 in India. However, the gains from the growth have hardly been distributed equally. The estimates of income inequality have been talked about by Sarkar et al. (2010) where it is found that there

[21]It is essential to calculate wage-income inequality across states in India because wage structure as well as standard of living differs a lot across states in India. A comparative analysis of the same across states would definitely put some light on the diverse economic situation of India. Along with that, the state with highest inequality of wage-income can also be identified.

has been an increase in income inequality over time in the post-reform period. During the post-reform period income inequality had increased by more than 4 per cent (Rani, 2008). According to Galbraith (2004), there has been an increase in inequality in organized manufacturing in India. Banga (2005) again points out that inequality in the manufacturing sector has enhanced due to economic liberalization. An increase in capital intensity has resulted from an increase in inequality in the manufacturing sector in India. (Kapoor, 2016).Abraham (2017) in her paper revealed that informal workers in informal enterprises have faced larger wage inequality compared to informal workers in formal enterprises. It is further revealed in this paper that education does not have a significant role to play in determining wage inequality among them. According to Kundu et al. (2022), significant wage discrimination exists among the regular salaried non-SC/ST workers (general social group) and among SC/ST workers. It is further found that 19 per cent of the total wage income gap among them comes from discrimination during 2019-2020. In that paper, it was observed that wage discrimination also exists among self-employed workers who are non-SC/ST and SC/ST workers and most part of the discrimination has occurred as a result of discrimination.

6.3. Research Gap and Objective of the Study

Before investigating the wage-income inequality among the Indian informal workers, initially, it is required to investigate whether there is any change in the composition of the labour force between formal and informal workers in India in the last decade. Employment share across male and female informal workers is also extremely important to understand because it is required to investigate whether there is any change in women's participation in informal employment which however has hardly been done so far with the existing literature.

Before comparing wage-income inequality among informal workers of India, initially, it is required to investigate whether there is any actual change in mean-wage income among the informal workers of India over time. To do that it is required to compare the mean money wage income of informal workers in 2011-12 and the real mean wage income of informal workers in 2018-19 and 2019-20 considering its nominal value of 2011-12 as the base period. It is well documented in the literature that women are ill-paid as compared to their male counterparts in all types of employment, it is, therefore, necessary to calculate the extent of the mean wage gap between themselves in informal employment.

The literature mentioned above provides a comparative study of the wage-income inequality among the formal and informal workers in India in the post-reform period but mainly within

2010. The existing literature hardly covers the same aspect in the current economic scenario. None of the papers provides a comparative analysis of the wage-income inequality among informal workers over the year, particularly in the last decades among the states. It is very essential to understand the extent of wage-income inequality among the informal workers in the rural area vis-a-vis the urban area. It is also important to investigate whether wage-income inequality among informal workers (who occupy the major share of earning members in India) has enhanced over time during the last decade from 2011-2012 to 2019-2020. During the time of collection of data for PLFS 2019-2020, data from the rural areas were collected only during the first visit of data collection. Thus, data from rural areas might have been collected even before the start of the covid-19 pandemic. However, the data from the urban sector is collected until the middle of 2020 when the effect of the pandemic has been very prominent. As a result, the impact of the pandemic should be reflected in the urban data. So, the unit-level data set of PLFS, 2019-20 cannot be totally considered as the information of the pandemic period. Thus, we can say that our chapter partially covers the impact of the pandemic and that too in urban areas only.

. Based on the research gap, the objectives of the study are written below:

i) To establish the dominance of informal workers in the Indian labour market. It is required to show how much changes in the employment share among the formal and informal workers is observed recently specifically across gender and in rural and urban India.

ii) To compare the mean wage income over the years among the informal workers. It will give a first-hand picture of whether the wage income of informal workers all over India has increased recently or not.

iii) To provide a comparative analysis and recent trend of the wage-income inequality among informal workers across gender, rural and urban sector in recent time periods across the State and Union Territories of India. Gini coefficient of wage-income among different types of informal workers will be calculated for each State and Union territories. Using the Gini decomposition technique, it can also be concluded whether the conventional causes of wage income inequality among the Informal workers in India can be responsible for the inequality or not?

6.4. Sources of Data

This study uses the 68th round NSSO data on employment and unemployment for the period 2011-2012, Periodic Labour Force Survey (PLFS) data for 2018-19 and also 2019-2020. In 2019-20, the data in the rural area is collected only on the first visit while that of the urban area is collected on the first visit and revisit[22]. For making the employment share we have considered the whole data set. However, for analysing the wages and wage inequality among the informal workers only we have extracted our data containing only self-employed workers[23], regular salaried workers, casual workers in the public sector and casual workers in other sectors. Hence, in this analysis, we have considered all types of informal workers. To do this we have subtracted all samples whose principal activity status is the employer, student, housewife, beggar, retired and handicapped. In this study, the informal workers in the formal sector are considered as those workers who work in formal sectors like the public sector, private sector, cooperative institutions and so on as contractual workers and not getting social security benefits. On the other hand, informal workers are the workers of proprietary enterprises, partnership enterprises, domestic enterprises and other enterprises. In general, informal employment can be considered as work without job security (GOI, 2007). Thus, the total number of extracted samples is 89, 288, 183,272 and 185,599 during 2011-12, 2018-19 and 2019-20 respectively. In this study, we have considered the weekly wages of the informal workers and compared the same over the years and across states. Weekly wages have been calculated simply by adding the wage income of each working day of the reference week.

6.5. Employment Share

To understand the economic condition of an economy, it is very important to look into the size of the workforce and the unemployment rate. In the study of Padhi et al.(2021), it is found that there has been positive growth in unemployment from 2017-18 to 2018-2019. Moreover, there has been a decline in the share of agriculture in the workforce without a corresponding increase in the share of the workforce in the non-agricultural sector. Not only that, there has been a reduction in the employment share of the female workforce during this time. In this scenario employment share of the formal workforce is bound to decline.

[22]Data in the urban period is collected during the period July-September, 2019, October- December, 2019, January- March,2020 and April- June, 2020.

[23]Among the Self-employed workers (they are considered informal), whose wage information are available in our data set are only included in our analysis for the estimation of wage and wage inequality.

Abraham (2017) confirms that the employment share of formal workers declines for both male and female workers from the period 1999 to 2011. Thus, it is very important to look into the employment share of male and female workers in both formal and informal sectors.

Table 6.1 confirms the fact that the share of informal employment in the Indian labour market is dominating as compared to formal employment. During 2011-12, more than 84 per cent of the total workers were informally employed. The incidence of informal employment has increased over time during 2018-2019 and further during 2019-2020. In rural areas, the percentage of informal workers out of the total workers in the Indian labour market is even higher. On the other hand, the incidence of informal workers is less in the urban area as compared to that of rural area and rural-urban areas combined. This phenomenon has been observed for all three years.

Table 6.1: Employment Share among the Formal and Informal Workers (in per cent)

	2011-2012		2018-2019		2019-2020	
Employment Share	Formal workers	Informal workers	Formal workers	Informal workers	Formal workers	Informal workers
Overall	15.56	84.44	12.50	87.50	11.06	88.94
Rural Sector	11.30	88.70	6.86	93.14	5.79	94.21
Urban Sector	21.32	78.68	14.93	85.07	14.47	85.53

Source: Source: Authors' own calculation from 68th round NSSO data and Periodic Labour Force Survey For 2018-2019 and 2019-2020

Table 6.2 points out the share of overall male and female informal workers (combining rural and urban areas) as well as rural and urban areas separately. It is observed that the lion's share of the workforce in informal employment has been occupied by male workers in both the rural and urban sectors. Moreover, female employment share also declines over the years in the last decade. Apart from that, it can also be observed that compared to that rural India, the incidence of male informal employment is slightly higher in urban India.

Table 6.2: Employment Share among the Male Informal Workers and Female Informal Workers (in per cent)

	2011-2012		2018-2019		2019-2020	
Employment Share	Male Informal Workers	Female Informal Workers	Male Informal Workers	Female Informal Workers	Male Informal Workers	Female Informal workers
Overall	82.15	17.85	88.53	11.47	88.75	11.25
Informal Workers in the Rural Sector	81.53	18.47	87.89	12.10	87.8	12.2
Informal Workers in the Urban Sector	83.25	16.75	88.96	11.03	89.95	10.05

Source: Same as table 6.1.

6.6.Comparing the mean wage income of the informal workers over time

From Table 6.3 it is clear that the Indian workforce is fully dominated by informal workers. In this part, the mean wage income is calculated among the informal workers over time and across gender. Initially, the mean wage income of the informal workers in India for the time period 2011-2012, 2018-2019 and 2019-20 are calculated separately. This is required before moving to their wage-income inequality. Since money wage income overtime is not comparable as different time periods of the last decade are considered, it is required to estimate real wage income for 2018-19 and 2019-20 considering 2011-12 as the base year with the mean nominal wage income of informal workers on 2011-12 so that one can observe whether there exits any actual mean wage enhancement among the informal workers over time or not. In order to execute this, the real wage income among the informal workers in India is calculated considering the consumer price index of rural areas and of urban areas of India as provided by the Reserve Bank of India (2020) after considering 2012 as the base year. To get the value of the real wage income of the overall informal workers of India, for the period 2018-2019 we have to consider, (Nominal mean wage income in 2018-19 X 100) /139.6, for the rural area (Nominal mean wage income in 2018-19X 100) / 141.3 and for the urban area. (Nominal Mean wage income in 2018-19 X 100)/137.7. Similarly, for the period 2019-2020, to get the mean real wage income of overall informal workers, we have to consider (Nominal mean wage income 2019-20/146.3) X 100 for the rural area and (Nominal mean wage income 2019-20 /147.3) X 100 and for urban areas (Nominal Mean Wage Income

2019-20 X 100) / 145.1. Since in both the above cases, 2011-2012 is the base period, therefore the mean wage in the base period is kept nominal. Table 20 illustrates mean wage earnings among the informal workers in overall India and compared the same with male and female informal workers. The estimates of real wage income among them are also provided so that the actual change in wage income can be compared over the years considering 2011-12 as the base year. It is found that money wage income has shown improvement over time for all the informal workers taken together as well as for male and female informal workers separately. However, there has been a decline in actual mean wage income among all types of informal workers as well as male and female informal workers from the period 2011-2012 to 2018-2019 while the same has a little bit enhanced from 2018-2019 to 2019-2020.

Table 6.3: Weekly Mean Wage-income among the Male and Female Informal Workers

	2011-2012	2018-2019		2019-2020	
	Money wages (Rs.)	Money wages (Rs.)	Real wages (Rs.)	Money wages (Rs.)	Real wages (Rs.)
Mean weekly wages for Informal Workers	1289.89	1694.4	1213.75	1882.33	1286.62
Mean Weekly Wages Among Male Informal Workers	1359.89	1776.77	1272.75	1965.61	1343.54
Mean Weekly Wages Among Female Informal Workers	920.66	1086.81	777.94	1198.87	819.46

Source: Same as table 6.1

Table 6.4 provides estimates of monetary as well real mean wage income among the informal workers in India for the period 2011-2012, 2018-2019 and 2019-2020 in both the rural as well as urban sectors respectively. Mean wage income in the rural area among the informal workers is lower than their counterparts in the urban area both in monetary terms and in real terms. In the rural sector, both money wage income as well real wage income has escalated over the years. On the other hand, in the urban sector, only money wage income has shown improvement while real wage income has dwindled from the period 2011-2012 to 2018-2019. However, from the period 2018-2019, not only mean the weekly money wage increase but the mean weekly real wage has also enhanced a little bit among the urban informal workers in India.

Table 6.4: Weekly Mean Wage-income across Rural and Urban Informal Workers

	2011-2012	2018-2019		2019-2020	
	Money wages(in Rs.)	Money wages (in Rs.)	Real wages (in Rs.)	Money wages (in Rs.)	Real wages (in Rs.)
Rural Sector	1080.64	1654.35	1170.81	1814.09	1231.26
Urban Sector	1449.3	1852.35	1345.21	2037.11	1375.49

Source: Same as table 6.1

6.7.Wage-Income Inequality among the Informal workers in India

A higher incidence of informal employment in the Indian labour market is already observed in Table 6.1. Sahoo and Neog (2016) also showed the existence of heterogeneity among different types of non-cultivator informal workers. Given the diversity of employment, it is difficult for policy workers to prescribe inclusive growth in the Indian economy. The wage income among the informal workers in different states is not the same. It is also not the same among different types of workers within a particular state. Wage-income inequality among informal workers is calculated with the help of the Gini index (GI). GI is a very useful tool to measure income inequality because it allows negative values of income and wealth[24].

Here wage income inequality among informal workers in India is considered. To know the cause of wage income inequality across states the decomposition exercise of the Gini index is extremely important. Conventionally in the economic literature, the Gini index is decomposed into various subcomponents like the contribution of within-group inequality (G_w), the contribution of between-group inequality (G_b) and the contribution of group overlap inequality (G_o) (Das, 2012 & Ariz et al, 2014). The importance of G_o appears when G_w and G_b fail to capture the extent of inequality. In that case, a researcher has to depend on the third component of the Gini coefficient G_o which occurs when a portion of one group of workers coincides with another group of workers. G_o helps to identify whether there exists any cause[25] of wage inequality (for eg. working conditions, sector, educational qualification, caste and so on). Higher values of Go indicate that factors like working conditions, sector, educational qualification etc. do not play any major role in determining the overall wage inequality

[24]According to many scholars, GI gives better results compared to General Entropy measures (GE).

[25]The most important determinants of wage inequality is nothing but the important factors affecting wage inequality in the economic literature. Das (2012) reveals that educational qualification, technical skill and experiences are the factors of wage inequality. Sengupta et al.(2021) also reveals that higher wage inequality exists among scheduled caste and scheduled tribes compared to higher caste.

(Costa, 2016). Thus, the overlapping analysis provides a very important conclusion regarding the discussion of wage inequality. In this study, we have used the Gini index (Gini, 1912)[26]as a summary measure of wage income inequality among informal workers both within and between groups of workers across rural and urban India.

We consider G as the Gini coefficient of wage income inequality and the population subgroups are indexed by k=1,2,…..36.

$$G = G_B + \sum_{k=1}^{36} a_k G_k + R \ldots (8)$$

Here G_B is nothing but between-group inequality. G_B is defined as the one which can be obtained if every wage income in every subgroup can be replaced by the mean of the relevant subgroup. Here 'a_k' is the product of population share and wage-income share corresponding to each subgroup k. G_k is the Gini coefficient for wage income within subgroup k. R is the residual whose value will be zero when the subgroups of the wage income hardly overlap. According to Lambert et al. (1993), the residual part is nothing but group overlap inequality. Thus we can say that G can be decomposed into three components Within-group inequality (G_w), Between-group inequality (G_b) and Group overlap inequality (G_o)[27]. Here the extent of wage inequality among informal workers across states will be addressed. Here, a state is considered a "group". It is found the overall wage inequality among informal workers across states. To do that wage income inequality of the informal workers within a particular state as well as wage income inequality among the informal workers between two or more states are considered. The third component, the overlap inequality of wage income among informal workers across states has also been found. Since the characteristics and wage patterns of informal workers vary a lot across states, it is required to find out the extent of wage inequality across states.

Hence $G = G_w + G_b + G_o$. …….Eq.9

6.7.1 Recent trend of Wage income (weekly) Inequality among different types of Informal Workers in India:

[26]Associated with Lorenz (1995)

[27]The aim of inequality decomposition is related to the identification of relevant factors determining the inequality structure. Gender, working conditions, education level, and area of residence are the possible factors which may possibly influence the wage-income inequality. But if high value of overlapping factor is observed in the value of the Gini coefficient after decomposition, then it can be said that the above indicated possible factors slightly contribute to total wage-income inequality. The decomposition of Gini index and its interpretation has been vividly done in *Lambert et al.(1993)* has further been used in Das (2012).

Table 6.5 provides an overall picture of wage-income inequality during 2011-2012, 2018-2019 and 2019-2020 respectively. The estimates of wage income inequality have been shown with the help of GI. It is observed that the estimates of the Gini Coefficient have enhanced over time after considering 2011-12 as the base period. It is found that in 2011-12, wage-income inequality among informal workers in rural areas is higher than that in urban areas. However, the opposite is happening for both 2018-2019 and 2019-2020. It is also observed that within the rural sector, compared to the male workers, wage-income inequality has been higher among the female workers in all three concerned time periods. On the other hand, in the urban sector, wage income inequality has been higher among male informal workers during the former period and female informal workers during the latter period.

Table 6.5: Wage (weekly) Income Inequality among the Informal Workers in India

	2011-2012	2018-2019	2019-2020
Informal workers	0.77	0.88	0.91
Informal workers in the rural sector	0.79	0.85	0.87
Informal workers in the urban sector	0.72	0.90	0.93
Informal workers among rural male workers	0.79	0.84	0.85
Informal workers among rural female workers	0.80	0.89	0.90
Informal workers among urban male workers	0.72	0.89	0.92
Informal workers among urban female workers	0.70	0.93	0.96

Source: Same as table 6.1

6.7.2Recent Trend of Wage Income (weekly) Inequality among the Informal Workers of India across States (including Union Territories)

The GI indicating the extent of wage-income inequality among the informal workers across states of India have been calculated separately in the rural sector, urban sector as well as rural and urban sector combined. Three different time periods are here considered in order to provide a comparative study about the same over the years and the results are presented in Table 6.6.

In our analysis, we have tried to estimate inequality measurements of the informal workers in India in the recent decade and also try to compare the same across states. Since the economic condition of the state varies a lot and hence the quality of jobs as well as wage structure also varies a lot. Thus, we not only have calculated the Gini index among the informal workers

across various states but also have decomposed the same across G_w, G_b and Go. Here the state is considered as a group. G_w indicates inequality in wage income among informal workers within the states, while G_b means wage income inequality between two or more states. The importance of G_0 lies when both G_w and G_b fail to capture the extent of wage inequality. The positive value of Go indicates a portion of one group of workers coincides with another group of workers. As the state has been considered as a group, the positive value of G_0 is obtained when a particular percentage of informal workers in a particular state coincides with a particular percentage of informal workers in some other states. Here, we have got positive values of Go indicating that a given portion of informal workers in a particular state coincides with a given percentage of informal workers in some other states.

It is found that the overall measure of GI among the informal workers increases over the years in rural areas, urban areas as well as rural and urban areas combined. Out of the overall measure of GI, the contribution of G_w is 0.4 which remains the same over the years but G_b and G_0 have enhanced in the last decade in rural areas, urban areas and in the overall or combined situation. Out of the overall GI estimate, the contribution of Go has been the highest while that of G_w is the least. This happens for rural and urban areas taken separately and when both are combined. Thus, the high values of G_0 indicate that important factors like sector, educational qualification of the worker etc. in determining wage inequality contribute very less to the overall wage inequality. Moreover, as the values of G_0 have increased over the year in the last decade, one emphasises that the contribution of the factors[28] possibly influencing wage inequality has reduced over time.

From Table 6.6 it is observed that during 2011-12, the estimated overall value of GI was highest in Arunachal Pradesh and lowest in Pondicherry followed by the islands. However, during 2018-2019, the estimated value of the same was highest in Daman Diu followed by Dadra Nagar Haveli while lowest in Lakshadweep. During 2019-2020, the estimates of GI are very high in various states including Chandigarh, Delhi, Sikkim and Goa. The smallest measure of GI is found in Bihar.

[28]Era Dabla. Narris, Kalpana Kachar, F.Rica (June, 2015) had shown that trade, financial literacy, technological upgradation, credit availability, skill formation, education, caste, religion are possible factors responsible for income inequality in any area. When G_o increases over time, then the influence of these factors on wage-income inequality gradually becomes negligible.

After that rural and urban areas are considered separately. This is done because there has been much contrast in the economic conditions and wage rate among the workers in the rural as well as in the urban area. So, it is necessary to compare the wage inequality among the rural and urban informal workers separately across states. Table 6 shows that the estimates of GI have increased from 2011-2012 to 2018-2019 for all the states. But the same from 2018-2019 to 2019-2020 enhancement happened in some states and fall in some states. More specifically, the estimates of GI have increased in the states like Uttaranchal, Rajasthan, Nagaland, Assam, West Bengal, Jharkhand, Orissa, Chhattisgarh, Madhya Pradesh, Daman-Diu, Maharashtra, Karnataka, Lakshadweep, Kerala, Pondicherry and Telangana over the period 2018-2019 in rural sector. On the other hand, the values of GI remain the same across the time period 2018-2019 and 2019-2020 in the states like Uttar Pradesh, Sikkim, Arunachal Pradesh, Arunachal Pradesh, Manipur, Andhra Pradesh and Tamil Nadu.

Considering the urban sector separately it is found that compared to the rural sector, the estimates of overall GI in the urban sector have been lower during 2011-2012 and higher during 2018-2019 and 2019-2020. The estimates of overall GI have enhanced over the years from 2011-2012 to 2019-2020. Not only that, it is further found that the estimates of GI have increased for all the states. During the former period, Manipur and Dadra Nagar Haveli are the states with the highest and lowest estimates of GI respectively. During 2018-2019, Delhi and Dadra Nagar Haveli are the states with the highest estimates of GI while Lakshadweep is the state with the least estimate of GI. During 2019-2020, Sikkim and Goa are the states with the highest estimates of GI. On the other hand, the lowest estimates of GI are found in Lakshadweep.

Table 6.6: Wage Inequality among the Informal Workers across States in the Rural Sector, Urban Sector and Combined

	Rural Sector			Urban Sector			Combined		
States	2011-2012	2018-2019	2019-2020	2011-2012	2018-2019	2019-2020	2011-2012	2018-2019	2019-2020
Jammu & Kashmir	0.73	0.83	0.81	0.73	0.92	0.94	0.73	0.89	0.90
Himachal Pradesh	0.80	0.88	0.86	0.65	0.90	0.94	0.78	0.88	0.89
Punjab	0.66	0.80	0.78	0.63	0.92	0.94	0.64	0.89	0.91
Chandigarh	0.65	0.91	0.90	0.62	0.95	0.96	0.63	0.95	0.96
Uttaranchal	0.84	0.89	0.91	0.77	0.92	0.95	0.82	0.91	0.94
Haryana	0.73	0.85	0.80	0.69	0.92	0.93	0.72	0.90	0.90
Delhi	0.54	0.97		0.64	0.96	0.96	0.64	0.96	0.96

Rajasthan	0.75	0.88	0.90	0.67	0.92	0.95	0.72	0.91	0.94
Uttar Pradesh	0.79	0.86	0.86	0.76	0.91	0.94	0.79	0.89	0.92
Bihar	0.81	0.82	0.80	0.80	0.83	0.90	0.81	0.82	0.86
Sikkim	0.75	0.94	0.94	0.64	0.95	0.97	0.73	0.94	0.96
Arunachal Pradesh	0.94	0.96	0.96	0.84	0.93	0.93	0.93	0.94	0.94
Nagaland	0.94	0.95	0.96	0.86	0.92	0.95	0.92	0.94	0.95
Manipur	0.89	0.90	0.90	0.92	0.89	0.93	0.91	0.89	0.92
Mizoram	0.94	0.92	0.90	0.83	0.87	0.90	0.88	0.88	0.92
Tripura	0.69	0.86	0.83	0.68	0.84	0.90	0.69	0.85	0.87
Meghalaya	0.84	0.83	0.81	0.68	0.84	0.90	0.79	0.84	0.87
Assam	0.84	0.86	0.87	0.81	0.91	0.93	0.83	0.88	0.90
West Bengal	0.79	0.82	0.85	0.72	0.90	0.94	0.76	0.88	0.92
Jharkhand	0.72	0.78	0.83	0.74	0.88	0.91	0.73	0.84	0.89
Orissa	0.80	0.82	0.83	0.76	0.91	0.93	0.79	0.86	0.88
Chhattisgarh	0.83	0.86	0.88	0.68	0.90	0.94	0.78	0.89	0.92
Madhya Pradesh	0.80	0.85	0.89	0.75	0.89	0.93	0.78	0.88	0.92
Gujarat	0.77	0.93	0.91	0.67	0.94	0.96	0.73	0.94	0.95
Daman Diu	0.68	0.93	0.96	0.65	Not Available	Not Available	0.67	0.97	0.91
Dadra Nagar Haveli	0.57	0.94	0.93	0.47	0.96	Not Available	0.53	0.96	0.96
Maharashtra	0.83	0.89	0.90	0.68	0.90	0.93	0.76	0.90	0.93
Andhra Pradesh	0.78	0.84	0.84	0.66	0.89	0.92	0.73	0.87	0.90
Karnataka	0.80	0.86	0.87	0.70	0.86	0.91	0.75	0.86	0.90
Goa	0.71	0.92	0.91	0.58	0.94	0.97	0.63	0.94	0.96
Lakshadweep	0.67	0.46	0.96	0.72	0.61	0.86	0.70	0.55	0.93
Kerala	0.74	0.75	0.79	0.70	0.81	0.89	0.73	0.80	0.87
Tamil Nadu	0.72	0.76	0.76	0.67	0.84	0.90	0.7	0.82	0.87
Pondicherry	0.64	0.78	0.85	0.60	0.87	0.94	0.61	0.86	0.94
Islands	0.62	0.86	0.85	0.52	0.91	0.90	0.57	0.90	0.91
Telangana	Not formed	0.86	0.93	Not formed	0.89	0.92	Not Formed	0.88	0.92
GI	0.79	0.86	0.86	0.72	0.90	0.93	0.78	0.89	0.92
G_w	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
G_b	0.2	0.21	0.24	0.18	0.26	0.27	0.2	0.23	0.24
G_o	0.55	0.61	0.58	0.50	0.60	0.62	0.54	0.62	0.64

Source: Source: same as table 6.1

6.7.3Recent Trend of Wage Income (weekly) Inequality among the Informal Workers across States in terms of Region and Gender

In this section, the estimates of wage inequality among the male and female informal workers across different states of the rural and urban sectors during 2011-2012, 2018-2019 as well as 2019-2020 are calculated separately and the results are represented in Table 6.7. Since female

labour force participation is quite lower than that of males, it is essential to look into the wage inequality among male and female informal workers separately to understand how wage inequality varies across gender. It is found that the overall value of GI increases over time among male and female workers in the rural as well as urban sectors. Among the rural male and female workers as well as urban male and female informal workers, most states have witnessed an increase in GI during 2018-2019 compared to 2011-12. While among the rural male informal worker, some states have witnessed an increase in GI from the period 2018-2019 to 2019-2020. These states are Uttaranchal, Rajasthan, Uttar Pradesh, Assam, West Bengal, Jharkhand, Orissa, Chhattisgarh, Madhya Pradesh, Daman Diu, Daman Nagar Haveli, Maharashtra, Andhra Pradesh, Karnataka, Goa, Lakshadweep, Pondicherry and Telangana. While the reverse has been experienced by the other states. Compared to the rural male informal workers, overall weekly wage inequality reflected in terms of GI is higher among the rural females during all three time periods. The values of GI are also higher among the female informal workers as compared to the males in most of the states except Punjab, Bihar, Sikkim, Manipur, Tripura, Assam, West Bengal, Jharkhand, Madhya Pradesh, Gujarat, Maharashtra, Karnataka, Goa (only during 2011-2012), Arunachal Pradesh (only during 2018-2019), Mizoram (only during 2019-2020), Chandigarh, Delhi, and Telangana respectively.

Compared to the rural male informal workers, it is found that overall wage inequality as measured by GI among the urban male workers has been less during 2011-2012 and higher during 2018-2019 and 2019-2020. Among the urban male informal workers, most states have witnessed an increase in the estimates of GI from the period 2018-2019 to 2019-2020 except Arunachal Pradesh where the reverse is witnessed.

GI is also measured separately among female informal workers in the urban sector. It is found that the overall wage inequality as measured by GI has been higher among males as compared to that of the females in the urban sector during the former period. While this estimate has been higher among females during 2018-2019 and 2019-2020.

Furthermore, the decomposition results of GI again provide the same inference. Out of total GI, the contribution of G_0 has been the highest followed by the contribution of G_b and the least contribution comes from G_w for rural males, rural females, urban males as well as urban female informal workers. This is true for all the three-year period. This undoubtedly indicates that the contribution of the factors determining wage inequality is very negligible.

Enhancement of G_0 over the years also indicates that the contribution of these factors reduces over time.

Table 6.7: Wage Inequality among the Male and Female Informal Workers across States in terms of Region and Gender

	Rural Sector						Urban Sector					
	Male			Female			Male			Female		
States	2011-2012	2018-2019	2019-2020	2011-2012	2018-2019	2019-2020	2011-2012	2018-2019	2019-2020	2011-2012	2018-2019	2019-2020
Jammu & Kashmir	0.72	0.82	0.78	0.76	0.96	0.94	0.75	0.91	0.93	0.59	0.95	0.96
Himachal Pradesh	0.72	0.82	0.78	0.91	0.95	0.95	0.64	0.90	0.93	0.65	0.92	0.94
Punjab	0.66	0.77	0.76	0.62	0.93	0.89	0.64	0.91	0.93	0.55	0.94	0.87
Chandigarh	0.64	0.92	0.88	0.58	0.88		0.59	0.94	0.96	0.78	0.96	0.96
Uttaranchal	0.81	0.87	0.89	0.94	0.95	0.95	0.77	0.91	0.94	0.73		0.79
Haryana	0.72	0.84	0.79	0.77	0.94	0.91	0.70	0.91	0.92	0.59	0.95	0.96
Delhi	0.55	0.97		0.29			0.64	0.95	0.96	0.67	0.95	0.84
Rajasthan	0.73	0.87	0.89	0.81	0.91	0.94	0.66	0.92	0.95	0.72	0.95	0.95
Uttar Pradesh	0.79	0.85	0.86	0.84	0.95	0.93	0.76	0.91	0.94	0.77	0.94	0.95
Bihar	0.81	0.81	0.79	0.75	0.96	0.94	0.80	0.82	0.89	0.68	0.95	0.95
Sikkim	0.75	0.92	0.91	0.74	0.96	0.95	0.66	0.94	0.96	0.57	0.96	0.92
Arunachal Pradesh	0.93	0.96	0.95	0.94	0.95	0.95	0.83	0.92	0.91	0.87	0.96	0.93
Nagaland	0.93	0.95	0.95	0.95			0.85	0.91	0.94	0.90		
Manipur	0.91	0.88	0.88	0.82	0.96	0.94	0.91	0.86	0.90	0.95	0.95	0.96
Mizoram	0.92	0.91	0.88	0.95	0.89	0.95	0.80	0.81	0.88	0.90	0.96	0.95
Tripura	0.71	0.86	0.81	0.58	0.90	0.88	0.70	0.85	0.89	0.53	0.80	0.95
Meghalaya	0.83	0.79	0.78	0.85	0.89	0.86	0.64	0.80	0.86	0.80	0.92	0.96
Assam	0.85	0.85	0.86	0.67	0.91	0.92	0.83	0.91	0.93	0.61	0.92	0.96
West Bengal	0.79	0.80	0.84	0.76	0.92	0.91	0.73	0.88	0.93	0.67	0.95	0.93
Jharkhand	0.72	0.77	0.83	0.71	0.88	0.88	0.74	0.88	0.90	0.65	0.84	0.95
Orissa	0.80	0.82	0.83	0.76	0.82	0.81	0.77	0.92	0.93	0.67	0.87	0.96
Chhattisgarh	0.85	0.87	0.89	0.72	0.84	0.85	0.69	0.89	0.93	0.64	0.92	0.94
Madhya Pradesh	0.81	0.85	0.89	0.67	0.83	0.87	0.76	0.88	0.92	0.66	0.93	0.95
Gujarat	0.78	0.93	0.91	0.71	0.94	0.93	0.69	0.95	0.96	0.63	0.89	0.95
Daman Diu	0.68	0.95	0.96	0.50	0.82		0.64			0.51		
Dadra Nagar Haveli	0.58	0.93	0.95	0.50		0.80	0.47	0.96		0.39		
Maharashtra	0.84	0.88	0.89	0.78	0.90	0.93	0.68	0.89	0.92	0.67	0.94	0.95
Andhra Pradesh	0.77	0.82	0.83	0.79	0.88	0.88	0.65	0.87	0.90	0.63	0.93	0.95

Karnataka	0.80	0.84	0.86	0.78	0.93	0.94	0.69	0.84	0.90	0.67	0.91	0.95
Goa	0.74	0.92	0.94	0.52	0.94	0.77	0.59	0.94	0.96	0.54	0.94	0.96
Lakshadweep	0.69	0.45	0.96	0.40			0.73	0.60	0.88	0.64		
Kerala	0.73	0.71	0.76	0.73	0.83	0.83	0.70	0.78	0.85	0.68	0.89	0.96
Tamil Nadu	0.71	0.74	0.74	0.71	0.74	0.74	0.66	0.81	0.88	0.68	0.90	0.94
Pondicherry	0.67	0.73	0.79	0.52	0.85	0.93	0.60	0.84	0.93	0.54	0.94	0.93
Islands	0.63	0.85	0.85	0.56	0.88	0.87	0.51	0.89	0.90	0.53		0.95
Telangana		0.88	0.93		0.81	0.90		0.87	0.90		0.94	0.96
GI	0.79	0.84	0.85	0.81	0.89	0.90	0.73	0.89	0.92	0.71	0.93	0.96
G_w	0.04	0.04	0.04	0.04	0.05	0.04	0.04	0.04	0.04	0.04	0.05	0.05
G_b	0.20	0.22	0.25	0.30	0.35	0.36	0.18	0.28	0.29	0.24	0.30	0.29
G_o	0.55	0.58	0.56	0.47	0.49	0.50	0.51	0.57	0.59	0.43	0.58	0.62

Source: Source: same as table 6.1

As the informal workforce occupies the maximum percentage of the workforce in India, our result supports the findings of the Oxfam report (2022) which pointed out the incidence of high-income inequality in present India. Table 23 and Table 24 shows that after the decomposition of the value of the Gini Coefficient, the value of G_O is maximum in all situations. This establishes the fact that possible factors responsible for income inequality contribute slightly to wage-income inequality. Lee and Lee (Nov 2018) had shown that a more equal distribution of education significantly reduces income inequality. According to them, expansion of education is a major factor in reducing educational inequality which in the long run will also reduce income inequality of the country's people. Sherawat and Singh (2019) had also shown that expansion in education in India and enhancement of average years of schooling can reduce income inequality. Biswas and Kundu (2021) had shown that both Gross Enrolment Ratio and Gender Parity Index in primary education in India are impressive. They had also shown that different types of government grants necessary to improve the infrastructure of the public primary schools had percolated down to every corner in India even in rural India. In spite of this, informal workers consider education as their luxury item (Roy and Kundu, 2022). This supports the reason behind the high value of G_O in each situation. Some government policies are required which can help the informal worker households to treat expenditure on education as necessary. This may reduce wage-income inequality among the informal workers of India.

6.8.Changes in wage-income inequality among the informal workers in India in the last decade

It has already been proved that in the Gini Coefficient of wage-income among any type of informal worker, the contribution of G_O i.e. group overlap inequality is always highest in all the concerned time periods. To investigate whether there is any decrease in wage income inequality among a particular group of informal workers in India over time the following equation is considered.

$$GI_{jit} = \beta_0 + \beta_1(\text{Time}) + \varepsilon_{jit} \ldots\ldots\ldots\ldots\ldots\ldots \text{Eq. } 10^{29}$$

GI_{jit} indicates the value of the Gini coefficient of the j^{th} type of worker (described in Table 6.8) of the i^{th} state in the t^{th} time period. Time will take the value 0 for any state in the baseline period and 1 for the end-line period. If the value of the parameter estimate of $\widehat{\beta_1}$ in Eq.3 becomes statistically significant and negative, then only one can claim that wage income inequality among the informal workers in India has decreased between the base-line period and the end-line period. But if the estimated value is positive, then it is obvious that the wage income inequality among the informal workers has increased between the concerning time periods. Initially, we consider 2011-12 as the baseline period and 2018-19 as the end-line period. Next, we consider 2018-19 as the baseline period and 2019-20 as the end-line period. According to the Periodic-Labour Force survey report of 2018-19, the samples of the urban workers were collected during the lockdown period but that is not happening for the rural workers. Table 6.8 provides the results of the above-mentioned equation in order to grasp the changes in wage-income inequality across states over time. Here exercises are done separately for rural, urban, rural male and female workers and urban male and female workers. It is found that the estimate of $\widehat{\beta_1}$ has been positive and significant in all the cases, meaning that wage-income inequality of all types of considered workers has increased significantly over the years from 2011-2012 to 2018-2019.

Next, it is required to investigate whether there is any enhancement in wage income inequality among informal workers due to the first phase of the pandemic. Here 2018-19 is considered the base period where there is no pandemic and 2019-20 will be considered as the end-line period. Unlike the former case, we do not find significant results in all the cases between 2018-19 to 2019-20. Significant and positive results of $\widehat{\beta_1}$are found among the overall informal workers, urban workers, urban male as well as urban female workers. This

[29]Here G_{jit} is the value of the Gini Co-efficient of the j^{th} type of worker of the i^{th} state in the t^{th} time period. 'Time' is considered as Dummy variable who takes the value 1 for all considered states at the end-line period and '0' in the baseline period.

means that in the case of overall informal workers and specifically urban informal workers (including males and females), there has been a significant increase in wage-income inequality during the concerned time period when the pandemic covers the end-line period for urban informal workers. But for the rural informal workers, the result of $\widehat{\beta_1}$ has been insignificant indicating no change in wage-income inequality during that period.

Table 6.8: Changes in wage-income inequality in the last decade

Type of worker	Changes in wage inequality from 2011-2012 to 2018-19			Changes in wage inequality from 2018-2019 to 2019-20 (the impact of the Covid-19 Pandemic)		
	α	$\widehat{\beta_1}$	R^2	α	$\widehat{\beta_1}$	R^2
Overall Informal Workers	0.74 (0.01)	0.18*** (0.02)	0.62	0.88 (0.009)	0.03* (0.01)	0.39
Overall Rural Workers	0.77 (0.01)	0.1*** (0.02)	0.31	0.85 (0.01)	0.02 (0.02)	0.22
Rural Male Workers	0.77 (0.01)	0.09*** (0.02)	0.25	0.84 (0.01)	0.02 (0.02)	0.25
Rural Female Workers	0.74 (0.02)	0.16*** (0.02)	0.41	0.90 (0.01)	-0.001 (0.01)	0.46
Overall Urban Workers	0.71 (0.01)	0.22*** (0.02)	0.76	0.89 (0.008)	0.04*** (0.01)	0.45
Urban Male Workers	0.71 (0.01)	0.21*** (0.02)	0.74	0.88 (0.009)	0.04*** (0.01)	0.55
Urban Female Workers	10.7 (0.80)	13.53*** (1.13)	0.71	0.93 (0.006)	0.02* (0.008)	0.47

Source: Same as Table 6.1

Table 6.8 shows that the maximum enhancement of wage-income inequality between 2011-12 to 2018-19 is observed among urban female informal workers.The minimum enhancement of wage-income inequality is observed among rural male informal workers.

Next, it is required to investigate whether there is any enhancement in wage income inequality among informal workers have taken place from the period 2018-2019 to 2019-2020. Here 2018-19 is considered the base period and 2019-20 will be considered as the end-line period.

So, following Eq.10, it is required to look at the estimated value of $\widehat{\beta_3}$ to investigate whether there is any difference in changes in wage-income inequality among different types of informal workers over time. If the value of the parameter estimate becomes positive and statistically significant, then only one can claim that over the concerned period, there has been enhancement of wage income inequality among that particular type of worker in India where the state is chosen as a unit. The results of the equation which is investigating the changes in wage inequality considering 2018-2019 as the base period are again provided in Table 6.8. Unlike the former case, we do not find significant results in all the cases between 2018-19 to 2019-20. Significant and positive results of $\widehat{\beta_3}$are found among the overall informal workers, urban workers, urban male as well as urban female workers. This means that in the case of overall informal workers and specifically urban informal workers (including males and females), there has been a significant increase in the estimates of GI over during the period 2019-2020 as compared to 2018-2019 which is considered as the base period. However, for the rural informal workers, the result of $\widehat{\beta_3}$ has been insignificant indicating the change in GI from 2018-2019 has not been significant.

6.9. Conclusion

It is established that the informal labour force occupies the lion's share in the Indian labour market and its' share has escalated over the years in the last decade. It is found that nominal wage income among the male and female informal workers has increased over the years from 2011-2012 to 2018-2019 while the same for real wage earnings which is a symbol of workers' purchasing power hardly shows any improvement. However, compared to 2018-2019, estimates of nominal and real wage income indicate improvement among them during the period 2019-2020. Along with the reduction in employment share in the informal employment among the female workers compared to the male counterpart, it is also found that the mean wage earning among the former is considerably lower than the latter. It is observed that wage income inequality among informal workers has increased over the years from 2011-2012 to 2019-2020 for most of the states. The GI estimates of the wage income have also increased among rural, urban and male and female informal workers. It is also

observed that compared to the urban sector, wage income inequality has been higher in the rural sector during 2011-2012 and lower during 2018-2019 and 2019-2020 respectively. Moreover, within the rural sector, the estimates of GI have been higher among females as compared to that males. While in the urban sector, the estimate of the same has been higher among the males during the former period while lower among them during the latter period. The overall estimate of GI has also been decomposed into G_w, G_b as well as G_0 and the states were considered as groups. It is found that the contribution of G_0 in 'G' is very high which points out that the major possible factors determining wage income inequality across states have been very insignificant. It is identified that between 2011-12 and 2018-19, a maximum positive impact on wage-income inequality was observed among the female workforce, though this positive impact was observed among all types of the informal working population in India. It is found that there has been an enhancement in wage-income inequality among the informal workers of India during the latter period as compared to that of the former period. However, this enhancement is mainly observed among the urban informal working class.

We have already discussed that informalization of employment initiated considerable wage cut among the informal workers and escalated misery among them. Along with the deterioration of earning facilities among the informal workers and high level of inequality in the distribution of wage income, there has been remarkable enhancement in health expenditure among them during this time due to privatization in the health sector. However, in chapter 4, we have proved that health expenditure has been luxury good for the informal workers which indicate that they tend to spend lesser proportion of their income in health expenditure. To resolve the confusion, we have analysed health expenditure among them and also tried to figure out whether the health expenditure exceeds the threshold level in the next chapter.

Chapter seven: Determinants of Health Expenditure Among the Informal Workers of India: Is it always Catastrophic?

Chapter 7

Determinants of Health Expenditure Among the Informal Workers of India: Is it always Catastrophic?

7.1.Introduction

Indian labour market is mainly captured by informal employment[30] and, the incidence of it has enhanced rapidly during the post reform period (Marjit et al., 2007; Sanyal et al., 2008 and Narayana, 2015). This has also witnessed rapid proliferation of informal employment in both the informal sectors as well as the formal sectors (Sanyal et al., 2008). Generally, informal sector also consists of large number of self-employed (SE) workers (Mukhopadhyay, 1998). Thus, informal employment is heterogeneous in nature (Unni, 2005; Sahoo et al., 2016). In this chapter the heterogeneity of the informal employment is classified across types, status and location. Across types informal employment is classified into self-employed workers (SE), employees in the informal sector (EIS) and informal employees in the formal sector (IEFS). On the basis of status, informal employment is further sub-divided into self-employed employed (SE), regular salaried workers (RS), casual workers in the public sector (CP) and casual workers in another sector (CO). Last but not the least, informal employment is further distributed in the following ways across location of employment ---- Workers working without any fixed location (WWFL), workers working in own household (WWIOH), workers working in own office (WWIOF), workers working in employers' household (WWIEH), workers working in employer's office (WWIEF), workers working in street with fixed location (WWISFL) and workers working in other location (WWIOL).

The rapid proliferation of the informal employment during the post reform period is a result of flexibility of labour market (Unni et al., 2008) resulting in sufficient reduction in wages in order to sustain escalated international competitiveness. On top of that, privatization of the government enterprises has enhanced casual and informal employment. The deteriorated quality of work during the new policy regime coupled with some major policy shifts in the health sector has caused disastrous effect in the quality of life of the informal workers. The decline in public investment in health, introduction of the user fees and new Drug Price Control Order (DPCO) has enhanced the vulnerable condition of the informal

[30]Informal employment is not only generated only in the informal sector, they work both in the formal as well as informal sectors in unhealthy working conditions with long working hours and devoid of any social security benefits (GOI., 2007; ILO, Standing, 1999).

workers. The dependency of Out-of-pocket (OOP) [31] health expenditure thus enhanced during this regime. More specifically, out of total health expenditure, approximately 70 percent has been OOP private health expenditure (Government of India,2005). Being deprived of health benefits, sick leave, working in unhealthy and deplorable environment for hours, health of the informal workers is also questionable. In addition to that, income earning opportunities are also limited among them leading to the impoverishment of the large section of the informal workers (Panneer et al.2019). Besides, various researchers and economists have opined that not only incidence of poverty but also wage disparity among them have enhanced during the post reform period (Papola,2008; Unni, 2005).Moreover, health expenditure is a luxury good among a large portion of the informal workers (Roy et al., 2022). That means they tend to spend lesser amount in health expenditure out of their total income. Thus, it would not be unwise to discuss the extent of health expenditures among the informal workers of India. This chapter thus aims to discuss about out-of-pocket private health expenditure among the informal workers of India in present situation. Furthermore, this chapter also wants to put some light on the incidence of catastrophic health expenditure among the informal workers in India. The issue and nature of health expenditure among the informal workers using NSSO unit level data has not been addressed in economic literature so far. This chapter would help to fill up the gap in the literature.

This chapter is organized as follows: Section 2 provides a brief discussion on the available literature related to the determinants of out-of-pocket health expenditure in India as well as many other developing countries. The research gap and objectives of the study will be spelled out in Section 3. Section 4 talks about the source of data used in the study. Section 5 provides estimates of out-of-pocket (OOP) health expenditure among the informal workers in India. Determinants of health expenditure among the informal workers has been discussed in section 6. Section 7 talks about the extent of catastrophic health expenditure among the informal workers. The determinants of catastrophic health expenditure among them are given in section 8. Section 9 summarizes the above discussions and concludes.

7.2. Brief Review of Literature

Pal (2012) found that presence of children and elderly members increase the probability of OOP health expenditure in India. Furthermore, OOP health expenditure in India has been higher in the urban area compared to that of the rural area (Sangar et al., 2018). Magazzino et

[31]OOP expenditures on healthcare are payments made by the individual worker at the time of receiving healthcare goods and services (NHSRC).

al. (2012) had found that real Gross State Product, the unemployment rate, the number of beds in community hospitals, the urbanization degree and the percentage of the population with at least the junior high school degree had a direct impact on the real health care outlay in Italy. Hooda (2015) had found the per capita income and fiscal capacity of a particular state turns positive and significant impact on determining the per capita public expenditure on health in India. Mahumud et al. (2017) found that age, sex, marital status, place of residence, and family wealth are significant factors of OOP healthcare expenditures in Bangladesh.

7.3. Research Gap and Objective of the Study

The above-mentioned literatures only highlighted the Out of pocket, determinants of health expenditures among various countries including India. However, none of the literatures have given focus on the determinants of health among different types of informal workers in India. Worsening financial condition and hazardous work environment are bound to increase workers' job insecurity and in turn impact their mental and physical health (WHO, ILO and Green, 2020). The vulnerability and health hazards among the informal workers are hardly discussed in the economic literature to a great extent. Based on the research gaps, the objectives of the study are listed below:

i) To investigate the mean health expenditure across different types of informally employed people of India.

ii)To find out the determinants of health expenditure among the informal workers in India.

ii) To find out whether the health expenditure is catastrophic among the informally employed workers in India or not.

iii) To identify the possible factors responsible for the incidence of catastrophic health expenditures among the informal workers of India.

7.4.Sources of Data

This study uses the 68th round NSSO data on employment and unemployment for the period 2011-2012 which is the latest available data related to health expenditure among the informal workers till date. The extract contains only own account workers (SE), RS, CP and CO (indicating IEFS and EIS). To do this we have subtracted all samples whose principal activity status is employer (because this is formal in nature), student, housewife, beggar, retired and

handicapped. Thus, the total number of extracted samples is 117,172. Total extracted samples are sub-divided into three types of informal workers, SE, EIS and IEFS, and then want to find out the health expenditure among those chosen types of workers. SE workers are own account workers in our data set. EIS are workers of proprietary enterprises, partnership enterprises, domestic enterprises (4) and other enterprises where number of workers are less than 10. On the other hand, in our data set, IEFS are workers of public enterprises, private enterprises and co-operative enterprises who hardly get any social security benefits.

7.5. Analysis of yearly health expenditure among the informal workers of India

The mean yearly health expenditure including both formal and informal workers for all types of households is Rs. 6789.65. The following discussion will concentrate on mean health expenditure separately for formal as well informal workers.

7.5.1. Mean yearly total health expenditures among different types of workers

Table 7.1 has displayed the mean total[32] health expenditures among the formal as well as informal workers where it is found that mean yearly health expenditure of the formal workers has been considerably higher than that of the informal workers. This is true for both low asset holders[33] as well as high asset holder workers. Our next aim is to look into the out-of-pocket health expenditure across heterogeneous groups of informal workers. The rest part of the chapter therefore provides us the information about the health expenditure among the informal workers.

Table 7.1: Mean Yearly Total Health Expenditure among the Formal and Informal Workers

Types of Workers	Mean Expenditure Across All Types of Workers (Rs)	Mean Expenditure of low asset holders (Rs)	Mean Expenditure of high asset holders (Rs)

[32]Here total health expenditures include both institutional and non-institutional expenditures.

[33]Assets include cooking and household appliances, recreation goods (tv, radio, tape recorder and so on), jewelry, ornaments and personal transport equipment. Low asset holders include workers whose expenditure on assets is less than Rs 3123.30 and high asset holders include workers whose expenditure on assets is higher than that.

Formal worker	9528.25	7928.83	13094.44
Informal worker	6982.35	6092.81	12890.9

Source: Same as table 4.1

Table 7.2 gives us information about the out-of-pocket yearly mean health expenditures across heterogeneous groups of informal workers. Across types of informal workers, EIS have the highest mean health expenditures and SE have the lowest mean health expenditures. This is true for both high asset holders as well as low asset holders. Across status of informal employment, mean OOP health expenditure is highest among the RS while lowest among CP. So far as location of informal employment is concerned, we find that mean OOP health expenditure has been highest among the WWIOF and lowest among WWISFL. This is also true for low asset holders. However, for high asset holders, highest health expenditure is found among WWISFL and lower among WWIOL.

Table 7.2: Yearly Mean Household Level Health Expenditure Across different types, status and Location of Informal Workers

Types of Informal Workers	Mean Expenditure Across All Types of Workers (Rs)	Mean Expenditure of low asset holders (Rs)	Mean Expenditure of high asset holders (Rs)
SE	5663.93	5018.24	10898.31
EIS	7007.97	6120.67	12963.56
IEFS	6735.78	5820.82	12253.51
Status of Informal Workers			
SE	6501.11	5666.41	6519.06
RS	8136.37	8704.56	8128.56
CP	4401.83	2259.07	4497.25
CO	4908.87	4520.24	4914.08
Location of Informal Workers			
WWFL	6740.06	5738.44	17868.53
WWIOH	6858.4	5970.21	14682.04
WWIOF	8693.77	7236.33	15526.23
WWIEH	6771.02	6189.23	12666.8
WWIEF	7911.44	6836.62	13552.17
WWISFL	5487.81	5154.81	96665.15
WWIOL	5671.65	5349.43	10903.56

Source: Same as table 4.1

7.5.2. Composition of total OOP payments for healthcare across informal workers at household level

Table 7.3 explains the composition of total out-of-pocket payments for healthcare. Total healthcare payments have been sub-divided into two components----- I) Institutional expenses and ii) non-institutional expenses. The former refers to hospitalization expenses while the latter signifies expenses on outpatient services availed by the informal households (NSSO). It is found the lion's share of the healthcare finances is the non-institutional sources irrespective of types, sources and location of informal workers. On the other hand, share of institutional expenses have been below 20 percent for all the informal workers irrespective of all the heterogeneous groups.

Table7.3: The Composition of Out-of-Pocket Payments for Healthcare (in %) Across Informal Workers at Household level

Types of Informal Workers	Non-institutional Expenses (in %)	Institutional Expenses (in %)
SE	84.83	15.17
EIS	83.24	16.76
IEFS	83.33	16.67
Status of Informal Workers		
SE	84.56	15.44
RS	82.08	17.92
CP	84.53	15.47
CO	83.99	16.01
Location wise status of Informal Workers		
WWFL	83.07	17.93
WWIOH	83.47	16.53
WWIOF	84.62	15.38
WWIEH	83.47	16.53
WWIEF	82.75	17.25
WWISFL	82.49	17.51
WWIOL	83.48	16.52

Source: Same as table 4.1
(All figures are in percentages)

7.5.3. Share of Out-of-Pocket medical expenditure out of household consumption expenditure among different informal workers at household level

The impact of OOP payments across consumption expenditure quintiles have been analyzed among the informal workers and displayed in Table 7.4. The mean share of

household OOP healthcare expenditure in relation to household consumption expenditure is more or less same across types of informal employment. However, this figure is marginally lowest among the EIS. Surprisingly, this figure is highest among the RS across status of informal employment. Across location, this figure is lowest among WWIOF. The coefficient of variation (CV) is greater than 1 for all three groups. This is very typical in healthcare expenditure distribution where many people spend little or nothing on healthcare while few households consisting of sick people have large expenditures. Higher the value of CV, higher is the discrepancy in healthcare expenditures among the workers. The concentration index (CI) of OOP payment for healthcare ranks households according to their income on the x-axis and their healthcare expenditure on the y-axis. This indicates to what extent household healthcare payments increases. These indices show whether healthcare payments account for an increasing proportion of income[34] as the latter rises. The CIs are positive indicating that OOP payments on healthcare are disproportionately concentrated among the rich. The quintile[35] specific means of OOP payments also show the same result.

Table 7.4: Out-of-Pocket for Healthcare as a Percentage of Household Consumption Expenditure Among Different Informal Workers

	Mean	CV	CI	Poorest	2nd poorest	Middle	2nd richest	Richest
Types of Informal Workers								
SE	6.26	1.49	0.171	0.05	4.63	6	9.41	16.13
EIS	6.11	1.47	0.148	0.04	4.82	6.27	8.29	10.28
IEFS	6.55	1.46	0.171	0.05	4.19	5.82	7.78	9.81
Status of Informa								

[34]Here expenditure is considered as a proxy of income.

[35]The yearly expenditure of the poorest workers is below 5% percentile, while that of the second poorest is more than 5% and less than 25% percentile. On the other hand, the yearly expenditure of the richest workers is above 95% percentile that of second richest is between 75% and 95% percentile. Needless to say, that the middle workers are those whose yearly expenditure is between 25% percentile and 75% percentile.

l Workers								
SE	6.37	1.49	0.152	0.05	4.82	5.97	8.46	11.20
RS	5.97	1.49	0.141	0.03	3.57	5.51	6.86	8.37
CP	6.68	1.49	0.143	0.05	5.16	7.58	12.36	6.36
CO	6.62	1.48	0.193	0.05	4.8	7.07	13.58	2.75
Location of Informal Workers								
WWFL	6.50	1.44	0.158	3.74	4.92	5.67	8.15	15.43
WWIOH	6.96	1.47	0.142	6.25	5.39	6.54	8.21	11.58
WWIOF	5.83	1.52	0.149	3.66	4.57	4.58	6.66	8.74
WWIEH	6.73	1.44	0.127	4.04	4.53	6.62	9.77	5.47
WWIEF	6.12	1.48	0.139	3.88	3.84	5.61	6.94	8.87
WWISFL	6.13	1.39	0.159	3.38	5.1	5.7	8.52	7.87
WWIOL	6.74	1.48	0.168	3.83	4.89	6.60	10.1	16.17

Source: Same as table 4.1

7.6.Determinants of yearly health expenditure among the informal worker at household level in India

Our aim is to find out the determining factors of yearly total health expenditures among the informal workers at household level in India. Here we consider both household specific and individual specific factors. Sample is drawn from the NSSO 68th round where we have the information of both formal and informal workers. But here we want to identify the factors play crucial role in the extent of health expenditures among the informal workers only. Hence there may be some quantitative or qualitative factors responsible for a factor to be informal in nature according to our definition.

So, for this investigation we have to take the help of Heckman two step regression model in order to tackle the problem of selectivity bias[36]. In order to do this, we have to consider two equations simultaneously; the original equation and the selection equation. In the original equation the dependent variable yi* which is the yearly health expenditure. However,

[36]This is necessary because in NSSO data set we observe both informal and formal workers simultaneously.

statistical analysis based on non-randomly selected samples consisting of informal workers only can lead to erroneous conclusions and poor policy. Thus, we use Heckman corrections which is a two-step statistical approach provides a means of correcting the non-randomly selected samples and sample selection bias.

As already discussed, the heterogeneity of informal employment has been explained in three ways----i) types ii) status iii) location. This chapter thus aims to capture the determinants of health expenditure across these different groups of informal workers. The mean health expenditure varies a lot across types, status as well as location, it is really essential to look into the determinants of health expenditure for these three groups separately. Furthermore, wages, educational qualification as well geographical locations of the informal workers across work types and status vary a lot (Dutta, 2005; Abraham,2019), health expenditure is bound to vary among these workers. Moreover, vulnerability of the informal workers depends on location of employment to a great extent. Almost 50 percent of the workers are engaged in unconventional places[37] which is also detrimental to their job security (Unni et al.,2013). Enhanced vulnerability and insecurity in the workplace undoubtedly worsen the workers' health condition and in turn affects health expenditure. This chapter thus aims to capture the determinants of health expenditure across different groups of informal workers based on types, status and location. The problem of multicollinearity is obvious if we include three types of informal workers in a single model. Thus, we use three distinct models MODEL 1, MODEL 2 and MODEL 3 separately in order to incorporate informal workers based on three different definitions. Thus, our aim is to capture the determinants of health expenditures among the informal workers based on three different definitions.

Model 8

$Yi^{*}= F(age_i , assets_i, hh_i, caste_i, young_i, old_i , Edu_i, \text{informal workers types}_i,)$ (Eq.11)

MODEL9

$Yi^{*} = F(age_i , assets_i, hh_i, caste_i, young_i, old_i , Edui, \text{informal workers status}_i)$ (Eq.12)

MODEL10

$Yi^{*} = F(age_i , assets_i, hh_i, caste_i, young_i, old_i , Edu_i, \text{informal workers location}_i,)$ (Eq.13)

Apart from that, our aim is also to capture the determinants of OOP health expenditure in the rural area so that we can put some light on the rural-urban divergence in terms of health expenditure. In order to avoid the problem of multicollinearity, we include rural workers only

[37]The places other than office, shops and workshops are unconventional places (Unni et al.,2013).

in a separate model to find out the extent of health expenditure in the rural area compared to that of the urban area.

MODEL11

$Yi^{*} = F(age_i , assets_i, hh_i, caste_i, young_i, old_i , Edu_i, rural_i)$ (Eq.14)

Here " age_i" is considered as age of the i^{th} informal worker. As age increases, health expenditures are supposed to increase because age increases morbidity and illness.

" hh_i" represents household head of the i^{th} informal worker. We create its dummy variable. Gupta et al., (2013) provides us the information that health expenditure is considerably higher among the males compared to that of the females. By contrast, in Nigeria female headed household tend to spend more on health services compared to male headed household (Ogundari et al., 2014). This chapter thus aims to investigate the extent of health expenditures among the workers with female head where the reference group is male headed household.

"$assets_i$" represents total amount of assets possessed by the i^{th} informal workers. According to Gupta et al., (2013), there has been a positive relationship between the economic status of the people and that of health care expenditures. The workers possessing large amount of assets can be said to be possessing greater economic status. Thus, the workers with large amount of assets are expected to have larger health expenditures.

"$Caste_i$" represents the social group of the i^{th} informal worker. This er thus seeks to investigate the extent of health expenditure among different social groups. Three dummy variables are separately constructed for scheduled tribe (ST), scheduled caste (SC) and other backward classes (OBC). General category worker is in the reference group. SC, ST and OBC s are widely considered as vulnerable social groups in India (Sengupta et al.,2008) and thus we intend to investigate the extent of health expenditures among them.

"$Young_i$" represents the workers with dependents less than 15 at household level. Workers with higher number of young dependents is expected to spend more on health.

"Old_i" represents the workers with dependents greater than 60at household level. Workers with senior dependents is also expected to spend larger amounts on health (Gupta et al., 2013).

Here "Edu_i" represents years of education among the i^{th} worker. It is assumed that workers with less academic qualification are less likely to spend on health expenditures (Gupta et al.,2013).

"$rural_i$" represents ith worker in the rural area. People in the rural areas are less intended in seeking healthcare compared to that of the urban areas (Gupta et al.,2013).

"Informal workers $types_i$" represents of types of informal employment of the i^{th} informal worker. We have constructed dummy variables each for EIS and SE whereas IEFS is the reference. Since informal worker is not homogeneous, extent of health expenditure among different groups of informal workers may vary a lot.

"Informal workers $status_i$" represents heterogeneity of the i^{th}informal workers in terms of their work status. Three dummy variables are constructed. These are SE, CP and CO while RS is the reference group. Our objective is to find out the extent of health expenditure among the i^{th} informal workers who are working as SE, or CP or CO compared to RS workers.

"Informal workers $location_i$" again represents heterogeneity of the i^{th} informal workers in terms of location of work. We have constructed six dummy variables. These are WWIOH, WWIOF, WWIEH, WWIEF, WWISFL and WWIOL. The reference group is WWFL. This chapter endeavors to find out the extent of health expenditure among the i^{th} informal workers working in each of the location compared to the reference groups.

Now we present the selection equation that helps to identify the determining factors for the workers to join informal employment. The selection equation is given by

$\mathbf{I_i}^* = F(tech_i, voc_i, rel_i)$

Where $\mathbf{I_i}^*$ represents type of employment (formal/informal) of the i^{th} worker which is dummy in nature. Here "$tech_i$" represents technical education of the i^{th} worker. "Voc_i" represents vocational training of the i^{th} worker. "rel_i represents religion of the i^{th} worker.

Initially we have to estimate the selection equation on the basis of Probit model, On the basis of the estimation, we can have estimated value of Inverse Mill's ratio represented by λ of each sample 'i'. In the Heckman two step estimation, this λ is to be treated another explanatory variable of the original Equation, mentioned in Model-8, Model-9, Model-10. If it is observed that the parameter estimates of λ is statistically significant, then we can become sure that Heckman two step estimation procedure is appropriate to address our research problem. However, the value of λ in Heckman two step model has been non-significant even at 10 percent level of significance [38] and thus proves the non-existent of selectivity bias in our

[38]The coefficient of λ is-75002.22 and 74862.01 for MODEL 1, MODEL2 and MODEL3 respectively and all are statistically insignificant.

model. Thus, we conduct OLS model to find out the determinants of health expenditure. The models of the OLS are same as that of the Heckman---

Table 7.5: Factors responsible for the yearly health expenditure among the informal workers in India (Using OLS estimates)

Dependent variable: Yearly health expenditure of each household

Determinants of Health Expenditure

	MODEL 1	MODEL2	MODEL 3	MODEL 4
	Coefficient	Coefficient	Coefficient	Coefficient
Constant	6028.57*** (439.63)	6969.58*** (422.58)	6070.59*** (471.21)	5296.96*** (372.24)
Age	71.41*** (12.25)	68.61*** (12.27)	73.3*** (11.57)	60.49*** (11.58)
Assets	0.09*** (0.01)	0.09*** (0.01)	0.09*** (0.01)	0.09*** (0.01)
Female headed household	-3528.69*** (375.22)	-3574.82*** (261.02)	-3481.94*** (380.26)	-2974.67*** (353.56)
ST	-2596.32*** (268.3)	-2562.76*** (265.78)	-2600.04*** (268.47)	-2594.40*** (265.95)
SC	-1071.13*** (222.12)	-990.46*** (222.58)	-1107.98*** (217.73)	-1093.67*** (218.87)
OBC	-693.01*** (224.42)	-649.68*** (208.65)	-686.73*** (205.12)	-694.22*** (207.54)
Young Dependents	583.94*** (84.59)	593.41*** (84.41)	597.30*** (83.71)	558.88*** (83.5)
Old dependents	1528.14*** (197.64)	1513.78*** (197.6)	1531.03*** (197.54)	1673.79*** (194.27)
Years of Education	425.12*** (43.82)	391.38*** (44.74)	410.38*** (41.05)	389.01*** (42.71)
Rural Workers				-1497.26*** (183.39)
EIS	778.02*** (179.27)			
SE	658.1* (249.84)	-277.95 (235.86)		
CP		-2328.39*** (354.17)		
CO		-1171.62*** (177.52)		

WWIOH			367.55 (266.34)	
WWIOF			1087.77* (490.64)	
WWIEH			319.27 (437.03)	
WWIEF			512.83* (236.83)	
WWISFL			-493.52 (366.54)	
WWIOL			258.15 (187.83)	
Number of observations	111,213	111,213	111,213	111,213
F	69.29	71.44	53.59	85.49
Prob > F	0.00	0.00	0.00	0.00
R squared	0.02	0.02	0.02	0.02
Root MSE	19380	19376	19381	19392

Source: Same as table 4.1

7.6.1. Results and discussions about determinants of health expenditure among informal workers at household level:

The results of the OLS regression have been displayed in Table 7.5 highlighting the determining factors of yearly health expenditures among the informal workers at household level in Indian labour market. The results indicate that the co-efficient of EIS as well as SE have been significantly higher compared to IEFS which is the reference group. Thus, it can be inferred that health expenditures have been significantly highest among EIS followed by SE and the least expenditure has been incurred among IEFS. Considering status of informal, RS experience highest expenditures on health compared to SE, CP and CO. The least expenditure has been incurred by CP. Considering location of workers, it is found that WWIOF and WWIEF spend significantly higher amount on health compared to WWFL which is the reference group. The highest health expenditure has been incurred by WWIOF. It is also found that compared to the urban workers, rural workers spend significantly lower amounts on health.

Furthermore, it is found that there has been a positive relationship between health expenditures of the informal workers and that of presence of young and old dependents and age of the respondent. In fact, the presence of old dependents in the family enhances yearly health expenditure three times more than that of the young dependents. Apart from that, health expenditures significantly enhance with the increase in asset holding. Compared to

general caste, health expenditure has been significantly lower among the vulnerable social groups like SC, ST as well as OBC workers. The least expenditure on health is observed among the STs. Increase in the years of education increases the expenditures on health significantly. Lastly, compared to that of the male headed household, workers coming from female headed families tend to spend less on health. All these results are compatible with the theory.

7.7.Incidence of Catastrophic Health Expenditure among the Informal workers of India.

If a household has to reduce its basic expenses over a certain period of time, sell assets, or accumulate debts to pay the medical bills of one or more of its members, then the family is said to incur catastrophic payments. There are no universally accepted cut-off values or thresholds for defining the catastrophic nature of healthcare payments. Catastrophic headcount has been defined here as the percentage of households spending more than a 5-25% of their total consumption expenditure on healthcare. However, empirical studies confirm that 10% of total expenditure is widely accepted as the standard, as this represents an approximate threshold at which the household is forced to cut down on subsistence needs, sell productive assets, incur debts or be impoverished (van Doorslaer et al, 2006 and Ghosh, 2011).

Doorslaer (2005) found out that there is heavy reliance of out-of-pocket financing of healthcare in Asia which is one of the major causes in the deterioration of standard of living. The increased out-of-pocket financing for healthcare can only be accommodated through diversion of resources from other consumption items. The excessive spending on healthcare is explained by the author as negative welfare cost or "catastrophic expenditure" which increased impoverishment among the low-income countries. Ghosh (2011) found out that new economic policies have significantly enhanced not only the incidence of catastrophic health expenditure but also impoverishment in India. Gupta et al. (2013) found that incidence of catastrophic health expenditure is found to be concentrated among high consumption expenditure households in India. Households from SCs are more likely to incur catastrophic health expenditure from households of general category (Pal,2012).

We use the methodology of calculating the catastrophic payments for healthcare following Wagstaff and van Doorslaer (2003). An OOP payment for healthcare is considered "catastrophic" when the payment exceeds some threshold (Z_{cat}), defined as a fraction of total household consumption or non-food consumption. If T represents OOP payments for

healthcare, x represents total household expenditure and f(x) stands for food expenditure, then a household is said to have incurred catastrophic payments when T/x or T/[x-f(x)] exceeds a specified threshold, Z_{cat}. The approach used to measure catastrophic payments for healthcare involves analyzing the incidence of catastrophic payments – that is, the percentage of households that spend more on healthcare than the threshold, which can be measured by the headcount (HC). HC is the fraction of the sample whose expenditures as a proportion of total income exceed the threshold Z_{cat}. HGi is the "catastrophic overshoot", which equals Ti /xi – Z_{cat} if Ti /xi >Z_{cat} and zero otherwise. The catastrophic overshoot captures the average degree by which payments (as a proportion of total expenditure) exceed the threshold Z_{cat}. If we let Ei = 1 if HGi> 0 and Ei = 0 otherwise, then the headcount is given by expression (15):

$$HC= (1 /N) \Sigma Ei= \mu E, \qquad \text{(Eq.15)}$$

where N is the sample size and μE is the mean of Ei, while HC captures only the incidence of any catastrophes occurring and O captures the intensity of the occurrence as well.

We have again calculated concentration index of Ei in order to determine whether poor households incur more catastrophic payments than rich households. If value of CI for Ei is positive, then there is a greater tendency rich household to exceed the threshold, while negative values indicate a greater tendency for poor households to exceed the threshold.

The estimates of HC are calculated on the basis of 10% threshold only as it is widely accepted as standard. The out-of-pocket (OOP) payments across different types, status and location of informal workers have been displayed in table 7.6. Across different types of informal workers, HC has been highest among informal employees in the formal sector (IEFS) followed by employees of informal sector (EIS) and the lowest among self-employed workers (SE). However, we find that HG has been same across SE and EIS and lower among IEFS. Concentration index of HC (CE) is positive for all types of informal workers indicating that there is inequality in the spending of yearly health expenditure. Concentration index for HG (CEG) is also positive for all types of informal workers excepting IEFS which reflects that inequality in HG has been lower among them.

Across status, HC has been highest among casual workers in other sector (CO) followed by casual workers in public sector (CP) and self-employed workers (SE). Needless to say, that the estimate of HC has been least among regular salaried workers (RS). Furthermore, HG has been highest among CP but lowest among RS. Apart from that the values of CE and CEG are positive for all of them indicating higher inequality in catastrophic payments.

Across location, HC has been highest among workers working in employers' household (WWIEH) followed by workers working in own household (WWIOH), workers working in

street without any fixed location (WWFL), workers working in other location (WWIOL), workers working in street with fixed location (WWISFL), workers working in employers' office (WWIEF), while the lowest is observed among workers working in own office (WWIOF). Besides, the estimates of HG have been highest among WWIOL but lowest among WWISFL. Higher inequalities in catastrophic payments are reflected by the positive values of CE and CEG. Thus, we find a large percentage of informal workers across all heterogeneous groups are not only bound to pay catastrophic payments but also the extent of expenditure is also unequal.

Table 7.6: Percentages of Informal Workers across Types, Status, and Location Incurring Catastrophic Payments for Healthcare

Types of Informal Workers	10%
SE	
HC	27.41
CE	0.196
HG	11.89
CEG	0.162
EIS	
HC	30.19
CE	0.163
HG	11.89
CEG	0.137
IEFS	
HC	33.34
CE	0.201
HG	10.82
CEG	-0.246
Status of Informal Workers	
SE	
HC	23.55
CE	0.171
HG	11.94
CEG	0.143
RS	
HC	19.37
CE	0.157
HG	10.67
CEG	0.141
CP	34.01
HC	36.14
CE	0.173
HG	13.32
CEG	0.142

CO	
HC	35.24
CE	0.196
HG	11.99
CEG	0.193
Location of Informal Workers	
WWFL	
HC	32.62
CE	0.172
HG	11.09
CEG	0.168
WWIOH	
HC	35.53
CE	0.149
HG	12.48
CEG	0.137
WWIOF	
HC	21.74
CE	0.181
HG	11.7
CEG	0.131
WWIEH	
HC	36.33
CE	0.123
HG	11.22
CEG	0.145
WWIEF	
HC	25.60
CE	0.159
HG	10.94
CEG	0.137
WWISFL	
HC	28.94
CE	0.181
HG	10.20
CEG	0.142
WWIOL	
HC	30.37
CE	0.189
HG	12.55
CEG	0.163

Source: Same as table 4.1
(All figures are in percentages)

7.8. Determinants of the incidence of catastrophic health expenditure among the informal workers in India

It is clear from the above discussion that health expenditure is catastrophic for a large part of the informal workers but not for all. In this section we would like to explore the possibility of incurring catastrophic health expenditure (yearly) among the informal workers in India. In other words, our first purpose is to identify whether informal workers are subject to catastrophic health expenditure or not. Then we would like to look into the possible determinants of catastrophic health expenditure. Since selectivity bias hardly exist in our data, so we have used Probit model to find out the determining factors of the incidence of catastrophic health expenditure (yearly). The catastrophic health expenditure of 10% has only being considered in order to find out the determining factors. The dependent variable y_i* is taking binary values 1 and 0 where 1indicates that the i^{th} informal worker has to undergo catastrophic expenditure of 10% and above and 0 indicates otherwise. The dependent variable is thus a dummy variable and hence justifies our regression equation. Just like the previous regression, we once again use four different models which are mentioned below----

MODEL 12

Y_i^* = F (Edu_i, age_i,hh_i, $caste_i$, $young_i$, old_i ,$fuel_i$, $electr_i$, $land_i$, $assets_i$, $size_i$, female lit_i, female edu_i, informal workers $types_i$,) ……. (Eq. 16)

MODEL13

Y_i^* = F (Edu_i, age_i,hh_i, $caste_i$, $young_i$, old_i ,$fuel_i$, $electr_i$, $land_i$, $assets_i$, $size_i$, female lit_i, female edu_i, informal workers $status_i$) ……. (Eq.7)

MODEL14

Y_i^* = F (Edu_i, age_i,hh_i, $caste_i$, $young_i$, old_i ,$fuel_i$, $electr_i$, $land_i$, $assets_i$, $size_i$, female lit_i, female edu_i, informal workers $location_i$) ……. (Eq.18)

MODEL15

Y_i^* = F (Edu_i, age_i,hh_i, $caste_i$, $young_i$, old_i ,$fuel_i$, $electr_i$, $land_i$, $assets_i$, $rural_i$, $size_i$, female lit_i, female edu_i) …….. (Eq.19)

It is true that income is one of the most important explanatory variables. As income rises, the ability to pay for the healthcare without affecting the consumption of necessary goods will also rise. This lowers the incidence of catastrophic OOP health expenditure. Thus, there should be a negative relationship between worker's income and that of the ability to pay for OOP healthcare expenditures (Pal, 2012). However, information on income has been unavailable in our data. Wage of the workers might be considered as a proxy of income which is available in our data. Even then we have not considered wage because wage information is not available among the SE. Household assets might be considered as a proxy

of income, and in turn considered as an important explanatory variable for calculating determinants of catastrophic health expenditure. "$assets_i$" represents total amount of assets possessed by i^{th} informal workers (Pal,2012). Land possessed[39] is also an important explanatory variable among the rural workers (Pal,2012). "$land_i$" is the total amount of land possessed among the i^{th} informal workers. Furthermore, cooking methods and access to household electricity can also be considered as important explanatory variable of the catastrophic OOP health expenditures. Access to cooking methods and electricity not only are an indicator of workers' wellbeing but also these possessions determine workers' health risks. Long-term exposure to solid cooking fuels enhances the chances of falling ill (Pal,2012). The extent of exposure to health risk in turn determines the OOP health expenditures. "$fuel_i$" represents the cooking methods and electricity used by i^{th} informal workers.

Apart from that, years of education are also considered as an important determinants of OOP catastrophic health expenditure. Education undoubtedly enhances individuals' care for health and thus catastrophic health expenditure among the individuals are likely to decline. (Pal,2012; Grossman, 1999; Cowell, 2006). Additionally, according to Cowell (2006), education increases the opportunity cost of getting ill. Furthermore, it can also be said that as income increases, education also increases. Thus, increase in education reduces the likelihood of OOP health expenditure. Therefore, "Edu_i" represents education of the i^{th} informal worker. Female literacy also plays very important role in health expenditure and hence catastrophic health expenditure ((Pal,2012; Gupta et al., 2013) So, the interaction dummy between education level and gender of the household head have been considered to check this hypothesis. Thus, the interactive dummy that is "female lit_i" and "female edu_i" represent female literacy and years of education of the female member respectively.

Apart from that presence of young family members and senior citizens in the family also enhances the health expenditures and in turn catastrophic health expenditure (Cavagnero et al.,2006). Moreover, larger the household size means higher probability of being ill Thus, there has been a positive relationship between household size and catastrophic health expenditure (O' Donnell et al.,2005). "$Young_i$" represents workers with dependents less than 15. "Old_i" represents workers with dependents greater than 60.

Just as the health expenditure, social background also plays very important role in determining catastrophic health expenditure. "$Caste_i$" represents social group of the i^{th} informal worker. Therefore, we use three different dummies to represent the deprived social

[39]Information on land and assets have been given separately in our data set and multicollinearity hardly exist between them because they are completely unrelated to each other.

groups. Those are scheduled tribe (ST), scheduled caste (SC) as well as other backward workers (OBC). Compared to the others (general), our objective is to investigate the extent of catastrophic health expenditures among the deprived social groups.

Age of the household head also play major role in determining the extent of catastrophic health expenditure (Pal,2012). "age_i" is considered as the age of the head of the family. Apart from age of the household head, gender of the household head also plays major role in determining catastrophic health expenditure. As explained in Cavagnero*et al*., (2006), female headed household have higher chance of facing catastrophic health expenditure compared to that of male headed household. "Hh_i" represents household head of the i^{th} informal worker. We have therefore calculated dummy variable for female headed household and would want to investigate whether catastrophic health expenditure is higher among the female compared to that of the male.

Besides, it would not be unwise to investigate how far catastrophic health expenditure is different across rural and urban area. So, we have created dummy variable for rural area in order to put some light on this matter in the rural area compared to that of the urban area.

Lastly, "$size_i$" has been considered as an important explanatory variable representing size of the household. Pal (2012) also considered household size as an important explanatory variable in order to find out the determinants of catastrophic health expenditure. The result obtained in that chapter is that higher household size significantly reduces the chances of catastrophic health expenditure.

Just like the health expenditure, "Informal workers $types_i$", "Informal workers $status_i$" and "Informal workers $location_i$" are considered in the explanatory variables in three different models in order to understand the extent of catastrophic health expenditures among informal workers across different heterogeneous groups.

Table 7.7: Factors responsible for the incidence of Catastrophic Health Expenditure among the informal workers in India using simple Probit model

	MODEL 12		MODEL 13		MODEL 14		MODEL15	
	Coefficients	Marginal effects	Coefficients	Marginal effects	Coefficients	Marginal Effects	Coefficients	Marginal effects
Constant	-1.11***(0.07)		-1.06*** (0.06)		-1.1*** (0.06)		-1.17***(0.12)	
Years	-0.002	-0.001	-0.005	-0.001	-0.0006	-0.0001	0.008	0.00

of education	(0.004)		(0.005)		(0.005)		(0.01)	1
Literate among the female	-0.06 (0.13)	-0.01	-0.05 (0.13)	-0.01	-0.04 (0.13)	-0.01	0.11* (0.06)	0.03
Educated among the females	0.03 (0.03)	0.007	0.02 (0.03)	0.006	0.02 (0.03)	0.006	-0.4* (0.23)	-0.08
ST	-0.22*** (0.04)	-0.055	-0.23*** (0.04)	-0.05	-0.25*** (0.05)	-0.056	-0.21* (0.1)	-0.04
SC	0.008 (0.03)	0.005	0.03 (0.03)	0.006	0.01 (0.03)	-0.06	0.06 (0.07)	0.02
OBC	0.000005 (0.02)	0.000	0.002 (0.03)	0.004	-0.003 (0.03)	-0.0007	0.04 (0.05)	0.009
Age of the House hold Head	0.005*** (0.001)	0.001	0.006*** (0.001)	0.001	0.006*** (0.001)	0.001	0.002*** (0.002)	0.0005
Female headed household	-0.103*** (0.02)	-0.029	-0.107*** (0.02)	-0.030	-0.104*** (0.03)	-0.029	-0.22*** (0.02)	-0.32
Rural							-0.04 (0.05)	-0.009
Number of senior citizens	0.21*** (0.02)	0.052	0.2*** (0.02)	0.05	0.21*** (0.02)	0.05	0.19*** (0.04)	0.05
Number of Childrden	0.004 (0.01)	0.001	0.004 (0.01)	0.001	0.003 (0.01)	0.0008	-0.01 (0.02)	-0.003
Assets	0.0001* (0.00001)	0.0001	0.0001*(0.00001)	0.0001	0.0001* (0.00001)	0.0001	0.0001* (0.00001)	0.0001
Land Possessed	0.0001 (0.00001)	0.0001	0.0001 (0.00001)	0.0001	0.0001 (0.00001)	0.0001	0.0001 (0.00001)	0.0001
Fuel and Electricity	0.0001*** (0.00001)	0.0001	0.0001***(0.00001)	0.0001	0.0001***(0.00001)	0.0001	0.0001 (0.00001)	0.0001

Household size	-0.008(0.008)	-0.002	-0.006 (0.008)	-0.001	-0.007 (0.008)	-0.002	0.01 (0.01)	0.003
EIS	0.05* (0.03)	0.01						
IEFS	-0.09*(0.05)	-0.022						
SE			-0.11*** (0.03)	-0.03				
CP			-0.25* (0.13)	-0.06				
CO			-0.09*** (0.02)	-0.02				
WWIOH					0.05 (0.04)	0.01		
WWIOF					-0.11*** (0.04)	-0.03		
WWIEH					-0.06 (0.05)	-0.031		
WWIEF					0.001 (0.03)	0.0004		
WWISFL					0.03 (0.07)	0.009		
WWIOL					0.07* (0.03)	0.02		
Number of observations	98727		98727		98727		98727	
Wald chi2	325.45		368.34		389.73		376.53	
Prob>chi2	0.00		0.00		0.00		0.00	
Log pseudolikelihood	-124900000.000		-124700000.000		-124700000.000		-13404561	
Pseudo R^2	0.02		0.03		0.03		0.02	

Source: Same as table 4.1

7.8.1. Results and discussions

The results of the determinants of catastrophic health expenditures (yearly) among the informal workers have been done with the help of Probit model and is represented in Table 7.7. Incidence of catastrophic health expenditures is significantly higher among the EIS but lower among the IEFS compared to that of SE. Just like the health expenditures, incidence of catastrophic health expenditure (yearly) has been significantly lower among SE, CP as well

as CO compared to the RS. The lowest incidence happens among the CP. Considering informal workers across different locations, incidence of catastrophic health expenditures has been significantly lower among the WWIOF but higher among WWIOL compared to WWFL. In contrast to that of the OOP health expenditure, we hardly find any significant result in determining catastrophic health expenditures among the rural workers compared to the urban workers.

Age of the household head significantly enhances the probability of catastrophic health expenditures. Dummy of female headed household is negative and significant which highlights that the chance of catastrophic health expenditure is lower among them compared to the male headed household. In contrast to the existing theories, years of education are hardly statistically significant in determining catastrophic health expenditures. Not only that, the interaction dummies like female years of education and female literate workers also do not have any impact on catastrophic health expenditure. So far as the economic condition of the informal workers are concerned, we find that availability of assets and expenditure on fuel and electricity play significant role in determining yearly catastrophic health expenditures. However, possession of land hardly has any impact on the catastrophic yearly health expenditure. Apart from that number of senior members in the family increases the chance of yearly catastrophic health expenditures. Lastly, vulnerable social groups such as STs are less likely to consider expenditure on health as catastrophic health expenditure compared to the non-scheduled social group.

7.9. Conclusion

The findings of our analysis show that the average out-of-pocket yearly health expenditure is highest among the EIS so far as types of informal workers are concerned. Needless to say, the mean health expenditure is highest among the RS and WWIOF across status and location of informal workers. However, the OOP share out of total heath expenditure have been lowest among them. Thus, it is observed that the group of workers whose mean health expenditure is the highest, OOP share of healthcare have been lowest for them. It is also found that assets, household head, social group, status of employment, types of employment, location of employment are important determinants of health expenditures. The health expenditures have been highest among the EIS followed by SE while it is least among the IEFS. Besides, the extent of health expenditure has been significantly lower among the SE, CP and CO compared to that of the RS. Furthermore, compared to WWFL, significantly higher health expenditures have been observed among WWIOF and WWIEF. Furthermore, almost 30 percent informal workers across all groups are paying catastrophic payments for

healthcare. HC for catastrophic payments have been highest among EIS, CO and WWIEH across types, status and location of informal employment. Considering catastrophic health expenditure among the informal workers in India, the determining factors are age and sex of the household head, possession of assets, expenditure of fuel and electricity and number of senior citizens in the family. However, contrary to the theory, years of education, as well as the interactive dummies like female education and female literacy are not at all determining factors of catastrophic health expenditure. Moreover, compared to SE, incidence of catastrophic health expenditures has been significantly higher among the EIS but lower among IEFS. Besides, catastrophic health expenditures are likely to be lower among SE, CP as well as CO compared to that of RS. Compared to WWFL, incidence of catastrophic health expenditures has been significantly higher among WWIOL but lower among the WWIOF. Workers in the rural area spend significantly higher amount on OOP health expenditure compared to the urban area. However, this result is insignificant so far as catastrophic health expenditure is concerned. Thus, the policy prescription for improving the health situation among the informal workers is to identify them and provide them better earning opportunities so that their economic condition can be improved.

Educational qualification and technical skill are very important determining factors of quality of employment and wages among the workers. Various theories suggest that there has been a positive relationship between investment in human capital and quality of job and the remuneration. It is discussed in Narayana (2017) that educational and technical qualification of the informal workers are muchless than the formal workers which in turn is reflected in poorer job quality and remuneration among them. Moreover, since their earning is quite less, their investment in human capital is also remarkably poor for themselves and also for their next generations. Hence, neither they nor their next generation can come out of the clutches of informal employment. Not only that, we have proved in chapter 1 that education has been luxury item among the informal workers. So, it is very necessary to find out the amount of educational expenditure among the informal workers and also to prescribe suitable policies which can help increasing investment in human capital among them. The next chapter attempts to prescribe some important public policies for increasing educational expenditure among them.

Chapter Eight: Relevant Public Policies Required for Accumulation of Human Capital among Informal Worker Households of India

Chapter 8

Relevant Public Policies Required for Accumulation of Human Capital among Informal Worker Households of India

8.1 Introduction

The problem of income inequality has been rising in India for the last three decades. According to the Oxfam report (published in 2022), the bottom 90% of the Indian population occupies only 33% of the total national wealth. Besides that, the lion's share of the Indian labour market has not only been captured by informal employment[40] but also, the incidence of informal employment has enhanced rapidly during the post-reform period (Marjit et al., 2007; Sanyal et al., 2008 and Narayana, 2015, Roy and Kundu, 2020). Roy and Kundu (2023) have also shown that in 2011-12, 84% of the Indian workforce was employed as informal workers and that has enhanced to near about 89% in 2019-20. The rapid proliferation of informal employment is observed not only in the informal sector but also in the formal sectors (Sanyal et al., 2008). Besides, self-employed workers (SE) are also an inherent part of the informal sector (Mukhopadhyay, 1998). According to Unni et.al (2008), informal employment enhanced stupendously as a result of economic reforms leading to considerable wage cuts by employers to tackle intensified international competition. Roy and Kundu (2023) have proved that there is a huge mean wage gap between formal workers and any type of informal worker in India. During the time of wage income inequality among the informal workers, it is also observed that in most of the states, the value of the Gini Coefficient is more than 0.7. These are the reasons behind the cause of income inequality in India[41]. Overall income inequality in India can be reduced if more workers can be engaged in the formal sector as skilled workers with better wages or salaries. A worker can become a skilled worker in his/her adulthood if and only if his/her parents invested in human capital for him/her in his/her childhood[42]. Enhancement of educational qualifications and technical skills always enhances workers' efficiency and hence plays a crucial role in employment opportunities in the formal sector. Workers coming from poor families hardly have suitable educational qualifications and are unable to grab suitable employment opportunities as skilled worker in the formal sector with higher wage or salaries. So, they are forced to take whatever

[40]Informal employment is not only generated only in the informal sector. Informal employees work in both the formal as well as informal sectors in unhealthy working conditions with long working hours and devoid of any social security benefits mainly Provident funds (GOI., 2007; ILO, Standing, 1999).

[41]Excess supply of unskilled informal labour force also keeps the wage rate at low level leading to wage inequality among all types of informal workers.

[42]This can reduce the supply of informal worker force which can also help to enhance their wage income.

employment opportunities come their way to earn their livelihood and to look after their family. Many times, workers are forced to get involved in informal employment where the wage rate is not only very poor but also social security benefit is unavailable with poor vulnerable working conditions. With lower wages, they are unable to enhance their skill and remain unskilled informal workers throughout their life and also fail to spend on human capital accumulation for their children through enhancing expenditure on education. So, they remain informal workers across generations. In this way, informal workers are engaged in a vicious cycle of informal employment with lower educational opportunities.

The interrelationship of the above attributes was theoretically explained much more clearly in Galor Zeira Model (1993). It is known that investment in human capital has a positive relationship with income. Following Galore and Zeira (1993), in an underdeveloped economy like India, where working members of most households are working as informal workers, a large section of the working population also has to work as informal (unskilled) workers in their adulthood because their parents failed to invest in human capital for them in their childhood. The lack of 'bequest' of the parents and the high out-of-pocket direct cost of education required for investment in human capital for children in their childhood are the prime causes behind it. But investment in human capital in childhood can help an individual work as a skilled worker (working as a formal worker) in adulthood which can help him/her earn much more than an unskilled worker. Roy and Kundu (2019) proved that the intensity of poverty among all types of Indian informal workers is quite high. Besides that Roy and Kundu (2022) also proved that any type of Indian informal worker considers expenditure on education as a luxury item[43]. Geeta Rani (2021) also indicated that among the poorest Indian households there is barely adequate income to spend on education for their children. Actually, the incidence of poverty and treating expenditure on education for the next generation as a luxury are closely related. Considering those incidences, this chapter will try to find suitable public policies which can help informal households to invest in human capital for their children so that in their adulthood they can earn a much better amount as skilled workers and keep their families above the poverty line. Investment in human capital is primly required to make the beneficiary much more productive so that he/she can contribute to the nation. This investment through proper education can enhance the skill of the beneficiary. An economy with a good percentage of the working-age population can achieve higher growth if

[43]A good for which demand increases more than proportionally as income rises. Luxury goods are said to have high income elasticity of demand. In other words, as people become wealthier, they will buy more and more of the luxury good.

the labour force is utilized optimally. De, Mukherjee and Ray(2022) had shown that in India there is a shortage of highly skilled labourers but the emerging economy is expected to be more dependent on a skilled workforce and investment in human capital is required for the enhancement of skill among the future generation workforce who can also earn much higher amount. This can also help to tackle the problem of income inequality in the Indian economy.

This chapter is organized as follows: Section 2 provides a brief discussion of the available literature related to the determinants of out-of-pocket education expenditure in developing economies including India. The research gap and objectives of the study are spelt out in Section 3. Section 4 will talk about the source of data used in the study. Section 5 will do a comparative analysis of mean monthly education expenditure and mean years of schooling between formal workers and different categories of informal workers. Section 6 provides estimates of out-of-pocket (OOP) educational expenditure among different types of informal workers in India. Determinants of educational expenditure across different types of informal workers have been discussed in Section 6. Section 7 summarizes the above discussions and will indicate a few public policies which can help informal households to spend on human capital for their children.

8.2. Brief Review of Literature

Tilak (2002) using NACER survey data on Human Development in rural India (HDI) for 1994 found that household income, educational qualification of household head, and household size are very important determinants of education. Baluch et al. (2008) using primary data for the city of Lahore found that family size, dwelling ownership, expenses on education, literacy ratio and dependency ratio are found to be positively related to primary enrollment. Moreover, access to school is not a significant factor in inhibiting school attendance. Quang (2012) using VHLSS 2006 for Vietnam's economy found that household income has not only a significant effect on total educational expenditure but also an enhancement of household income increases expense on education. Moreover, household heads with higher educational qualifications and engaged in professional jobs have higher probabilities of increased educational expenditure. Rizk et al. (2014) using Egyptian Household Income, Expenditure and Consumption Survey data for the period 2010-2011 found that expenditure on children’s education significantly increases with an increase in income. Furthermore, this paper has also concluded that the household head’s education is

positively related to children's income. Sajid et al. (2016) using micro-level data from the Household Income and Expenditure Survey for the period of 2010-11 found that school enrollment is negatively related to poverty, household size, and distance to the nearest school whereas positively related to age, gender of the child (male), parental education, region of urban residence and household assets. Household income hardly plays any significant role in school enrollment. Yun et al. (2017) using time series data from 1982 to 2015 for the Malaysian economy found that education expenditure is determined by the inflation rate, unemployment rate and younger population of age less than 65. Bayar et al. (2016) using data set from Turkstat for the Turkish economy found not only that higher household income level leads to higher educational expenditures but also households with better human capital spend more on children's education.

8.3. Research Gap and Objective of the Study

The above-mentioned literature only highlighted the out-of-pocket educational expenditure or direct cost of educational expenditure and determinants of educational expenditure among households in various developing countries including India. However, none of the literature hardly focuses on the determinants of educational expenditures among informal workers in India (who occupies the major share of the income-earning labour force in India) which are luxury goods for them. Based on the research gaps, the objectives of the study are presented below:

i) To put some light on the extent of investment in human capital among formal workers and different types of informal workers in India. With this, it will also be shown the mean years of schooling across formal workers and different types of informally employed people in India.

ii) To investigate the determinants of expenditure on human capital formation among the households depending on informal workers for their livelihood in India.

iii) To suggest public policies that may be undertaken by the government so that human expenditure among households working as informal workers can be increased.

8.4. Sources of Data

Informal employment comprises workers working in unorganized enterprises or households excluding regular workers with social security benefits provided by the employer (NCEUS,2008). Here provident fund is considered the prime social security benefit.

Therefore any employment without the provision of a Provident fund is considered informal employment. Based on the definition of employment all informal workers are here categorized as Self-Employed, Informal workers in the formal sector and Informal workers in the Informal sector. Although the labour force survey in India has recently been renewed from 2017, the Employment-Unemployment survey (NSSO 68th round) is still widely recognized because it has some advantages to address the above research problems. The survey work of Periodic Labour force survey in 2017 was done after the implementation of demonetization which is still considered a macroeconomic shock in the Indian economy where the mostly affected labour force is the informal labour force. The Indian Government introduced free and compulsory education up to class Eight and between the ages 6-14 in 2005 In this background the 68th round of NSSO data on Employment and Unemployment for 2011-2012 is the most suitable and latest available data related to educational expenditure among informal workers to date. Here the distribution of different kinds of expenditure among the households depending on informal work can be properly identified. Initially, the age group between 18 to 70 is considered. Actually, in India, an informal worker is joining the labour force for around his/her 18 years. So it is expected that they are not required to spend human capital for himself/herself, rather that amount would be spent on his/her siblings or their children. Here the extracted data contains only own account workers (SE), regular salaried workers (RS .who are not getting any social security benefit), Casual workers in the Public Sector (CP) and casual workers in the other sector (CO) including informal worker in the formal sector(IEFS) and informal worker in the informal sector (EIS). To do this we have subtracted all samples whose principal activity status is employer (because this is formal in nature), student, housewife, beggar, retired and handicapped. Thus, the total number of extracted samples is 117,172. Total extracted samples are subdivided into three types of informal workers, SE, EIS and IEFS[44], and then want to find out the expenditure on education among those chosen types of workers. SE workers are own-account workers in the NSSO data set. EIS are workers of proprietary enterprises, partnership enterprises, domestic enterprises and other enterprises with fewer workers than 10. On the other hand, in our data set, IEFS are workers of public enterprises, private enterprises and cooperative enterprises who hardly get any social security benefits mainly provident funds.

8.5.Mean Out-of-Pocket Education Expenditure among formal and all types of informal workers in India.

[44] All RS, CP, CO and IEFS are clubbed here as IEFS.

Table 8.1 has displayed the mean monthly expenditures on human capital among formal as well as informal workers. The annual mean education expenditure of the formal workers[45] has been considerably higher than that of the informal workers.

Table 8.1: Mean Monthly Household Expenditure for Investment in Human Capital among Formal and Informal Workers (all types)

Types of Workers	Mean Monthly Expenditure on Human Capital across Two Types of Workers (Rs)
Formal worker	1150.78
Informal worker	351.59

Source: Source: same as table 4.1

Keeping in mind the heterogeneity of the informal workers, it is required to mention the investment expenditure on human capital among different types of informal workers. Table 8.2 depicts mean monthly expenditures on human capital across different types of informal workers. Across different types of informal workers, IEFS have the highest mean expenditure on human capital and SE have the lowest mean expenditure on human capital but the gap of it between different types of informal workers is not so high.

Table 8.2: Mean Monthly Household Level Expenditure on Human Capital across Different Types of Informal Workers[46]

Types of Informal Workers	Mean Monthly Expenditure on Human Capital among different types of informal workers (Rs)
SE	279.46
IEFS	396.715
EIS	378.61

Source: Source: same as table 4. 1

Next, Table 8.3 explains the composition of out-of-pocket payments for human capital across different types, of informal workers. Among different types of informal workers, it is found that the institutional expenses (which are considered expenditure on tuition fees as mentioned in the Unit level NSSO data) have been the highest among the EIS which is just above 50 per

[45]Between the age group 18 to 70

[46]We have considered all types of education simultaneously.

cent. Among SE and IEFS the tuition fees have been lower than 50 percent. But the composition of the direct cost of education among any type of informal workers in India is more or less identical among all types of informal workers.

Table 8.3: The Composition of Out-of-Pocket Payments for Education (in %) (As an indicator of household level spending for investment in human capital for the next generation) across different types of Informal Workers

Types Of Informal Workers	Institutional Expenses	Non-Institutional Expenses	Total (100%)
SE	48.07	51.93	100
EIS	50.17	49.83	100
IEFS	47.65	52.35	100

Source: Source: same as table 4.1

Table 8.1 and Table 8.2show that monthly expenditure for the accumulation of human capital among households depends on different types of informal work for their livelihood is not so high. The Summary statistics presented in the Appendix show that it is Rs.351.60 per month. Dutta and Kundu (2014) had shown that education is considered a 'merit good' among the informal working class because they underestimate the benefit of education though it has positive externalities. The government of India also knows that and has started different subsidized programs for education so that the majority of Indian citizens should not depend much on his/her purchasing capacity. Still, Roy and Kundu (2022) have proven that expenditure on human capital among households depending on informal work is considered a luxury item. It is observed in Table 8.3 that the sample households have to bear near about 50% percentage of the total expenditure on human capital as Institutional expenses though the government of India has taken several initiatives to reduce the direct cost of education at the primary level. Biswas and Kundu (2021) after constructing School Grant Index have proved that all types of government grants have percolated in all parts of India including in rural India. But NSSO data (75^{th} round on Social Consumption on Education) has shown that near about 50% of rural households prefer private schools to public schools at the primary level for their children. Maybe due to this reason, the parents consider expenditure on human capital as a luxury good whose income elasticity of demand is positive and more than one.

Mean years of schooling can be considered an important indicator of the average intake of human capital of the workers. It is already mentioned that education is considered a luxury item among informal workers in India (Roy and Kundu, 2022) which means that informal workers tend to spend less on education which automatically reflects low years of schooling among themselves. From Table 8.4 it is evident that the mean years of schooling among the informal workers is less than half compared to that of the formal workers.

Table 8.4: Mean Years of Schooling among the Formal and Informal Workers

Types of workers	Mean years of schooling
Formal Workers	10.63
Informal Workers	3.27

Source: Same as Table 4.1

Note: All the figures in the table are in years

Table 8.5 provides us with the estimates of mean years of schooling across heterogeneous groups of informal workers in India. Across different types of informal workers, the mean years of schooling among the SE has been lower than 3 years and that among EIS has been slightly above 3 years. On the other hand, the same among IEFS has been slightly higher than 4 years.

Table 8.5: Mean Years of Schooling across Different Types of Informal Workers

Types of informal workers	Mean years of schooling
SE	2.59
EIS	3.27
IEFS	4.21

Source: Same as Table 4.1

Note: All the figures in the table are in years

Table 8.6 proves that a certain percentage of informal workers (any type) have hardly crossed primary education in India[47]. It is required to investigate whether this is an important reason why informal workers think expenditure on human capital for their siblings or children is a luxury item. Following Galore and Zeira (1993) this may be a major reason why their children also have to work as informal workers for livelihood in their adulthood in India where even after 75 years of Independence, huge dominance of the informal labour force among the total labour force is observed.

[47]Summary statistics table presented in the Appendix has shown that the maximum value of years of schooling of the Indian informal worker is 9.

Out-of-pocket payments (OOP) for education across consumption expenditure quintiles among the informal workers across heterogeneous groups have been analyzed and displayed in Table 6. The percentage of OOP payments for education out of total household consumption expenditure is an important indicator that to what extent informal workers spend on education. It is found that the mean share of household OOP educational expenditure out of total household consumption expenditure is nearly 3.5 per cent among different types of informal employment. However, this figure is marginally lowest among the SE and highest among EIS. The values of the coefficient of variation (CV) are greater than 1 for all the informal workers across types. This is indicative of the fact that the distribution of educational expenditure is very unequal. The higher value of CV indicates a higher discrepancy in educational expenditures among informal workers. Among different types, this discrepancy is marginally highest among IEFS[48]. The concentration index (CI) ranks OOP payments for educational expenditure and ranks households according to their income. These indices indicate whether educational expenditure accounts for an increased proportion of income[49] as the latter rises. The positive values of CI across all the informal workers indicate that OOP payments for educational expenditure are disproportionately concentrated among the richer households. The quintile-specific means among the richer households also give us the same result as mentioned in Table 38.

Table 8.6: OOP Payments for Education as a Percentage of Household Consumption Expenditure among the Informal Workers

	Mean	CV	CI	Poorest	2nd poorest	Middle	2nd richest	Richest
Types of Informal Workers								
SE	3.47	1.68	0.25	0.06	1.81	3.45	7.23	7.66
EIS	3.83	1.61	0.28	0.061	1.67	3.44	6.14	8.51

[48]But the value of CV among all types of workers is not very high which establishes the fact that little inequality is observed in terms of investment in human capital among the households depending on informal work for their livelihood.

[49]Here expenditure is considered as a proxy of income

IEFS	3.61	1.69	0.26	0.76	1.21	3.39	5.71	8.01

Source: Same as Table 4.1.

8.6. Determinants of Investment of Human Capital Among the Informal Workers in India

For the enhancement of skills among the Indian labour force, investment in human capital especially in education is necessary. Educational expenditure at the household level is necessary for their children for the enhancement of skill as well as human capital. In this section, the main objective is to find out the determining factors of monthly educational expenditures among informal workers in India. Based on this one can identify the policy variables which can improve the proportionate share of educational expenditure of the i^{th} informal workers. Considering both the household-specific and individual-specific factors, the sample size is drawn from 68^{th} round NSSO data containing the information of both formal as well as informal workers. However, the prime objective of this chapter is to find out the factors playing important roles in the expenditures of human capital (here, education) among the informal workers only. Since the intensity of poverty among informal workers across various heterogeneous groups are almost identical[50], the extent of investment in human capital among them is more or less equal. Hence, in this section, all types of informal workers are simultaneously considered to identify the determinants of investment in human capital for the informal workers in India as a whole. Thus, according to mentioned definition, there may be some quantitative or qualitative factors responsible for a worker to be informal in nature.

In this investigation, Heckman's two-step regression model is applied to tackle the problem of selectivity bias. Roy and Kundu (2020) had shown that the incidence of being an informal worker is endogenous. So to address the above research problem, Heckman's Two-step estimation procedure is required where two equations are considered simultaneously viz, the original equation as well as the selection equation. The dependent variable is $LnEXPHC_i$ in the original equation which is nothing but the log of monthly expenditure on the education of the i^{th} informal workers. One can come to erroneous calculations and poor policy if the regression procedure is based on non-randomly selected samples containing only informal workers. As a result, using Heckman corrections is a two-step statistical approach which has

[50]During 2011-12, across types of informal workers, percentages of poverty among SE, EIS and IEFS are 24.74 percent, 21.87 percent and 22.98 percent respectively in all India. Across status of informal workers, Percentages of the same among SE, RS, CP and CO are 22.21 percent, 13.18 percent, 46.99 percent and 38.33 percent respectively in all India (Roy and Kundu., 2020).

the technique of correcting the sample selection bias problem of the NSSO data. Now the original equation can be expressed as:

$LnEXPHC_i = F(age_i , age^2_i assets_i, caste_i religion_i, \frac{children}{total\ family}_{ii} , male\ child_i , head\ edu_i, poor\ family_i , bank_i, reason\ of\ school\ dropout_i, , \frac{monthly\ transport\ expenditure}{monthly\ total\ expenditure}_i , \frac{monthly\ electrical\ expenditure}{monthly\ total\ expenditure}_I , \frac{monthly\ nutritional\ food\ expenditure}{monthly\ total\ expenditure}_i , \frac{monthly\ fuel\ expenditure}{monthly\ total\ expenditure}_i)$ (Eq.1)

The selection Equation is here

$\mathbf{I}i^* = F(Voc_i)$ (Eq.20)

In the original equation " age_i" is considered as the age of the i^{th} informal worker who is the head of the household. As the age of the head of the household head increases, expenditure on education is supposed to increase (Karaaslan *et.al*, 2022, Ebaidalla, 2017). More age of the household head indicates better experience as an informal worker which helps him/her to earn a better wage or salary. This can help that household to spend more on education for their children. But when an informer worker gradually becomes older, then his/her productive capacity which mainly depends on his/her physical capability will decrease and that creates an impact on his/her earnings. Hence, Age^2 has also been considered as another explanatory variable.

Here "$assets_i$" represents the total value of assets possessed by the i^{th} informal workers. Here the assets are valued in monetary terms. Karaaslan *et.al*.(2022) considered household income has been a very important determining factor of educational expenditure. Unfortunately, in NSSO data, a researcher can not get household income. So, "$assets_i$" may be represented as a proxy of the economic solvency of the sample household. It will be found out whether the families with higher-valued assets spend more on educational expenditures or not. In other words, the economic condition of the family is an important indicator of educational expenditure. In order to put some light on the economic condition of the workers' families, we create a dummy variable on the poor family. "poor $family_i$" represents the poverty situation among the i^{th} informal worker. Our target is to investigate whether educational expenditure among households depending on informal work lying below the poverty line is

lower than that of non-poor households depending on informal work which is the reference group[51].

Household size can create impact the expenditure on the human capital of the family (Ebaidalla,2017; Tilak,2002). Thus, the ratio of the number of children and total household members in the family of the i^{th} informal worker is considered an explanatory variable. This ratio indicates the proportion of young dependents in the family. It is required to investigate whether this dependency ratio of young members of the households can create any impact on investment in human capital or not.

The gender of the child also plays a very important role in determining expenditure on human capital (Ebaidalla,2017). In India, parents tend to spend more on expenditures on human capital for the male child compared to that of the female child. Here, "male $child_i$" represents the number of male children in the family of i^{th} informal worker.

"head edu_i" represents educational qualification among the head of the household of the i^{th} informal worker. Karaaslan *et.al.* (2022) also considered this variable as an important determining factor of educational expenditure. It is expected that household heads with higher educational qualifications spend more on investment in human capital for their children.

"$bank_i$" represents i^{th} informal workers who are having a bank account. Financial inclusiveness[52] undoubtedly enhances schooling levels and educational aspirations (Chiapa et al.,2015). This chapter thus seeks to find out whether financial inclusiveness increases educational expenditure among informal workers in India.

In poor families, school dropout is observed. It is expected that the higher the school dropout, the lower will be the educational expenditure. So, the reason for school $dropout_i$is also called an explanatory variable. This chapter seeks to investigate how far educational expenditure changes as a result of school dropout. Several reasons are mentioned behind the cause of school dropout. The causes are 'school never attended because school is considered too far', 'school never attended to supplement household income', 'school never attended because

[51]Poverty line is considered on the basis of the recommendation of Tendulkar Committee. Here state specific poverty line is considered for the time period 2011-12. The poverty line varies state wise. Suppose an informal worker's Monthly Per Capita Consumption Expenditure is below the declared poverty line in that state in which he represents. Then that informal worker is considered as poor and take the value 1 as dummy variable.

[52] It is an important determinant during the time of calculation of Multi-Dimensional Poverty. It actually reduces the intensity of such poverty.

education is not considered necessary' and 'school never attended to perform household chores'. Here due to the strong theoretical background 'school never attended to supplement household income' and 'school never attended because education is not considered necessary' are considered as the dummy variable for the family of i^{th}informal worker. The first one reflects that parents send their children to the job market to work as child labour to supplement their family income as mentioned by Basu( ). This is an economic factor. The second one indicates that parents are not motivated enough to send their children to school as mentioned by Kundu and Dutta(2014) which is a psychological factor.

The ratio of monthly transport expenditure to the total expenditure of the i^{th} family is also considered another explanatory variable. We would like to investigate whether expenditure on human capital will be influenced by the decrease in the ratio for the i^{th} family. Due to the paucity of public transport in rural areas, many students drop out of school. The availability of household transport like cycle, scooter etc. help the students of poor families to easily go to school by travelling long distance in rural areas where public transport is not available. In this situation, the value of the ratio will decrease and it can be expected that a fall in the value of this ratio can help the households depend on informal work to invest more human capital for their children.

The ratio of monthly electrical expenditure to the total monthly expenditure of the i^{th} family is calculated. It is required to find out whether educational expenditure increases as a result of the decrease in this ratio in the case of the i^{th} informal worker. The availability of electrical appliances in the home enables the students to continue their education further. Most importantly the availability of computers and laptops provides greater support in taking up higher education courses and those will be functional only if electricity connection is available in the house at a subsidized rate.

The ratio of nutritional food expenditure to the total monthly expenditure of the i^{th} family is also considered another explanatory variable. The ratio can take a lower value only in the presence of a strong public distribution system. It is required to find out the relationship between expenditure on human capital and this ratio in the case of the i^{th} family of the informal workers and the expected sign should be negative.

The ratio of expenditure on fuel to the total monthly expenditure of the i^{th} family is also considered. It is required to find out whether there has been a negative relation exist between educational expenditure and this ratio. It is expected that the availability of fuel in the house

at a subsidized rate can reduce that ratio and enhance the chances of investing in education because subsidized fuel can reduce the budget share of a household on fuel which can help the household to spend more on education.

The last four explanatory variables can be considered policy variables which can enhance investment expenditure for human capital. The Summary Statistics table is presented in the Appendix. It is also observed total absence of multicollinearity among the explanatory variables and the value of VIF in all situations never exceeds 6.

Roy and Kundu (2020) had already proved that being an informal worker is not exogenous but endogenous. So here Heckman's two-step treatment effect model is applied to tackle the problem of selectivity bias. So on the basis of the results obtained by Roy and Kundu (2020), the following selection equation is considered that helps to identify the determining factors for the workers to join informal employment.

In the Selection Equation (Eq. 20) Ii* represents the type of employment (formal/informal) of the i^{th} worker which is a dummy in nature. Here "voc_i" represents the vocational training of the i^{th} worker. It is treated as a dummy variable which represents different kinds of specialized training including engineering training, leather and textile-related training, photography, childcare-related training and so on the training of the i^{th} workers[53].

Firstly, we have estimated the selection equation following the Probit model. On the basis of the estimation, we have found out the estimated value of Inverse Mill's ratio for each sample 'i' as λ. In the Heckman two-step estimation, we treat λ as an explanatory variable of the original equation, which we mentioned in the model. The results of this regression are represented in Table 7.

Table 8.7: Factors responsible for the monthly educational expenditure among the informal workers in India

Dependent variable: Log of monthly education expenditure of each household (Heckman Two-Step method is here applied)

Dependent Variable- log of Monthly Educational Expenditure	C0-efficient

[53]Years of Education of the head of the family is another determining factor which can influence the happening of informal or formal worker of a laborer as identified by Roy and Kundu (2020). But as this variable is considered in the original equation, it is dropped from the selection equation. Religion is another factor which can also determine the type of a labourer. But here also due to the same reason that is not considered in selection equation.

Constant	3.42*** (0.24)
Age	0.17*** (0.01)
Age Square	-0.002*** (0.62)
Assets	1.09e-06* (5.71e-07)
Scheduled Tribe	-0.36*** (0.06)
Scheduled Caste	-0.29*** (0.05)
Other Backward Classes	-0.2*** (0.03)
Muslim	0.08* (0.04)
Christian	0.36*** (0.06)
Other religion	0.27** (0.09)
The ratio of children and total household	-0.22 (0.17)
Educational Qualification of household head	0.31** (0.13)
Poor Workers	-0.35*** (0.05)
Bank account holders	0.26*** (0.04)
Number of male dependent	0.77* (1.37)
school never attended to supplement household income	-0.18 (1.43)
School never attended because education is not considered necessary	-0.89* (0.44)
Monthly transport expenditure as a ratio of total monthly expenditure	-1.51*** (0.42)
Monthly electrical expenditure as a ratio to total monthly expenditure	-2.06* (0.99)
Monthly expenditure on nutritious food as a ratio to total monthly expenditure	-3.7*** (0.25)
Monthly expenditure on fuel as a ratio to total monthly expenditure	-6.26*** (1.84)
Dependent variable-Informal worker = 0 and Formal worker =1	
Constant	0.30*** (0.07)
Vocationally trained workers	0.47*** (0.03)

λ	-0.32*** (0.09)
Wald χ^2 (19)	3277.02
Prob>χ^2	0.00

Source: Source: same as table 4.1

8.6.1. Results and discussions about determinants of educational expenditure among the informal workers at the household level:

The results of Heckman's two-step estimation have been shown in Table 8.7 which provides the determining factors of monthly educational expenditures among the informal workers at the household level in India. Here it is observed that the parameter estimate of λ is statistically significant, which proves that Heckman's two-step estimation procedure is appropriate[54] to address this research problem. A positive significant relationship exists between expenditure for the accumulation of human capital and the age of the informal worker who is also the head of the family. However, a negative relationship is found between age^2 and expenditure on human capital. It establishes the fact that with the increase in the age of the informal worker, he/she spends more on human capital for their children but that will increase at a decreasing rate with his/her age. It is proved that families with higher amounts of assets which represent economic solvency of the household also spend a higher amount for accumulation for human capital. Thus, it is easily understood that informal workers coming from poor families spend significantly lower amounts on education. Expenditure on human capital among the different castes is significantly different. The same among Christians is significantly higher than among the Hindus which is the reference group. Although the ratio of children to total household is insignificant, the number of male children present in the family significantly enhances the educational expenditure of the same. This establishes the significance of gender bias during the time of investment in human capital and the result once again proves that families tend to spend more on a boy child compared to that of a girl child. Furthermore, it is also no surprise that as the informal worker who is the household head becomes more educated, he tends to spend more on their children. Moreover, as the number of bank account holders increased in a family, educational expenditure also increased significantly. This establishes the importance of Jana Dhan Yojana for the accumulation of human capital among the children of informal worker households. It

[54]The reason is that selectivity bias exists in our research problem.

is found that monthly transport expenditure as a ratio to total monthly expenditure is significantly negatively related to the monthly educational expenditure of the family. This implies that if households can spend proportionately less on transport then that household can spend more on human capital generation within his/her household. Thus, the distribution of bicycles among school students mainly among girls enhances education among informal workers because that can reduce the above-mentioned ratio. The same situation with investment in human capital happens with expenditure on electricity, fuel and for nutritious food. Efficient distribution of public distribution system, supply of cooking fuel and electricity at a subsidized rate and can help households depend on informal work for their livelihood to spend more on human capital for their children. Results shown in Table 7 give more stress on the supply of cooking fuel at a subsidized rate is the most important factor if the government wants to enhance investment in human capital among the children of the informal worker households. This establishes the importance of the Pradhan Mantri Ujjala Yojana where LPG cylinders are supplied to poor households at a subsidized rate.

NSSO's 75th round Survey on 'Social Consumption of Education in India' has shown that even 'preprimary' education is quite expensive in India. It is on average Rs.471.25 per month in rural areas and Rs1209.10 per month in urban areas. In this survey, all types of households are considered. Here, it is also proved that there is a sharp increase in the costs of education coming up at the secondary level both in rural and urban areas. Tertiary education is also quite expensive. It is known that an individual can penetrate the job market with some skill if and only if that individual can pursue some skill-enhancing-based education after completion of a higher secondary level of education. It is also shown that even in Government institutions, the cost of education rises sharply with the level of education offered. As a large section of the informal workforce in India is poor or lying just above the poverty line, it is difficult for them to spend much on education for their children unless that household depending on informal work can reduce his/her other household expenses. Besides that following Gita Rani (2021) it is required to arrange some policies for them so that their income level can be enhanced so that they can consider expenditure on human capital as necessary. The above results establish those facts. Here the arrangement of scholarships for all types of students, the facility for getting Student credit cards, and Kanyashree Prakalpa for human capital accumulation of girl children can play an important income-supporting role for the low-income households dependent on informal work. For reducing the drop-out rate among poor families after completion of the secondary level of education the parents can be

informed about the average income gain for spending some part of their income on skill enhancement. This can help the children can get a job as skilled workers in the formal sector. Apart from those factors, it is required for the household head not to consider expenditure on human capital as a 'merit good'. The government of India has already taken several steps to reduce the direct cost of expenditure on human capital. Child labour is now banned in India. So informal workers should realize the importance of education among their children for a better economic future.

8.7. Conclusion

The human capital theory mentions a strong positive relationship between education and the growth, development, proper income distribution and reduction of income inequality in that economy at the household level. It is also related to enhancing individual productivity and better earnings at the unit level or individual level. After getting an education mainly higher education, an individual wants to leave the traditional sector as an informal worker to the modern sector for better earnings as a skilled worker. Informal workers occupy the major percentage of the Indian workforce and their dominance is increasing over decades. In this background, investment in human capital among households depends on informal work is necessary for the next generation for their improvement of livelihood because, through this investment, the beneficiary child can work as a skilled worker in the formal sector with higher earnings. This chapter shows that the direct cost of investment in human capital is more than double among formal workers as compared to informal workers. The composition of the direct cost for investment in human capital between institutional and non-institutional expenses is more or less identical across all types of households depending on informal work. The percentage of OOP payments on educational expenditure as a proportion of total household expenditure among the informal workers provides us with information that to what extent informal workers spend on education out of their total expenditure. It is observed that across different informal workers, this value is more than 3 per cent for SE, EIS as well as IEFS. The value of CV is greater than 1 and that CI is positive for different types, of informal workers which is indicative of the fact that educational expenditure is very much unequally distributed among the households. It is found that the age of the head of the family, economic status of the informal worker, presence of male dependents, financial inclusion, and

educational qualification of the household head, are important determining factors of expenditure on human capital among the informal workers. Moreover, it is found that low monthly expenditure on transport as a ratio of total monthly expenditure, low monthly expenditure on nutritious food as a ratio of total monthly expenditure and low monthly expenditure on fuel and light as a ratio of total monthly expenditure can help the informal households to spend more on human capital for their children, Thus, these can be considered as policy variables. Hence, it is clear that greater availability of personal transport (bicycle), an efficient public distribution system with the nutritious food availability of light and fuel at subsidized rates undoubtedly can enhance the expenditure on human capital among informal households. Sobuj- Sathi prokolpo of the West Bengal government and the subsidized LPG programme of the Central government for poor households are very fruitful public policies which can enhance the educational expenditure among the informal workers for their children. Apart from that Sarba Siksha Abhijaan schemes which minimize the direct cost required for investment in human capital can also play positive roles among poor informal households. Moreover, Kanyasree and Vivekananda scholarships are other fruitful government policies to spread education among girl children. The expenditure on education in India is gradually increasing with its level. The amount required to spend for higher education in public institutions is also high. But this is actually necessary to make a worker skilled and accessible for better employment opportunities with higher earnings. It is proved that households with better assets spend more on human capital. In this background, the government should also take proper measures to reduce poverty among the informal workers through an income support programme which would help to enhance educational expenditure among them and hence the educational qualification of the next generation. Last but not least, a proper awareness drive is required among informal households about the importance of education among their children so that they do not consider education as 'merit good'.

Appendix

Summary Statistics:

Variables	Mean	Standard Deviation	Min value	Max value	VIF
Monthly Educational Expenditure (Rs.)	351.585	147.7	0	3254.17	
Age	38.91	13.24	20	70	4.29
Years of education	2.84	2.42	0	9	

Educational qualification of the head of the household	2.65	2.37	0	9	0.95
Assets (Rs.) (Monetary value of Assets)	3123.30	14060.70	0	139000	1.29
Bank Account Holder	0.29	0.45	0	1	1.12
Hindu	0.83	0.38	0	1	1.09
Muslim	0.13	0.33	0	1	1.18
Christian	0.02	0.14	0	1	1.02
Other religion	0.03	0.16	0	1	1.05
Male child	0.82	0.38	0	1	1.01
Poor family (Whether the household is below the state specific adjusted poverty line or not)	0.27	0.45	0	1	1.09
$\frac{\text{children}}{\text{total family}}$	0.06	0.15	0	1	0.98
$\frac{\text{monthly transport expenditure}}{\text{monthly total expenditure}}$	0.01	0.04	0	0.9	0.80
$\frac{\text{monthly electrical expenditure}}{\text{monthly total expenditure}}$	0.004	0.01	0	0.47	0.98
$\frac{\text{monthly nutritional food expenditure}}{\text{monthly total expenditure}}$	0.17	0.06	0	0.53	1.07
$\frac{\text{monthly fuel expenditure}}{\text{monthly total expenditure}}$	0.1	0.04	0.0008	0.68	1.08

Source: Calculated by authors

The Value of VIF of 'Age' is 4.29 because Age^2 is also considered as another explanatory variable in the original Equation. On the basis of the reported values of VIF of the other explanatory variables of the original equation, it is proved the total absence of multicollinearity in the model.

Chapter Nine: Overall Conclusion and Policy Implications

Chapter 9

Overall Conclusion and Policy Implications

9.1 Conclusion:

In this study, we have found out that informal employment captures the lion's share in Indian labour market. Again, within the informal labour market, the dominance of male informal workers is not only higher than female informal worker, but also male informal workers earn higher wages compared to the female counterpart during the last decade. During 2011-2012, informal workers spend larger proportion of their income in food items and smaller proportion of their income in non-food items compared to the formal workers. Since in our study information of income is not available, so data of expenditure has been used as a proxy of income. Thus according to Engel's law, we can conclude that the former is more poverty stricken than the latter. Keeping in mind the heterogeneity of the informal workers, we have also calculated expenditure share of food items and non-food items across different types of informal workers. We find that expenditure share of food items has been highest among SE followed by EIS and the least among IEFS. Although the difference in the expenditure share among these three types of informal workers has been very nominal, but we can say that according to Engel's law, SE is the most poverty-stricken while IEFS is the least poverty stricken. Besides, using the Working Lesser model we have analysed consumption pattern of the food and non-food items among the informal workers. Across different types of informal workers, food items are mostly considered as necessary while non-food items are mostly considered as luxury goods. Apart from food items, some of the daily use product like fuel and light, umbrella, torch are considered necessary among them. Besides, entertainment items, addictive items are also necessary product. While therapeutic apparatuses are neither necessary nor luxury among them. Moreover, health and education are also luxury items among the informal workers. It means that out of their total expenditure, the expenditure share of health and education have been very less. This is surely not a very good sign because spending lesser amount in health and education out of total consumption undoubtedly pushes the informal workers into more vulnerability. Since they are forced to work for longer hours in harmful environment, it is very likely that they would succumb to various kind of diseases. Since their expenditure share in health is lower, it means that they are treating in the government hospitals at free of cost. In that case provision of government hospitals and health centre is extremely essential for treating the informal workers. Paucity of sufficient

government hospitals especially in the rural sector would surely increase vulnerability among the informal workers. Spending lesser expenditure share in education reflects that the informal workers are mostly unskilled and semi-skilled as they spend lesser in generating human capital. Thus, they can hardly improve their economic conditions by getting employed in better quality of jobs.

Since we have found out that informal workers are more impoverished compared to formal workers according to Engel's law, so in the next chapter we have tried to investigate the extent of poverty across different types of informal workers only. Since Indian economy witnessed demonetization in November, 2016, so we have tried to analyse the long-term impact of demonetization on the informal workers. Hence, we have done this exercise not only during 2011-2012 but also during 2018-2019. Our objective is to find out the extent of poverty during 2018-2019 which can be considered as the post demonetization period. Thus, we would like to compare the extent of poverty among the informal workers during the pre-demonetization era (2011-2012) and post-demonetization era (2018-2019). We find that there has been reduction in the incidence of poverty among the informal workers in both the rural as well as urban sector over the years from 2011-2012to 2018-2019. We have also calculated acuteness of poverty among the poor informal workers. Unlike incidence of poverty, acuteness of poverty has enhanced during the said period. This explains us that demonetization does not have any impact on the economic condition of the informal workers, but economic condition of the poor informal workers have been worsened. Thus, we can say that poor informal workers have become poorer which is surely not a good indicator for the economy. Comparing different types of informal workers, we find that during the former period, incidence of poverty and acuteness of poverty have been highest among IEFS followed by EIS and lowest among SE in the rural area while that in the urban area, the same has been highest among SE followed by EIS and lowest among IEFS. During the latter period, percentages of impoverished informal workers have been highest among EIS while that of SE is little lower than EIS and incidence of poverty among IEFS is lowest in both the rural and urban sector. During this time, acuteness of poverty has been highest among IEFS both in the rural and urban area. In the rural area, it is least among EIS and in the urban area, it is least among SE during the said time. Among different types of informal workers, incidence of poverty has been higher in the rural sector as compared to the urban sector, while the opposite happens in case of acuteness of poverty for both the period.Keeping in mind the heterogeneity of the informal workers, we have sub-divided informal workers on the basis of status and location. Across status of employment, incidence of poverty has been

lowest among RS in both the rural and urban sector and in both the periods. Acuteness of poverty on the other hand has been lowest among SE and RS in the rural and urban area respectively during the former period while during the latter period this is lowest among CP in both the sector. By contrast, incidence and acuteness of poverty have been highest among CP during the former period and CO during the latter period. This is true for both rural and urban sector. Across different location of informal employment, during the former period, incidence of poverty has been highest among WWFL and WWIOL in the rural and urban area respectively. The same has been lowest among WWIOF in both the sectors. During the latter period, incidence of poverty has been highest among WWIOL in both the rural and urban area. During the latter period, incidence of poverty has been lowest among WWIOF in the rural area and WWIEF in the urban area. During the former period, acuteness of poverty has been highest among WWIEH and WWIOL in the rural and urban sector respectively and lowest among WWIOF in both the sectors. During the latter period acuteness of poverty has been highest among WWIOH in the rural sector and WWIOL in the urban sector and least among WWIOF in both the rural and urban sector. Across different states, incidence of poverty has been highest among Chhattisgarh during the former period and Nagaland during the latter period. Nagaland has deteriorated alarmingly so far as incidence of poverty is concerned. Using Heckman 2 step procedure we have tried to find out the determinants of poverty among the informal workers. Determinants of poverty are age, caste of the worker quality of employment, financial inclusion, satisfaction of the workers, educational qualification as well as technical qualification and so on. We have found out that as age which is a proxy of experience increases, incidence of poverty declines. Besides, ST is the most poverty-stricken social group. Incidence of poverty among the workers without bank account is higher than the workers who are financially included. Compared to EIS, incidence of poverty are significantly lower among IEFS and SE. We have used quantile regression as well as OLS to determine acuteness of poverty. Determinants of the depth of poverty are educational qualification, technical qualification and sectors are the determinants of depth of poverty.

In our next chapter we have tried to compare money wage, real wage as well as wage-income inequality among the informal workers of India during the last decade. We find that money wage has increased over the years among the informal workers, but real wage has declined from 2011-2012 to 2018-2019. However, there has been a slight increase in real wage from 2018-2019 to 2019-2020. We have tried to analyse wage-income inequality by using Gini Index. There has been increase in wage income inequality among the informal

workers as measured by GI estimates over the year around last decade. After decomposing overall estimates of GI across states, it is found that contribution of Go has been highest indicating that the factors determining wage-income inequality across states has been negligible. With the help of OLS regression, we find that there is a significant increase in wage-income inequality among the informal workers from 2011-2012 to 2018-2019 in both the sectors. However, considering 2018-2019 as the base period, we find significant enhancement in wage-income inequality during 2019-2020 only among the urban informal workers.

In the last two chapters we have discussed about the health and educational expenditure among the informal workers of India. We find that both health and education have not only been luxury goods among the informal workers but also, they are highly unequally distributed among them. It is not at all surprising that compared to formal workers, health expenditure has been many times lower among the informal workers. During 2011-2012, out-of-pocket yearly health expenditure is highest among EIS, RS and WWIOF across different types, status and location of informal workers respectively. On the other hand, out of pocket health expenditure has been least among SE, CP as well as WWIOL. The out-of-pocket expenditure health expenditure has been decomposed into two sub-groups. They are institutional sources and non-institutional sources. Irrespective of different types, status as well as location of informal employment, lion's share of the health expenditure is spent on non-institutional sources as compared to institutional sources. Moreover, it is found that approximately 30 percent of informal workers across all heterogeneous groups spend on catastrophic payments.We have used OLS regression procedure to find out the determining factors of health expenditure and Probit regression procedure to find out the determinants of catastrophic health expenditure among the informal workers. We find that age, assets, caste, household head, number of dependents (both young and old), years of education and type of informal employment, status and location of employment play crucial role in determining health expenditure. The determining factors of catastrophic health expenditure are age of the household head, number of old dependents, assets, use of fuel and electricity and type of informal employment are the determinants of catastrophic health expenditure.

Just like health expenditure, out-of-pocket educational expenditure among the formal workers are more than double compared to the informal workers. Compatible with the educational expenditure, mean years of schooling among the formal workers is more than double the informal workers. We find that out-of-pocket educational expenditure as well as mean years of schooling across different types of informal workers is highest among IEFS and lowest

among SE. Thus, it can easily be said that human capital among the informal workers has been considerably lower which in turn pushed them in lower quality of jobs. We have used Heckman 2 step procedure to find out the determining factors of educational expenditure. Age, age square, caste, religion, educational qualification of the household head, financial inclusion, number of male child, expenditure share of monthly transport, expenditure share on electrical goods, expenditure share on nutritious goods and expenditure share on fuel are the determinants of monthly educational expenditure.

9.2 Government Policies

Although incidence of poverty has reduced, acuteness of poverty has enhanced from 2011-2012 to 2018-2019. Hence Government of India must spread various schemes in order to reduce poverty. Some policies are already undertaken by government which are quite fruitful. These are National Rural Employment Programme (NREP), Food for work Programme, Jawahar Rozgar Yojna (JRY) and so on. Besides, government has issued BPL cards for the poor families where foodgrains and other necessities are sold to these families at subsidized rates since June,1997. However, the public distribution system in the form of provision of BPL card to the poor family is often criticized of having corruption practices. Many times, it has happened that the benefit of this scheme is taken away by non-poor and wealthy families and poor and needy families are deprived of the benefit. Hence, government resources are being wasted without properly benefitting the poor. Hence, along with poverty alleviation measures, government will have to take necessary steps to reduce corruption otherwise most of the poverty alleviation measures will be ineffective. We know that school drop-out rate has been very frequent among the children in the poor families. Although there is provision of free primary schools but opportunity cost of the families for sending these children to school has been very high. Thus, provision of mid-day meal has been a very effective policy which not only reduces drop-out rate of the children but also provides sufficient nourishment to them. In our study it has already been proved that lack of investment in human capital pushes the workers in substandard jobs. “Sarba Siksha Abhijan” is one such scheme which help in enhancing literacy among the poor. However, government must implement various schemes in which talented students from poor families can get the opportunity of higher education. In our study we have already proved that expenditure on education increases among the bank account holders than those who do not have any bank account. Hence, Jan Dhan Yojna is a very fruitful policy for the accumulation of human capital among the informal workers. New schemes must be issued in which poor students can get education loans at a very nominal rate

of interest. In our study it is also proved that if a family spends proportionately less in transport, then expenditure on human capital can be increased. Thus, “Sobujsathiprokolpo” of West Bengal government are very effective in this regard which have the capability of enhancing educational qualification of the informal workers. This policy is even more effective in the rural area where transport system is not very developed. We have also proved that if any family spends lesser amount in fuel, nutritious food and electrical equipment, then accumulation of human capital will be higher. Through public distribution system these families can get subsidized nutritious food. Through Pradhan Mantri Ujjwala Yojna government has already taken measure by providing subsidizing fuel to the poor family. Besides, government must spend more money in providing electrical gadgets to the school children which will help poor students to generate more human capital. In our research we have already shown that families of the informal worker tend to suffer from gender biasedness and hence they spend more on education of the boy child compared to the girl child. So, government has already taken various measures to enhance educational qualification of the girl child. There are various schemes like "Kanyasree", Vivekananda scholarship which have the capacity of enhancing literacy rate and educational qualifications of the girl child and hence their economic conditions can also be improved. Thus, proper investment in human capital will not only reduce incidence of poverty but also reduce acuteness of poverty among the informal workers of India. Consequently, marginal poverty and middle poverty can also be reduced by enhancing educational qualifications. Government of India should take proper steps so that literacy and educational qualifications can be spread at that grass root level in order to reduce the acuteness of poverty.

Besides, we have shown that approximately 30 percent of the informal workers spend on catastrophic expenditure. The extent of catastrophic expenditure can be reduced by various health schemes undertaken by our government. These are Ayushmaan Bharat, Awaz Health Insurance Scheme, Central government Health Scheme and so on. Government must increase health centres and government clinic specially in the rural area to reduce catastrophic expenditure of the informal workers. More specifically, government should take necessary steps so that poor people can get proper service from the government hospitals and lifesaving drugs can be available at cheap rate.

We have already proved that female informal workers get considerably lesser remuneration than their male counterpart. Therefore, government of India should ensure equal pay for equal work in every sector so that pay discrimination can reduced to a great. Inflation must also be taken care off so that real wages are not reduced.

Last but not the least, government should take solid steps so that new industries can be set up and sufficient employment can be created. As we have already shown that lion's share of our labour market is already captured by informal employment, therefore proper measure must be taken by our government so that all the organisations are formalized and all the workers are paid social security benefits, paid leave and so on. More than anything else government of India should take necessary steps to reduce India's population which is the root cause of poverty.

Bibliography:

Abdulai, A., Jain, D. K., & Sharma, A. K. (1999). Household food demand analysis in India. *Journal of Agricultural Economics, 50*(2), 316-327.

Abraham, R. (2017), "Forms of Informal Employment and Wage Inequality in India. A Review of Trends" , Paper discussed in IARIW-ICIER Conference. Seen at *http://old.iariw.org/India/abraham.pdf on 16/09/2022*.

Abraham, R. (2019), Informal Employment and Structure of Wages in India, *A Review of Trends, The review of Income and Wealth*, Vol. 65, No.1, pp-102-122.

Aduralere, I, I . (2015), "Determinants of Public Health Care Expenditure in Nigeria: An Error Correction Mechanism Approach (1981-2014)", *Journal of Economics and Sustainable Development*, Vol. 6, No. 24, pp- 7-19.

Aikaeli, J. &Mkenda, B.K. (2014), "Determinants of Informal Employment: A Case of Tanzania's Construction Industry", Botswana Journal of economics, Vol.12, No.2, pp-51-73.

Anand, I., & Thampi, A. (2016). "Recent Trends in Wealth Inequality in India", *Economic and Political Weekly*, 51(50). Retrieved from *http://www.epw.in/journal/2016/50/special-articles/recent-trends-wealth-inequality-india.html.*

Baluch, M.U.H. and Shahid, S. (2008), "Determinants of Enrollment in Primary Education: A Case Study of District Lahore", *Pakistan Economic and Social Review*, Vol. 46, No. 2, Pp-161-200.

Banga, R. (2005). "Liberalisation and Wage Inequality in India" (ICRIER Working Paper No. 156). Delhi: ICRIER. Retrieved from http://icrier.org/pdf/wp156.pdf.

Banks, J., Blundell, R., &Lewbel, A. (1997). Quadratic Engel curves and consumer demand. *Review of Economics and Statistics, 79*(4), 527-539.Available at: https://doi.org/10.1162/003465397557015.

Banerjee, S. (2014), "A Study of Socio-Economic Condition of Vegetable Street Vendors in Ranchi, Jharkhand Journal of Social Development, Vol. 7, No.1 pp-1-9.

Basu, D., &Basole, A. (2012). The calorie consumption puzzle in India: An empirical investigation. Retrieved from: https://scholarworks.umass.edu/cgi/viewcontent.cgi?article=1146&context=econ_workingpaper [Accessed 01/08/2022].

Bayar, A.A. and Yanikilhan, B (2016), "Determinants of Household Education Expenditures: Do Poor spend Less on Education?", Topics in Middle Eastern and African Countries, Vol.18, No.1 pp-83-111.

Becker, G. (1964), "*Human Capital",* Chicago: University of Chicago Press.

Begum, S. & Sen, B. (2004), “Unsustainable Livelihoods, Health Shocks and Urban Chronic Poverty: Rickshaw Pullers as a Case Study. Dhaka”, Bangladesh Institute of Development Studies. Seen at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1754402 on 17/04/2021.

Bhowmick, S. (2003), “urban responses to street trading: India. In urban research symposium on Urban development for economic Growth and Poverty Reduction, World Bank, Washington DC.

Bhoite, R. (2016), "Economic Growth and Rising Employment of Flexible Workforce in the private Organized Manufacturing Sector in and around Pune", *Journal for Contemporary Research in Management* ,pp 47-55, Available at *http://dawn-svims.in/wp-content/uploads/2016/02/6.-Economic-Growth-and-Rising-Employment-of-Flexible-Workforce-in-the-Private-Organized-Manufacturing-Sector-in-and-around-Pune-Dr.-Rohini-Bhoite.pdf.* Seen on 3rd January, 2017

Biswas Puja and Amit Kundu (August 2022): “ Determinats of Enrolment of Girl Children in Primary Education in Rural India: A Region-Based Analysis” *Indian Journal of Human Development* Vol 16. No. 2 pp.317-337.

Brien, M.O. & Jones, D. (1999), “Children, Parental Employment and Educational Attainment: An English Case Study”, *Cambridge Journal of Economics*, Vol. 23, No.1 pp-599-621.

Burki, A.A. and Ghayur, S., 1989. Urban Informal Sector in Pakistan: some selected issues, ThePakistan Development Review, Papers and Proceedings Part II 6th Annual General Meeting ofthe Pakistan Society of Development Economists Islamabad, January 8-10, 1990, Vol. 28,No. 4, pp. 911-924.

Burki, A. A. (1997). Estimating consumer preferences for food, using time series data of Pakistan. *The Pakistan Development Review,*

Cavagnero, E., Carrin, G., Xu, K., &Anguilar_Rivera, A. (2006). Health financing in Argentina: An empirical study of health care expenditure and utilization. Working Paper Series in Innovations in Health Financing. InstitutoNacional de SaludPublica, Mexico.

Chung, R. H., Lee, J.-Y., & Brown, M. G. (2002). An Engel curve analysis of household expenditure in Taiwan: 1996-98. Research Paper 58866, Florida Department of Citrus. Economics and Market Research Department. Retrieved from: https://ageconsearch.umn.edu/record/53388/files/RP2002-m1.pdf.

Clements, R. W. (1985). Alternative approach to consumption theory, Working paper 85-12, The University of Australia, Department of Economics. Retrieved from: https://ecompapers.biz.uwa.edu.au/paper/PDF%20of%20Discussion%20Papers/1985/85-12.pdf [Accessed 01/08/2022].

Colen, L., Melo, P., Abdul-Salam, Y., Roberts, D., Mary, S., & Paloma, S. G. Y. (2018). Income elasticities for food, calories and nutrients across Africa: A meta-analysis. *Food Policy, 77*, 116-132.

Costa, M. (2016), "Overlapping component and inequality decomposition: A simulation study for the Gini index" *file:///C:/Users/SOURAV/Downloads/costa2016metron.pdf on 01/12/2022.*

Cowell, A. (2006). The relationship between education and health behavior: Some empirical evidence. *Health Economics*, Vol.15, No.2, pp-125-146.

Das, P., Dasgupta, B., & Biswas, P. K. (2009). *Gender and labour: Post labour scenario in India. In Sanyal et al.(eds) Post Reform Development in Asia—Essays for Amiya Kumar Bagchi*: Orient Longman.

Das, P., 2012. Wage Inequality in India: Decomposition by Sector, Gender and Activity Status,Economic and Political Weekly, Vol. 47, No. 50, pp. 58-64.

Das, P. (2019). Wage Penalty in Temporary Employment in India, Evidence from Quantile Regression. Retrieved from https://www.researchgate.net/publication/339538052 on 16/09/2020.

De Sanjukta, Dipa Mukherjee and JhilamRay(2022):" Skill in Indian LabourMarkrt: Current Trend and Estimating Future Gap" *Arthaniti* (Sage Journal) online version Dec.28, 2022.

Deaton, A., &Dreze, J. (2009). Nutrition in India: Facts and Interpretations. *Economic and Political Weekly*, *44*(7), 42-65.

Deaton, A., &Muellbauer, J. (1980). An almost ideal demand system. *The American Economic Review,* Vol.*70*, No.3, pp 312-326.

Dickens, W. T. and K. Lang (1985). A test of dual labor market theory. The American Economic Review, 792-805.

Dharejo, N., Dharejo, A.H., Nisa, N.U. & Mahesar, H.A (2022), " An Investigation of Socio-Economic Conditions of Street Hawkers : a case study of Hyderabad, Sindh, Pakistan, Liberal Arts & Social Sciences International Journal, Vol. 6, No.1 pp-237-259.

Doorsalaer, E.V. (2005), "Paying Out-of –Pocket for Health Care in Asia: Catastophic and Poverty Impact", EqitapProject,Working Paper :2, Seen at https://www.researchgate.net/publication/23778503_Paying_Out-of-Pocket_for_Health_Care_in_Asia_Catastrophic_and_Poverty_Impact on 21/08/2020.

Doorsalaer, E.V., O.O, Donnell, Rannan-Eliya, R.P., Somnathan, A. &adhikari, S.R. (2006), Effect of payments for health care on poverty estimates in 11 countries in Asia: an analysis of household survey data, Vol. 368, No.9544 pp-1357-1364.

Drajea,A.J.& Sullivan, C.O. (2014), "Influence on Parental Education and Family Income on Children's Education in Rural Uganda", *Global Education Review,* Vol. 1, No.3 pp-149-166.

Dutta, P.V., 2005. Accounting for Wage Inequality in India, *The Indian Journal of Labour Economics*, Vol. 48, No. 2, pp. 273-295.

Engel, E. (1857). The production and consumption relations of the Kingdom of Saxony. *Bulletin of the International Statistical Institute, 8 & 9*, 1-54.

Ebaidalla. E.M.(Sept 2017): “Determinants of Household Education Expenditure in Sudan” *Working Paper 1138, Economic Research Forum, Egypt*.

Era Dabla Narris, Kalpana Kachar, F.Richa (June, 2015). “ Causes and Consequences of Income Inequality: A Global Perspective” *IMF Staff Discussion Paper*.

Ergün, K. (2021). Determinants of demand for luxury goods: A comparative study among three European countries. *Yaşar University E-Journal, 16*(61), 128-146.

Ermich, J. & Francesconi, M. (2000), “The Effects of Parental Employment on Children’s Educational Attainment”, *Institute for Social and Economic Research, University of Essex, U K*.

Fields, G. S. (1990). Labour market modelling and the urban informal sector: theory and evidence.

Galbraith, J., Roy Chowdhury, D., & Srivastava, S. (2004). Pay Inequality in the Indian Manufacturing Sector 1979-98 (The University of Texas Inequality Project Working Paper No. No 28). Retrieved from http://utip.lbj.utexas.edu/papers/utip_28.pdf.

Galor.O. and Joseph. Zeira (January, 1993): “Income Distribution and Macro Economics” *The Review of Economic Studies,* Vol.60, No.1., pp-35-62.

Ghosh, S. (2011), Catastrophic Payments and Impoverishment due to Out-of-Pocket Health Spending, *Economic and Political Weekly*, Vol. 16, No. 47, pp-63-70.

Goldar, B., Aggarwal, C. (2010)," Informalization of Industrial labour in India: Are labour market rigidities and growing import competition to blame?", Presented at *the 6th Annual Conference on Economic Growth and Development*, December -16-18,2010, ISI, New Delhi.

Government of India. (2007). Report on conditions of work and promotions of livelihoods in the unorganised sector. National Commission for Enterprises in the Unorganised Sector, New Delhi.

Green, F. (2020), Health Effects of Job Insecurity ,UCL Institute of Education, UK, Seen at https://wol.iza.org/uploads/articles/212/pdfs/health-effects-of-job-insecurity.pdf on 09/01/2021.

Gunther, I. &Launov, A. (2012), “Informal employment in developing countries: Opportunity or last resort”, *Journal of Development Economics*, Vol. 97, No. 1, pp-88-98.

Gupta, I. and Joe, W.(2013), “Refining estimates of catastrophic healthcare expenditure: an application in the Indian context”, *International Journal of Health Care Finance and Economics*, Vol. 13, No. 2, pp-157-172.

Hamelin, N., &Thaichon, P. (2016). Consumer motives and impact of western media on the Moroccan luxury buyer. *Journal of Retailing and Consumer Services, 32,* 164-170.

Hartmann, L. H., Nitzko, S., & Spiller, A. (2017). Segmentation of German consumers based on perceived dimensions of luxury food. *Journal of Food Products Marketing, 23*(7), 733-768.

Hayami, Y., Dikshit, A.K., Mishra, S.N. (2007), " Waste Pickers and Collectors in Delhi: Poverty and Environment in an Urban Informal Sector", *The Journal of Development Studies,* Vol.42, No.1, pp-41-69.

He, J., & Li, B. (2016). Informal sector employment and consumption patterns in China. *Journal of US China Public Administration, 13*(3), 156-165.
Heintz, J., & Vanek, J. (2007). *Employment, the informal sector and poverty: Data and analytical challenges*. Paper presented at the Prepared for the China - India Labour Market, Research Design Conference, Cambridge, MA.
Hill, M.S. & Duncan, G.J., (1987), "Parental Income and Socioeconomic Attainment of Children", Social Science Research, Vol. 16, No.1 pp-39-73.

Hildenbrand, W. (1994). *Market demand: Theory and empirical evidence*. Princeton: Princeton University Press.

Holcomb, R. B., Park, J. L., & Capps Jr, O. (1995). Revisiting Engel's law: Examining expenditure patterns for food at home and away from home. *Journal of Food Distribution Research, 26*(856-2016-56971), 1-8.
Hooda, S. (2015), "Access to and Financing of Healthcare through Health Insurance Intervention in India" Working Papers id: 7973, *e Social sciences*.

India Discrimination Report (2022): *OXFAM, India*.

Indira, D. (2014), "A study on the organizing of street hawking business"*International Journal of Management and Commerce Innovations,* Vol. 2, No.1 pp-280-288.

Islam,R. (2008), "Has Development and Employment through Labour Intensive Industrialization Become History? In Kaushik Basu and R Kanbur (eds), Arguments for a Better World :Essays for Amartya Sen , Vol II.

Jaber, M., & Hoogerhyde, M. (2019), " Mood and luxury perception: A tale of two genders". *Journal of Global Fashion Marketing,* Vol. 10, No.2 pp-194-209.
Jawed, M. S., Dhaigude, A. S., & Tapar, A. V. (2019), "The sectoral effect of demonetization on the economy: evidence from early reaction of the Indian stock markets"*Cogent Economics and Finance,* Vol.*7*No.1. Seen at https://doi.org/10.1080/23322039.2019.1595992 on 20/09/2023.

Kahneman, D., Wakker, P. P., & Sarin, R. (1997). Back to Bentham? Explorations of experienced utility. *The Quarterly Journal of Economics, 112*(2), 375-406.
Kazi, S., 1987. Skill formulation, employment and earnings in the urban informal sector, *The Pakistan Development Review,* Vol. 16, No. 4, pp. 711-717.

Kapoor, R. (2016). Technology, Jobs and Inequality Evidence from India's Manufacturing Sector (Working Paper No. 313). ICRIER. Retrieved from http://icrier.org/pdf/Working_Paper_313.pdf.

Karaaslan. A. and H.H. Tekmanli (2022): “Factors Affecting Household Expenditure on Education: A Heckman Sample Selection Application for Turkey” *Journal of Measurement and Evaluation in Education and Psychology,* Vol.13, No.3, pp. 269-281.

Khanam, M. (2008), “ gender inequality: earning gap between men and women in Dhaka city”, Journal of Asiatic Society of Bangladesh, Vol.53, No.2, pp-287-303.

Kim, A. M. (2016), “A History of Messiness: Order and Resilience on the Sidewalks of Ho Chi Minh City”,*Messy Urbanism: Understanding the “Other” Cities of Asia*, pp-22-39.

Kim, Y. & Sherraden, M. (2011), “Do Parental Assets Matter for Children’s Educational Attainment? : Evidence from Mediation Tests”, Children and Youth Services Review, Vol.33, No.6, pp-969-979.

Kochhar, K., Kumar, U.,Rajan, R., Subramanian, A., Tokattidis, I. (2006) ,"India's Pattern of Development : What happened, What Follows", *Journal of Monetary Economics,* Vol. 53, No. 5, pp-981-1019.

Krishna, R.(1973). “Unemployment in India”, *Economic and Political Weekly*, Vol. 8, No.9, pp. 475-484.

Krishna, K.L. (2015)," Industrial development and Policies since Independence : Growth without Employment" in Uma Kapila (ed): Indian Economy Since Independence , New Delhi: Academic Foundation.

Kushwaha, H., Kumar, A. & Abbas, Z. (2018), “ Impact of Demonetisation on Indian Economy: A Critical Study”, International Journal of Management Studies Vol.5, No.2, pp-25-31.

Kundu Amit and Gitanjali Dutt (2014): “Quality of Education among Primary School children receiving Mid-day meal”. *The Empirical Economics Letters* ;Vol: 13 No. 11(November) pp. 34-37.

Kundu, A., Khan, K.(2022), “Discrimination in Labour Market”, *India Discrimination Report 2022*, Summary Edition, Oxfam India, pp-28-39.

Labour and Employment Report, 2014 , Institute For Human Development

Lades, L. K. (2013). Explaining shapes of Engel curves: The impact of differential satiation dynamics on consumer behavior. *Journal of Evolutionary Economics, 23*(5), 1023-1045.
Lahiri, A. (2016), “Demonetisation, the cash shortage, and the black money NIPFP WP No. 184 (December) Vol. 184, No.16, pp. 1-19.
Lambert, P.J. & Aronson, J.R. (1993), “Decomposition Analysis and the Gini Coefficient Revisited”, *The Economic Journal*, Vol. 103, No.420, pp. 1221-1227.

Lee Jong Wha and Hanol Lee (2018, Nov); Human Capital and Income Inequality" *Journal of Asia Pacific Economy*, Vol.23, No.4 pp.554-583

Leser, C. E. V. (1963). Forms of Engel functions. *Econometrica: Journal of the Econometric Society, 31*(31), 694-703.
Leser, C. (1976). Income, household size and price changes 1953–1973. *Oxford Bulletin of Economics and Statistics, 38*(1), 1-10.
Lewbel, A. (2008). Engel curve. In S.N. Durlauf, & L. E. Blume (Eds.), The New Palgrave Dictionary of Economics (pp. 55-58). Basingstoke: Palgrave Macmillan.
Magazzino, C. & Mele, M. (2012), "The Determinants of Health Expenditure in Italian Regions", *International Journal of Economics and Finance*, Vol.4, No.3, pp-61-72.

Mahumud, R.A., Sarker, A.R., Sultana, M, Islam, Z, Khan, Z and Morton, A. (2017), "Distribution and Determinants of Out-of- Pocket Healthcare Expenditures in Bangladesh", *Journal of Preventive Medicine and Public Health*, Vol.50, No. 2, pp-91-99. Seen at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5398340/ on 17/08/2020.

Majali, K. A., &Habashneh, F. A. (2014). Estimating the Engel Curves for household expenditures in Jordan from 2010-2011. *European Scientific Journal,* Vol.*10*, No.2, pp 267-282.
Malik, S. J., Nazli, H., & Whitney, E. (2015). Food consumption patterns and implication of poverty reduction in Pakistan. *The Pakistan Development Review,* Vol.*54*, No.4, pp 651–669.
Maloney, W. F. (2004). Informality revisited. World development Vol.32 No.7, pp 1159-1178.
Marbuah, D.A.A., (2016), "Influence of Parental Income and Educational Attainment on Children's Years of Schooling: Case of Ghana" Seen at https://www.researchgate.net/publication/239574341_The_Influence_of_Parental_Income_on_Children's_Outcomes on 17/04/2021.

Marjit, S., & Kar, S. (2007). Urban informal sector and poverty—effects of trade reform and capita; mobility in India. PEP-MPIA Working Paper #2007-09, Canada.
Marjit, S. and Kar, S., 2009): Urban Informal Sector and Poverty, *International Review of Economics and Finance*, No. 10, pp. 631-642.
Marjit, S., 2003. Economic Reform And Informal Wage – A General Equilibrium Analysis, *Journalof Development Economics*, Vol. 72, No. 1, pp. 371-378.
Masiero, S. (2017), "New routes to cashlessness? ICTs, demonetization, and the Indian Economy", found at https://core.ac.uk/download/pdf/288367521.pdf, seen on 26.08.2023.

Mehrotra, S., A. Gandhi, P. Saha, and B. Sahoo (2013). Turnaround in india's employment story-silver lining amidst joblessness and informalization? Economic and Political Weekly 48 (35).
Mehrotra, S., A. Gandhi, B. Sahoo, and P. Saha (2012). Creating employment in the twelfth _ve-year plan. Economic and Political Weekly 47 (19), 63-73.
Mehta, J., & Venkatraman, S. (2000). Poverty statistics: Bermicide's feast. *Economic and Political Weekly, 35*(27), 2377-2382.
Mohapatra, K.K. (2012), "Women Workers in Informal Sectors in India: Understanding the Occupational Vulnerability", *International Journal of Humanities and Social Science*, Vol.2, No.21, pp-197-207.

Mukhopadhyay, I., 1998. Calcutta's Informal Sector: Changing Pattern of Labour Use, *Economicand Political Weekly*, Vol. 33, No. 47/48, pp. 3075-3080.
Mincer, J. (1974) , "*Schooling, experience and earnings",*New York: Columbia University Press.
Naraynan, A. (2015). Informal employment in India: Voluntary choice or a result of labour market segmentation. *The Indian Journal of Labour Economics,* vol.*58*, No.1, pp 119-167.

Neagu, M. I., & Teodoru, M. C. (2017). Testing the Engel's law in the consumption pattern of Romanian population. *Studia Universitatis Vasile GoldişArad, Economic Sciences Series, 27*(3), 33-53.
Nirathron, N. (2006), "Fighting Poverty from the Street: A Survey of Street Food Vendors in Bangkok, ILO.
Njaya, T. (2014), "Operation of street food vendors and their impact on sustainable urban life in high density suburbs of Harare, in Zimbabwe", Asian Journal of Economic Modeling, Vol.2, No.1, pp-18-31.

O'Donnell, O., van Doorslaer, E., Rannan-Eliya, R., Somanathan, A., Garg, C., Hanvoravongchai, P., et al. (2005). Explaining the incidence of catastrophic expenditures on health care: Comparative evidence from Asia. EQUITAP Project Working Paper No. 5. mimeo. Seen at Eddy (equitap.org) on 20/01/2021.

Ogundari,K., Abdulai, A.(2014), "Determinants of Household's Education and Healthcare Spending in Nigeria: Evidence from Survey Data", African Development Review, Vol. 26, No. 1, pp-1-14.

Oxfam International (2022): India: Extreme Inequality in numbers, *oxfam.org/en/tags/inequality.*

P.Getttha Rani(2021): "Family Spending on Education in India: Pattern and Determinants", *Working Paper, National Institute of Educational Planning and Administration*" New Delhi, India.

Packard, T.G., (2016), "Do Workers in Chile Choose Informal Employment? A Dynamic Analysis of sector Choice, World Bank Policy Research, Working Paper No. 4232.

Padhi, B.&Motkuri, V. (2021). Labour Force and Employment Growth in India Evidence from the EUS(2011) and PLFS (I and II), *Economic and Political Weekly*, Vol. 16, No.47, pp. 58-63.
Pal, R. (2012), "Measuring incidence of catastrophic out-of-pocket health expenditure: with application to India", *International Journal of Health Care Finance and Economics*, Vol. 12, No. 1, pp-63-85.

Panneer, S., Acharya, S. and Sivakami, N. (2019), "Health, Safety and Wellbeing of Workers in the Informal Sector in India".

Papola, T. S. (2008). Employment challenge and strategies in India. ILO Asia Pacific Working Paper Series, International Labour Organization, Sub regional Office for South Asia, New Delhi.

Papola, T.S. and Sahu, P.P. (2012), " Growth and Structure of Employment in India: Long-Term and Post-Reform Performance and the Emerging Challenge ,*Institute for Studies in Industrial Development* , New Delhi, Available at *http://isidev.nic.in/pdf/ICSSR_TSP_PPS.pdf* on 1st April, 2017

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

Peffer, J. (1994), "*Competitive advantage through people*", Boston: Harvard Business School Press.

Pinki, R. (2014). Factors influencing consumer behavior. *International Journal of Current Research and Academy Review, 2*(9), 52-61.

Prahalad, C. K. (1983), "Developing strategic capability: an agenda for top management",*Human Resource Management*, Vol. 22, No. 3, pp. 237-254.

Prasad, A.; Goswami,A.&Gurtu, A. (2023), "Influence of demonetisation on Various sectors of the Indian economy", Strategic Management, Vol. 20, No. 10. Pp-1-16.

Prokeinova, R. B., Dobes, K., Mura, L., &Buleca, J. (2017). Engel's approach as a tool for estimating consumer behaviour. Retrieved from: https://dspace.tul.cz/bitstream/handle/15240/20839/EM_2_2017_02.pdf?sequence=1&isAllowed=y. [Accessed 12/08/2019].

Qazaffi, S. (2020). Factor affecting consumer buying behavior: A conceptual study. Retrieved from https://www.researchgate.net/publication/341407314_Factor_Affecting_Consumer_Buying_Behavior_A_Conceptual_Study. [Accessed 31/07/2021].

Ramya, N., & Ali, S. A. M. (2016). Factors affecting consumer buying behavior. Retrieved from https://www.researchgate.net/publication/316429866_Factors_affecting_consumer_buying_behavior. [Accessed 31/07/2021].

Quang, H.V. (2012), "Determinants of Educational Expenditure in Vietnam", *International Journal of Applied Economics*, Vol. 9, No.1 pp-59-72.

Ramaswamy,K.V.,(2008), wage Inequality in Indian Manufacturing: is it Trade, Technology or Labour Regulations, Indira Gandhi Institute of Development Research, Mumbai, seen at http://www.igidr.ac.in/pdf/publication/WP-2008-021.pdf, Seen on 18/07/2023.

Rani, U. (2008). Impact of changing work patterns on income inequality (Discussion Paper No. DP/193/2008). International Institute for Labour Studies. Retrieved from *http://www.ilo.org/wcmsp5/groups/public/---dgreports/---inst/documents/publication/wcms_193166.pdf.*

Ray, R. (2007). Changes in food consumption and the implications for food security and undernourishment: India in the 1990s. *Development and Change, 38*(2), 321-343.

Rizk, R. and Afriyie, J.O. (2014), "Determinants of household expenditure on Children's education in Egypt", *International Journal of Education Economics and Development*, Vol.5, No.4, pp-332-360.

Roy, R., & Kundu, A. (2020). An analysis of poverty among the informal workers of India. *Theoretical and Applied Economics, 27*(1), 87-104.

Roy Rajyasri and Amit Kundu (2022): " Consumption Nature of the Indian Informal Workers: Engel's Law Revisited" *Asian Development Policy Review* Vol.10 No.4 pp. 307-316.

Roy Rajyasri and Amit Kundu (2023): "Recent Trends of Wage- Income Inequality among the Informal Workers in India" *Unpublished Paper*.

Roy, S., Chowdhury, S.H., Islam, S. & Siddique, S. (2021), "Asian Journal of Sustainable Business Research", Vol.2, No.5, pp-95-116.

Sastri, N,S. (2000), "Estimating Informal Employment & Poverty in India", Discussion paper series-7, Council for Social Development.

Sahoo, B. K., &Neog, B. J. (2016). Heterogeneity and participation in informal employment among non-cultivator workers in India. *International Review of Applied Economics,* Vol.*31,* No.4, pp 437-467.

Sajid, G.M. and Khan, M. (2016), "Determinants of primary School Enrollment in Pakistan: Is Poverty a Hurdle in the Way of Educational Attainment", Seen at https://www.researchgate.net/publication/315769090 on 24/08/2020.

Sangar, S., Dutt, V. and Thakur R. (2018). Rural-urban differentials in out-of pocket health expenditure and resultant impoverishment in India from NSSO 71st round. Seen at https://www.researchgate.net/publication/327029650_Rural-urban_differentials_in_out-of-pocket_health_expenditure_and_resultant_impoverishment_in_India_evidence_from_NSSO_71st_Round/link/5badb749299bf13e6051ed19/download on 27/03/2021.

Sanyal, K., & Bhattacharyya, R. (2009). Beyond the factory: Globalisation, informalisation of production and the new locations of labour. *Economic and Political Weekly*, *44*(22), 35-44.

Sarkar, S; Mehta, B.S. (2010). "Income Inequality in India: Pre-and Post-Reform Periods", *Economic and Political Weekly,* Vol. 15, No. 37, Pp-45-55.

Sarpong, S., &Nabubie, I. B. (2015), "Nuisance or discerning? The social construction of street hawkers in Ghana",*Society and Business Review*Vol. 10, No.2 pp-102-117.

.Sastri, N.S. (2004), Estimating Informal Employment & Poverty in India, Seen at http://www.rrojasdatabank.info/da1/informemplpovindia02.pdf on 17/07/2023.

Schildberg, H., (2011), "Does Parental Employment Affects Children's Educational Attainment?" *Economics of Education Review,* Vol. 30, No.6 pp-1456-1467.

Sengupta, A., Kannan, K. P., & Raveendran, G. (2008). India's common people: Who are they, how many are they and where do they live? *Economic and Political Weekly*, Vol. 43, No.11. Pp.49-63.

Sengupta.,S&Guchchait, S.K.(2021): "Inequality in Contemporary India: Does Caste Still Matter?" Sage Publications, Vol. 37, No. 1. Pp-57-82.

Sehrawat M and S.k. Singh (2019): Human Capital and Income Inequality in India: Is There a Non-linear and Asymmetric Relationship?,*Applied Economics*, Vol.51, No.39, pp. 4325-4336.

Shankar, V.K. &Sahni,R. (2018), "How Demonetisation Affected Informal Labour: Waste Chains in a City", Economic & Political Weekly, Vol. 53, No. 26. Pp-75-82.

Shyam Sundar, K.R. (2011)," Non-Regular workers in India : Social Dialogue and Organizational Bergaining Stratigies and Practices", working paper no.30, International Labour office -----Geneva . Retrieved 2nd February , 2017 from *http://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---dialogue/documents/publication/wcms_172640.pdf* .

Smith, L. C. (2013). The great Indian calorie debate: Explaining rising undernourishment during India's rapid economic growth. Institute of Development Studies Working Paper No. 430.

Sraboni, E., & Quisumbing, A. (2018). Women's empowerment in agriculture and dietary quality across the life course: Evidence from Bangladesh. *Food Policy, 81*, 21-36.

Sundaram, K., 2008. Employment, Wages and Poverty in the Organized and the Unorganized Segments in the Non-Agricultural Sector, All-India, 2000-05, *Economic and Political Weekly*,May 31, pp. 91-99.

Siggel,E. (2010), The Indian Informal Sector: The Impact of Globalisation and Reform, International Labour Review, Vol.149, No.1, pp. 93-105.

Srivastava, R. (2016), Structural Change and non-standard forms of employment in India, Conditions of Work and Employment series no.68, ILO Geneva, seen at https://eprints.soas.ac.uk/34263/1/Structural%20change%20and%20non-standard%20forms%20of%20employment%20in%20India.pdf, seen on 20/07/2023.

Standing, G., 1999. *Global Labour Flexibility – Seeking Distributive Justice,* McMillan Press Ltd.

Stavkova, J. (2006). Consumer choice process when purchasing the staple food. *Agricultural Economics*, Vol.51, No.9, pp. 389-394.

Steel, G. (2012). Whoseparadise? Itinerant street vendors' individual and collective practices of political agency in the tourist streets of Cusco, Peru. *International Journal of Urban and Regional Research*, Vol.36, No.5, pp. 1007-1021.

Sundaram, K. (2008). Employment, wages and poverty in the organised and the unorganised segments in the non-agricultural sector, All-India, 2000-05. Working Paper No. 165, Centre for Development Studies, Delhi, India.

Syrovatika, P. (2003). Food expenditures of Czech households and Engel's law. *Agricultural Economics*, Vol.49, No.10, pp. 487-495.

Taubman,P.& Wachter, M.L., (1986), Segmented Labour Markets, handbook of Labour Economics, *2*, 1183-1217.

Thapa, S., & Acharya, S. (2017). Remittances and household expenditure in Nepal: Evidence from cross-section data. *Economies, 5*(2), 1-17.

Tilak, J.B. (2002), "Determinants of Household Expenditure on Education in India", Working Paper No.88, *National Council of Applied Economic Research.* Seen at

https://www.semanticscholar.org/paper/Determinants-of-household-expenditure-on-education-Tilak/c3a07009649965c3113cf92fa681698e4c3922ec on 19/08/2020.

Tiwari, G., Gangopadhyay, P.K., Biswas, S., Nayak, K., Chatterjee, M.K., Chakraborty, D., Mukherjee, S. (2012), "Socio Economic Status of Workers of Building Construction Industry", *Indian Journal of Occupational & Environmental Medicine* ,Vol.16, No.2, pp-66-71.

Topalova, P. B. (2008). India: Is the Rising Tide Lifting All Boats? (SSRN Scholarly Paper No. ID 1112156). Rochester, NY: Social Science Research Network. Retrieved from *https://papers.ssrn.com/abstract=1112156, Seen on 20/10/2020.*

Unni, J., & Rani, U. (2010). Social Protection for Informal Workers in India: Insecurities, Instruments and Institutional Mechanisms, Development and Change (Published on behalf of the International Institute of Social Studies, the Hague, Vol.3*4*, No. 1, pp 127-161.

Unni, J. (2005). Wages and incomes in formal and informal sectors in India. *The Indian Journal of Labour Economics,*Vol. *48*, No, 2, pp 311-317.
Unni, J., & Rani, U. (2010). Flexibility of labour in globalizing India: The challenges of skill and technology. *International Labour Review, 129*(3), 441-443.
Unni, J., Naik, R. (2013): Measuring Informality of Employment in Urban India, *Indian Journal of Labour Economics*, Vol. 56, No.4, pp-493-508.

Venkatanarayanan, S.(2015), "Economic Liberalization in 1991 and its impact on Elementary Education in India" Seen at https://journals.sagepub.com/doi/pdf/10.1177/2158244015579517 on 14/05/2021.

Viswanathan, M.; Jaikumar, S.; Sreekumar, A.;& Dutta, S. (2021), "Marketplace literacy education and coping behaviors among subsistence consumer–entrepreneurs during demonetization in India"*Journal of Consumer Affairs,* Vol. 55, No.1, pp- 179-202.

Wagstaff, A and E van Doorslaer (2003): Catastrophe and Impoverishment in Paying for Healthcare:With Applications to Vietnam 1993-98, *Health Economics*, Vol. 12, No.1, pp-921-34.

Wood,W. J. (1992), "Who is running British manufacturing? *Industrial Management and Data Systems",* Vol. 92, No 6., pp-13-16.

Working, H. (1943). Statistical laws of family expenditure. *Journal of the American Statistical Association,* Vol.*38*, No. 221, pp 43-56.

Wright, P. M.; McMahan, G. C.; McWilliams, A. (1994), "Human resources and sustained competitive advantage: a resource-based perspective", *International Journal of Human Resources Management*, Vol. 5, No. 2 ,p. 301-326.
Yun, W.S. and Yusoff, R (2017), "Determinants of Public Education Expenditure in Malaysia: A Time Series Analysis", Paper presented on 8th International Conference of the Asian Academy of AppliedBusiness(AAAB),https://www.researchgate.net/publication/322163560_Determinants_of_Public_Education_Expenditure_in_Malaysia_A_Time_Series_Analysis/link/5a4a244e0f7e9ba868ae216e/download on 17/08/20.

List of Publications

Roy, R., & Kundu, A. (2020). An analysis of poverty among the informal workers of India. *Theoretical and Applied Economics,* Vol.27, No.1, pp.87-104.

Roy Rajyasri and Amit Kundu (2022): " Consumption Nature of the Indian Informal Workers: Engel's Law Revisited" *Asian Development Policy Review* Vol.10 No.4 pp. 307-316.

Roy Rajyasri and Amit Kundu (2023): "Determinants of Health Expenditure Among the Informal Workers of India: Is it Always Catastrophic?" Journal of Health Management (SAGE Journal), Forthcoming.

Theoretical and Applied Economics
Volume XXVII (2020), No. 1(622), Spring, pp. 87-104

An analysis of poverty among the informal workers of India

Rajyasri ROY
Jadavpur University, Kolkata, West Bengal, India
rajyasri.roy@gmail.com
Amit KUNDU
Jadavpur University, Kolkata, West Bengal, India
akundu29@gmail.com

Abstract. *This paper using 68th round National Sample Survey of India data on Employment and Unemployment for 2011-2012 wants to investigate the incidence of poverty, acuteness of poverty and their determinants among the informal workers of India. It is shown that percentage of poverty has been lowest among the self-employed workers and highest among the informal workers in the formal sector in the rural area, while in the urban area the result is just the opposite. Although percentage of poverty-stricken workers has been higher in the rural area compared to that of the urban, acuteness of poverty has been the other way round. The determining factors of incidence of poverty and acuteness of poverty among the informal workers are general educational qualification, social groups, and sectors. These determining factors can be considered as important policy variables to reduce the incidence and acuteness of poverty among the informal workers of India.*

Keywords: Informal sector, labour market, poverty, India.

JEL Classification: I32, J40, O17.

Asian Development Policy Review
ISSN(e): 2313-8343
ISSN(p): 2518-2544
DOI: 10.55493/5008.v10i4.4662
Vol. 10, No. 4, 307-316.

URL: www.aessweb.com

CONSUMPTION NATURE OF INDIAN INFORMAL WORKERS: ENGEL'S LAW REVISITED

Rajyasri Roy[1]
Amit Kundu[2+]

[1,2]*Jadavpur University, Kolkata, West Bengal, India.*
[1]*Email: rajyasri.roy@gmail.com*
[2]*Email: akundu29@gmail.com*

(+ Corresponding author)

Article History
Received: 29 August 2022
Revised: 30 September 2022
Accepted: 14 October 2022
Published: 17 November 2022

Keywords
Consumption pattern
Education expenditure
Engel equation
Health expenditure
Income elasticity of demand
India
Informal worker.

JEL Classification
D12; I10; I20; J01.

ABSTRACT

The level of informal employment in the Indian labor market shows the importance of investigating the nature of consumption among informal workers and determining the budget share among them. The Working-Leser model is used to identify the necessary and luxury goods among Indian informal workers. The budget share of food and non-food items among them will help us to validate Engel's law. Informal workers are divided into three categories: self-employed workers, employees in the informal sector, and informal employees in the formal sector. Using the 68th round of the National Sample Survey data on Indian Employment and Unemployment for 2011–2012, we find food items, addictive items (e.g., alcohol and tobacco products), entertainment items, fuel, lights, and other non-food items are necessary, while health, education, jewellery and personal transport are luxury items for all types of informal workers in India. Engel's law is therefore validated among the informal workers. The policy recommendation is that the government needs to spend more on health and education for informal workers. Spending more on these would not only improve the skills and efficiency of workers but also reduce their vulnerability.

Contribution/Originality: In a country such as India where most workers are employed in the informal sector, it is important to investigate the pattern of consumers' choices. To fill the gap in the literature, this study identifies the necessary and luxurious choices of goods of the majority of the Indian consumers, which can help producers to make proper business decisions for the future.

1. INTRODUCTION

The theory and the determinants of consumer behaviour have been an area of interest among various researchers and economists. It is well known that consumer behaviour and consumer wealth are highly interrelated. According to Stavkova (2006), the determining factors of purchase decisions are consumers' needs and the quality of the product. According to Say's law, supply creates its own demand. Thus, firms must introduce a variety of products to the market to generate consumer demand (Prokeinova, Dobes, Mura, & Buleca, 2017). Moreover, preferences, resources, individual behaviour of consumers as well as social institutions are important determinants of consumer behaviour.

Change in consumer behaviour due to variations in consumers' income is narrated by Engel curves (Engel, 1857). The variations in income, in turn, are reflected in the values of income elasticity of demand for different types of commodities and services. Thus, the shapes of Engel curves vary a lot for different types of consumer demand (Lades, 2013; Lewbel, 2008). This paper attempts to verify Engel's law among different types of informal workers in India.