Determinants of Poverty and Inequality among Tea Labourers in Assam

A Thesis Submitted

To

Sikkim University

In Partial Fulfilment of the Requirement for the

Degree of Doctor of Philosophy

By

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May, 2023

Dedicated to my beloved Grandfather

Lt. Dhanapati Sharma

Date: 04/.05/2023

DECLARATION

I, **Yograj Sharma,** hereby declare that this thesis entitled **"Determinants of Poverty and Inequality among Tea Labourers in Assam"** is my original work. The content of this thesis or any part of it has neither been submitted nor presented anywhere for any other degree, diploma or fellowship. The entire work of the thesis has been done by me under the guidance and supervision of Dr. Pradyut Guha, Assiatant Professor, Department of Economics, Sikkim University.

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This is to certify that the thesis entitled **"Determinants of Poverty and Inequality among Tea Labourers in Assam"** being submitted to Sikkim University for the partial fulfilment of the degree of **Doctor of Philosophy** in the Department of Economics, embodies the result of bonafied research work carried out by **Mr. Yograj Sharma** under my guidance and supervision. He has duly acknowledged all the assistance and help received during the course of the investigation. No part of the thesis has been submitted for any degree, diploma, association or fellowship.

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- **Yograj Sharma**

CONTENTS

List of Abbreviations

ABITA	:	Assam Branch of Indian Tea Association
ACMS	:	Assam Chah Mazdoor Sangha
AES	:	Adult Equivalent Scale
AHA	:	Availability of Health Assistants
ANA	:	Availability of Nursing Attendants
ANCM	:	Availability of Nurse-Cum Midwives
ANM	:	Auxiliary Nurse and Midwife
AOI	:	Asset Ownership Index
AP	:	Availability of Pharmacist
AQM	:	Availability of Qualified Midwives
AQMP	:	Availability of Qualified Medical Practitioners
AQN	:	Availability of Qualified Nurse
ATTSA	:	Assam Tea Tribes Students Association
AVD	:	Availability of Visiting Doctors
BAI	:	Basic Amenities Index
BCSU	:	Barak Cha Shramik Union
BH	:	Boys Hostel
BPL	:	Below Poverty Line
BVZ	:	Barak Valley Zone
CAGR	:	Compound Annual Growth Rate
CAR	:	Central Assam Region
CBVZ	:	Central Brahmaputra Valley Zone
CC	:	Cultural Circle
CDF	:	Cumulative Distribution Function
CPI	:	Consumer Price Index
CR	:	Cachar Region
CTMD	:	Cancer Tuberculosis and Malignant Diseases
DDUGJY	:	Deen Dayal Upadhyaya Gram Jyoti Yojana
DF	:	Dispensary Facility
DR	:	Dependency Ratio
DSPLS	:	Distribution of Smart Phone to Line Sardar
DST	:	Distribution of Scooter

EM	:	Electric Meter
FAHS	:	Financial Assistance for Higher Studies
FAIP	:	Financial Assistance for Old and Infirm Persons
FAWSW	:	Financial Assistance to Widow and Single Women
FWSIS5	:	Family-wise Source of Income Generating Schemes
GDPBTC	:	Grant for Disabled Persons Belonging to Tea Tribe's Community
GH	:	Girls Hostel
GI	:	Gini Index
GNEI	:	Grant for Non-Governmental Educational Institute
GNGO	:	Grants for Non-Governmental Organizations
GNM	:	General Nursing and Midwifery
GoA	:	Government of Assam
GoI	:	Government of India
GWSHG	:	Grant to Women Self-Help Groups
HF	:	Hospital Facility
HR	:	Hills Region
HZ	:	Hills Zone
IC	:	Indifference Curve
ILO	:	International Labour Organization
LAR	:	Lower Assam Region
LBVZ	:	Lower Brahmaputra Valley Zone
LQU	:	Labour Quarter Facility
MPCE	:	Monthly Per Capita Consumption Expenditure
MPI	:	Multidimensional Poverty Index
NBPZ	:	North Bank Plains Zone
NBR	:	North Bank Region
NCBC	:	National Commission for Backward Classes
NGOs	:	Non-Government Organizations
NPC	:	National Planning Committee
OPHI	:	Oxford Poverty and Human Development Initiative
PBU	:	Provision for Books and Uniform
PCI	:	Per Capita Income
PF	:	Provident Fund

PIH	:	Permanent Income Hypothesis
PLA	:	Plantation Labour Act
PLC	:	Public Limited Company
POMS	:	Post-matric Scholarship
PPP	:	Purchasing Power Parity
PBF	:	Partnership-based Firms
PRMS	:	Pre-matric Scholarship
PROP	:	Proprietorship
PSU	:	Public Sector Undertaking
PTME	:	Purchase of Training Materials and Equipment
PTR	:	Pupil-teacher Ratio
RBID	:	Regression-based Inequality Decomposition
RCPL	:	Rangarajan Committee Poverty Line
SD	:	Standard Deviation
SEBA	:	Board of Secondary Education Of Assam
SEGSEY	:	Self-Employment Generating Schemes for Educated Unemployed Youth
SI	:	Sen's Index
SPF	:	Sports Facilities
SRDC	:	Skill Development Training Centre
TBI	:	Tea Board of India
TCPL	:	Tendulkar Committee Poverty Line
TF	:	Toilet Facilities
TSR	:	Teacher-school Ratio
UAR	:	Upper Assam Region
UBVZ	:	Upper Brahmaputra Valley Zone
UNDP	:	United Nations Development Programme
WPF	:	Water Point Facilities
WS	:	Water Supply

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CHAPTER 1

Introduction

1.1 Introduction

The steadily falling auction prices of Indian tea (Mishra et al., 2011; Vishwanathan and Shah, 2014; Roy and Biswas, 2021), removal of tariffs with trade liberalization resulting cheaper import (Selvaraj and Gopalakrishnan, 2016), shrinking export share of Indian tea with stiff competition from China, Kenya and Sri Lanka (Maity and Sinha, 2021), low productivity for the ageing of tea bushes and limited interest on re-investment towards replantation of bushes (Mishra et al., 2008; Dutta et al., 2010; Biggs et al., 2018; Manisha et al., 2019), industrial sickness resulting closure of tea plantations are few sun setting issues in Indian tea sector (Roy and Biswas, 2018; Das, 2019). Though there has been expansion of land under tea farming last few decades following the emergence of small-scale tea growers (Deka and Goswami, 2021), however, low profitability has been a serious threat to their sustainability as a sub-sector in India (Das, 2019). The viability of Indian tea plantation sector has been a matter of concern given the rising cost of production and depressing tea price following excess supply caused by unfettered expansion of tea areas (Krishna, 2019).

Following such developments post 1990s, there have been lay off and gradual casualization of labourers in Indian tea plantations (Sunny and Chattopodhya, 2008; Lama, 2019), curtailment of tea labour welfare facility (Sarkar, 2015; Roy and Biswas, 2019; Vijayabaskar and Viswanathan, 2019) leading to irregularity in income source witnessing unrest and worries about future among labourers (Misra, 2003; Sankrityayana, 2018; Langford, 2021). The reflection of such a crisis can also be seen among the labourers in Assam tea plantation with reduction of statutory benefits, non-

payment and curtailment of wages (Mishra et al., 2012; Das, 2014), posing precarious living and working conditions (Martinez, 2018; Spires et al., 2022) worsening employer-employee relationship in tea plantation (Gothoskar, 2012; Thapa, 2013; Refeeque and Sumanthy, 2021).

Ever since the establishment, the labourer pulled to tea plantations of Assam and West Bengal by colonial ruler has worked with limited freedom as intergenerational bonded labour (Gupta, 1992; Raman, 2002; Bhowmik, 2011; Gupta and Swamy, 2017; LeBaron, 2018; Siegmann and Sathi, 2022; Kalita, 2022). Deficient skills and education of tea labourers besides various binding regulations of the company constrain them from moving outside the plantation economy in search of better employment opportunities (Gurung and Mukjerjee, 2018; Sarkar and Ghosh, 2021). Low baseline wage rate and limited scope for supplementary earning kept tea plantation labourer backward sections (Saharia, 2005; Mishra et al., 2011; Jayaraman et al., 2016; Xaxa, 2019; Guha, 2019). Being landless, tea plantation labourers are not accorded tribal identity in Assam, thereby excluded from various benefits (Sharma, 2018; Sharma and Khan, 2018; Sumesh and Gogoi, 2021). Poverty, illiteracy, improper health and medical facility being responsible for the low standard of living of the tea tribes of Assam (Saharia, 2005; Sarma, 2007). Compared with agricultural labourers lower earnings of tea workers as one of the factors contributing towards poverty among tea labourers in India (Lalitha et al., 2013). Given the historical continuity and binding rules and regulations of the plantation, created invisible barrier for them making their livelihood more vulnerable and uncertain (Mishra et al., 2011; Das and Hazarika, 2022).

Under Plantation Labour Act (PLA) (1951) the entitlement benefits of labourer and labour relations are likely to be uniform across different ownership structures of tea plantations (Roy and Biswas, 2018; Saha et al., 2019). The loyalty to statutory benefits

under PLA provisions has been criticized in literature for its poor implantation and failure to arrive at fair degree of parity among residents and casual labourer besides geographical differences in wage and other welfare schemes (John and Mansingh, 2013; Tantri, 2019). Despite operating under the same legislation there is the presence of unexpected inequality in expenses towards welfare provision for tea labourers across different ownership structures of tea plantations in West Bengal (Roy and Biswas, 2019). Roy (2020), and Roy and Biswas (2021) recognized that barring public sector undertaking (PSU) the overtime working hours of labourer is ignored by tea plantation management of public limited company (PLC) ownership structure, while the actual weekly average working hours in proprietorship tea plantation (PROP) firm is significantly higher than standard weekly working hours. The presence of such heterogeneity in working conditions across different ownership structures of tea plantations likely to differentially influence the degree of socio-economic status among labourers. In such a context, policy decisions should focus towards ensuring uniformity in working conditions across different ownership structures of plantations. Therefore, a study examining determinants of poverty and inequality among labourers has any association with ownership structures of tea plantations has important implications. An improved understanding on does the determinants of poverty and inequality among labourers influenced by the ownership structures of tea plantations can greatly assist policy makers in designing policies and monitoring mechanisms ensuring uniformity in working conditions, management rules, and regulations in the tea plantation labour market. This, in turn, can bring harmony in the working environment and offer equal opportunities as per capability to labourers irrespective of the institutional structure thereby enhancing their economic status and welfare gain.

India is the second-largest producer and fourth-largest exporter of tea in the world and generates employment for a significant section of the labour force domestically (63rd Annual Report, Tea Board of India (TBI)). Amongst the three plantation crops viz. tea, coffee and rubber nearly 53% of the total labour force is engaged in the tea plantation sector of India absorbing 1.26 million workforce (Joseph and Viswanathan, 2016). Tea is primarily grown in 15 states of India of which Assam, West Bengal, Tamil Nadu, and Kerala are major producers accounting for 97% of the country's total production (63rd Annual Report, TBI). Assam is the single largest tea growing region in the world (Indian Tea Association, 2022). Assam[1] alone contributes significantly in production, the area under tea plantations, and employment generation among the major tea growing states of India. Assam shares 54.19% of India's total land devoted for tea plantation; contributing 50.96% of the country's total tea production and has provided 7 lakhs average daily employment which is more than 60% of the total daily employment generated by the tea sector of India (Economic Survey of Assam, 2021-22). As per Unique Identification India data (2020), the population of Assam by 2022 is estimated to be 36.3 million, while approximately 7 million belong to the tea tribe community which is nearly 20% of the total population of the state. Tea is primarily grown in four regions of Assam viz. Upper Assam, North Bank, South Bank, and Cachar region for their suitability in rainfall pattern, terrain, soil type, and climatic conditions (Appendix A). Among the various districts growing tea in Assam the

[1] During 2000-2014 the average area under tea plantation in Assam was 2,99,204 hectares while it was 1,18,993.33 hectares in West Bengal, 76,708.66 hectares in Tamil Nadu, 36,577.33 hectares in Kerala, 2,150 hectares in Karnataka, remaining states covered 17,944.2 hectares land for tea plantation. The average quantity of tea produced across these states were 5,03,270 thousand kg in Assam, 2,35,718 thousand kg in West Bengal, 1,60,000 thousand kg in Tamil Nadu, 63,914.67 thousand kg in Kerala, 5,670 thousand kg in Karnataka, and 14,465.33 thousand kg in rest of the states during 2000-2014. The daily average number of labour employed in tea plantation were 4,57,022 labourer used per day in Assam, 1,57,358 labourer in West Bengal, 49,742 in Tamil Nadu, 39,440 in Kerala, 4,031 in Karnataka, and rest 5,01,113 were engaged in remaining tea growing states during 2000-2014 (TBI, 2017).

Dibrugarh, Tinsukia, Sivasagar, Sonitpur, Biswanath, Jorhat, Nagaon, Golaghat and Cachar are leading districts when we consider the area under plantation, production and employment generation for Assam tea sector (Statistical Handbook of Assam, 2021).

1.2 Tea Plantation Labourers in Assam

The role of labourers in Indian tea plantation is crucial as in most of the initial stages of tea production the need for manual labour is undeniable. The tea plantation labourers are primarily categorized as labour, staff, and artisan. The labourer includes all manual workers employed in the field and factory which includes peons, watchmen, gardeners and ordinary leaf pluckers. Keeping in view the nature of employment tea plantation labourers have been classified as permanent resident labour, permanent non-resident labour and temporary labour (See Appendix C). A labour is considered to be a permanent resident if he or she resides in the garden and derives all benefits of housing or labour quarter with a small kitchen garden, provident fund (PF), gratuity, bonus, fringe benefits, and ration on subsidized rate while permanent non-resident labourer normally receives similar facilities as permanent resident labour except labour quarters. At present the daily wage rate of permanent or temporary tea labourer in the Brahmaputra valley and Barak alley region of the state is ₹ 232 and ₹ 210 respectively (Labour Welfare Department, Government of Assam (GoA), 2022). Besides getting all incentives that a permanent field labourer use to get, a permanent factory labourer use to get additional compensation of ₹ 7.50 per day during the Ticca (peak) period (Refer to Appendix B). The permanent labourer can be a field labourer[2] or factory labourer[3]. A labour engaged for a limited period who is terminated after 59 days and after the

[2]Field labourers involve in activities such as planting nursery, gautamala, uprooting old bushes, cleaning of forest, spraying fertiliser, plucking of tea leaves, ploughing the plantation area, sprinkling water etc.
[3] Factory labourers are those who works in the tea factory especially in manufacturing unit.

break of a few days he or she is again re-employed is considered to be temporary labour. Such a break in employment is maintained for denying the labourer from claiming permanent position. These labourers are deprived of many benefits derived by a permanent worker. Casual labourers are those in case of requirement for extra labour, people from nearby villages or some unemployed descendants of tea garden labourers engaged in various works mainly plucking and earth cutting or road construction inside the tea garden. They get a lump sum daily wage and are relieved from work after the busy season is over. Tea garden labourers are also classified according to age group such as adult (person who has completed his 18 years); adolescent (a person whose age is between 14-18 years) and child (a person who is below 14 years).

The PLA (1951) has amended several rules and regulations in the favour of plantation labourers such as provision for good health in terms of sufficient supply of drinking water; latrines and urinals separately for male and female; medical facilities for the labourers with qualified medical practitioner or office. Other labour welfare provisions such as availability of canteens where more than one hundred and fifty workers are ordinarily employed; crèches where 50 or more women workers include and 20 or more children below the age of 6 years; recreational facilities; standard educational facilities for the children between the age of 6-12 years in any plantation having more than 25 labourer. Good housing facilities for resident labourers, and also for the permanent non-resident labourer who have completed 6 months of continuous service can express desire in residing in the tea garden quarter. Hours of work have been also prescribed in the act of which no adult labourers are allowed to work exceeds 50 hours in a week and for adolescent or children 40 hours in a week. Extra incentives[4] for the over-plucking

[4] Incentives are paid to workers in three slabs to tea leaf pluckers in Assam. According to the new agreement, the revised rates for labourers plucking 25 kg tea leaves and up to 30 kg daily get ₹ 2 per kg;

of tea leaves are also provided to the labourers who pluck extra kg of tea leaves in a day. The monthly leave provision was also made for an adult one day for every twenty days of work and if a young person one day for every 15 days of work; if no leave is taken the whole year it will be carried forward to the next year. Moreover, a day on which half or less than half a day of work is being performed is counted as one day. Sickness and maternity leave are also applicable with the payment of allowances.

In the initial years (1823) of tea plantation in Assam, attempts were made to recruit labour from within Assam with the hope of cutting down the recruitment cost. However, during the formative days of Assam plantations, labour scarcity was an acute obstruction to the planters of tea in the state (Kar and Barua, 1997). Accordingly, the local people like the Kacharis, Mataks, Kukis, Nagas, Singphos, and Atapanis were employed with the active assistance of the chief of the respective groups (Joseph, 2009). The absence of a labour market was frequently cited in Assam compelled planters for long distance recruitment because local tribal and peasantry in the state used to demand high wage rate and expressed uneasy to work in tea plantations (Das, 2013) while the number of tea plantations steadily increased in Assam coupled with demand for a large number of labourers but the need could not be fulfilled from the local labourer as they had gradually been showing reluctant attitude towards their work in tea plantation (Kar, 2009). Upon enactment of Wasteland Grant Rules 1838, British planters expected that indigenous people of Assam would join tea garden labour work as their profession owing to the loss of land (Goswami, 1999). However, the labourer seemed to be unwilling in tea plantation work and unfit to clear jungle terrain in Assam for fear of getting afflicted with diseases like malaria and Kalaazar immediately after recruitment

those plucking 31 kg and up to 35 kg receives ₹ 2.30 per kg, and plucking tea leaves above 35 kg get ₹ 3 per kg in Assam tea plantations (The Telegraph, April, 2023).

by the Britishers (Das, 2016). In another study by Baishya (2016), Sarmah (2009) found that in the initial stages, the tea planters had to face many problems, as the local people were greatly depopulated due to Burmese incursions perpetrated several times and the remaining people being agriculturists were unwilling to work in tea gardens. Due to disinterest of local labourer and the shortage of local adult labourers during peak seasons compelled the British planters to make some alternative arrangement by employing labourers in the tea plantations of Assam via migrating them from other provinces of India during 1855 (Kar, 2009). The occurrence of flood, drought, and epidemics was regular during the early 19th century in Bihar, Orissa, Uttar Pradesh, and Madhya Pradesh. The agrarian regions of Bihar experience famine during the mid-19th century (Singh et al., 2006). The British planters exploited the opportunity and recruited a large number of labourers through agents in the tea plantation of Assam.

The labourer from famine and poverty-stricken areas of Bihar, Orissa, Uttar Pradesh and Madhya Pradesh, Andhra Pradesh, and West Bengal were induced by the agents to migrate to Assam and enjoy a better life (Kar, 2009). Under such situations, labourers voluntarily migrated to tea plantation work in Assam during 1840-1961 from various cultural, linguistic, and ethnic heritages (Sengupta, 2009). Assam received a steady flow of labourers from these provinces and it continued uninterruptedly till the mid-20th century. A good number of these migrated labourers initially suffered from malnutrition, some of them died and others went back after the expiry of the contract period. A major section of these groups, however, survived that stage and gradually been making their mind to make permanent settlement in the tea plantation of Assam (Joseph, 2009). The plantation labourers, as well as the ex-tea garden labour population, are now an integral part of the society of North East India in general and Assam in particular (Sengupta, 2009). Although, tea plantation labourer in Assam contributes

substantially to the economic sphere and socio-political life in the state but unfortunately the labourer were unable to go beyond the subsistence level. As per the report of the National Commission for Backward Classes (NCBC), the tea tribes in Assam formed by 96 castes that fall under the description of Tea Garden Labourer, Tea Garden Tribes, Ex Tea Garden Labourer and Ex Tea Garden Tribes (Press Information Bureau, 2012). Their engagement in tea plantation and agricultural activities has immensely contributed towards the socio-economic and cultural life of Assam.

1.3 Background of the Study Area

Assam forms the core of the northeastern region of India. It is located between the latitudes of 24°08′ N and 27°09′ N and the longitudes of 89°42′ E and 96°10′ E. It covers 78,523 sq. km constituting 2.4% of the country's total geographical area (Directorate of Economics and Statistics, GoA, 2023). The state shares its boundary with number of Indian states and a few foreign countries. The Kingdom of Bhutan is north-west of Assam, Arunachal Pradesh to the north and north-east, Nagaland and Manipur to the east, Mizoram to the south, Tripura, Meghalaya, and Bangladesh to the south-west, and the state of West Bengal to the west. The state comprises two broad natural divisions, viz., plains division and hills division. The plains division includes the Brahmaputra Valley and the Barak Valley. The Brahmaputra Valley is a long strip of plain land extending from the state's border in the west to the northeast in the northern part of the state. The valley derives its name from the mighty river Brahmaputra, which runs from north-east to west a distance of 450 kilometers, splitting the valley into two long strips. The Brahmaputra Valley constitutes about 72% of the total geographical area and about 85% of the population of the state (Directorate of Economics and Statistics, GoA, 2023). The Barak Valley is in the southern part of

Assam with the river Barak passing through it. This region is relatively small accounting for only about 9% of the total geographical area and about 12% of the state's population (Directorate of Economics and Statistics, GoA, 2023). The Hills division consists of Karbi-Anglong and North Cachar hills, which lies in the middle separating the two valleys. This division covers 19% of the total geographical area and a relatively sparse population that accounts for only 3% of the state's total (Directorate of Economics and Statistics, GoA, 2023). Assam has been broadly divided into six agro-climatic zones based on patterns of rainfall, terrain, soil type, and climatic conditions. They are North Bank Plains Zone (NBPZ), Upper Brahmaputra Valley Zone (UBVZ), Central Brahmaputra Valley Zone (CBVZ), Lower Brahmaputra Valley Zone (LBVZ), Barak Valley Zone (BVZ) and Hills Zone (HZ). Similarly, six tea growing regions in Assam are categorized as Upper Assam Region (UAR), North Bank Region (NBR), Cachar Region (CR), Central Assam Region (CAR), Hills Region (HR), and Lower Assam Region (LAR) refer to Appendix A. Tea cultivation is primarily practiced in almost all regions of the state, while UAR, NBR, and CAR are three largest tea growing regions in terms of area under cultivation, production, and average daily number of labour employment (Appendix A, C and D).

1.4 Significance of the Study

Assam occupies an important position in India's tea plantation sector in terms of production, area coverage, and employment generation. Assam is the largest producer sharing 50.96% of the country's total tea production, covering 54.19% of the country's total land under tea plantations, and occupying more than 60% of the total daily employment generated by the tea sector of India (Economic Survey of Assam, 2021-2022). The tea tribes' population of Assam is estimated to be nearly 20% of the total

population of the state by 2022 (Unique Identification India data, 2020). However, the status of tea garden labour welfare in Assam seemed to be less satisfactory in terms of basic settlement facilities, health, and hygiene (Gogoi and Sumesh, 2023). In addition, there is a differential in daily wage rate between general agricultural and tea plantations labourers in the state (Sarkar, 2015). Tea labourers receive relatively lower wage compared with the general agricultural labourers in both the Brahmaputra and Barak Valley region of Assam (Lalitha et a., 2013; Sentinel, 2022). A study by Majhi (2009) mentioned that despite the existence of PLA (1951) the tea garden labourers in Assam are deprived of proper education, health, sanitation, housing, and electricity facilities. The loyalty to statutory benefits under the PLA (1951) provisions have been criticized in literature for its poor implantation and failure to arrive at a fair degree of parity among the tea labourers in Assam (John and Mansingh, 2013; Tantri, 2019). Under the PLA (1951), the entitlements benefits of labourers and labour relations are likely to be uniform across different ownership structures of tea plantations (Saha et al., 2019), but the policy relating to administration and management differs across different ownership structures of tea plantation of West Bengal (Roy and Biswas, 2018). Roy (2020), and Roy and Biswas (2021) have claimed that there is a significant difference in weekly average working hours of labourers among the tea gardens which are managed by single owners and the gardens managed by a group of shareholders in West Bengal, while the situation was worse in the single owner garden with average working hours being higher for the uniform wage rate. The presence of such heterogeneity in working conditions across different ownership structures of tea plantations likely to differentially influence the economic status of labourers. Does diversity in working conditions and managerial intervention in the tea plantation sector differentially influences the welfare gain or loss translating into economic advancement or

backwardness among tea labourer communities has important implications. Present study endeavors to examine if the ownership structure of the plantation has any influence over the economic condition of labourers engaged in the tea plantation sector of Assam.

1.5 Review of Literature

The literature on tea plantation labourer spread over diverse issues and dimensions. The low wage rate of tea plantation labourers has been target of criticism in the works of several scholars. Low wage rate, inadequate housing facilities, and a lack of sanitation and social protection are among the major problems tea garden labourers are facing (Perumal, 2022). Low baseline wage rate and low pension post-retirement leading to economic backwardness among the tea plantation labourer was observed by (Jayaraman et al., 2016; Xaxa, 2019; Saha et al., 2019; Das, 2020). The same is true among the labourers in the tea plantation sector of Bangladesh (Majumdar and Roy, 2012). Raman (1986) remarked higher burden of debt, and negative savings among the tea plantation labourer of South India constrained by the low wage rate while it is more worsening in the case of tea labourers in Assam as their daily wage rate is significantly lower than the daily wage rate of tea labourers in Kerala, Tamil Nadu, and Karnataka respectively (Oxfam India, 2021; Kalita, 2022). The lower wage of tea labourers compared with the industrial and agricultural labourers is a driving factor for economic deprivation (Bhowmik, 1980; Basu, 1980; Ramachandran and Shanmugam, 1995; Lalitha et al., 2013; Sarkar, 2015; Gurung, 2021). Studies by Bhowmik (2011), and Goowalla (2012) stated that the condition of tea plantation labourer was vulnerable and made to work at low wage rate under exploitive conditions in West Bengal and Assam. Dutta (2015) mentioned that the wage rate of tea labourers in West Bengal is not linked with the price that tea fetches both in domestic and international markets. Owing to the low wage rate

the tea plantation labourer of Assam had to depend on supplementary earnings such as animal husbandry, fishery and poultry farming, collection of forest products, and wood cutting for their livelihood (Gupta, 1986; Saika, 2012; Gogoi, 2016). The low wage rate and limited supplementary earnings are traced responsible for the backwardness of tea plantation labourers in Assam (Guha, 2019).

The low level of educational attainment and illiteracy among the tea labourer is one of the factors responsible for their backwardness (Kumar, 2014; Hariharan and Kumar, 2014; Ruma and Dipak, 2014; Al-Amin et al., 2017) while poor educational facilities discouraged tea labourer for better livelihood options (Ramachandran and Shanmugam, 1995; Chetia and Baruah, 2014; Kamruzzaman et al., 2015). Studies by Mishra et al. (2011), Bhowmik (2011), and Gurung and Mukherjee (2018) found that deprivation from proper education and limited skills among tea plantation labourers affect their occupational mobility and upward modality which compelled them to engage in tea plantation while Sarkar and Bhowmik (1999) mentioned that the low level of literacy among women labourer keep them a marginalized section of society. Bosumatari and Goyari (2013) reported that women engaged in tea gardens have low level of educational attainment than women engaged in other occupations. Ramachandran (1995) has observed that due to the low quality of schooling, poor group support, and socio-economic backwardness among children of tea plantation labourers have become an educationally disadvantaged group in entire Malaysia. The low level of awareness of education among tea labourers in Darjeeling district of West Bengal was responsible for illiteracy among them (Datta, 2017). Low enrolment with a high dropout rate was responsible for poor educational attainment among the tea labourer of Assam (Sarma, 1994; Saharia, 2005; Sarma 2011) while the increasing gender gap in earning was responsible for the fall in rural school enrolment among tea plantation labourer in China

(Qian, 2008). Low level of education and lack of awareness among tea labourers are considered to be responsible for the deprivation of tea labourers from basic facilities (Kar, 2009; Sarkar, 2013). Ruma and Dipak (2014) maintained that the overall literacy rate among tea garden workers in Assam is very low in comparison to the national average due to their poor educational attainment, which makes them vulnerable in terms of socio-economic and socio-cultural conditions, livelihood opportunities and living standards, nutrition and health condition. Ray (2021), Das (2023) opined that due to lack of awareness regarding the importance of education, tea labourers are reluctant to send their children to school while the low level of educational attainment among labourers has a direct negative impact on the educational status of their children in Assam tea plantations (Ruma and Dipak, 2014).

Several studies also mentioned about the challenges faced by tea labourers in terms of shelter and proper hygiene in their settlements. Tea labourers lived in old and dilapidated houses sharing small rooms without a kitchen, having no access to electricity facility, lacking appropriate sanitary and drainage facilities, inadequate supply of drinking water, inadequate health and medical services, poor conditions of the road, and being underprivileged from government aid and facilities (Ramachandran and Shanmugam, 1995; Hariharan and Kumar, 2014; Bora, 2015; Purkayastha and Kalita, 2016; Panwar, 2017; Saha et al., 2019). The study by Kamruzzaman et al. (2015) remarked unsatisfactory improvement in financial position contributed towards low level of livelihood among tea labourers, which was responsible for their social exclusion, chronic poverty and remained as marginalized section of the society (Bhowmik, 1980; Mishra et al., 2011; Majumdar and Roy, 2012; Bhowmik, 2015; Al-Amin et al., 2017). Narzary (2016) reported the scope for the creation of job opportunities for the unemployed youths of tea labourer households is possible via

expansion of the size of the garden and factory in Assam. The phenomena of falling productivity growth in Assam tea sector brought serious challenges for those who managed their livelihood from this sector (Mishra et al., 2008; Dutta et al., 2010; Biggs et al., 2018; Manisha et al., 2019).

The poverty and backwardness of the tea plantation labourers are associated with extremely poor saving capacity, very high debts, and excessive expenditure on social occasions and intoxicants (Chetia and Baruah, 2014; Hariharan and Kumar, 2014). Wasting a major portion of earnings on the consumption of alcohol coupled with the absenteeism behavior of male tea labourers in Assam kept them economically backward (Kar, 1984; Sharma and Bhuyan, 2016). Tea garden labourer suffers from various health problems owing to improper access to health services and the nature of their occupation, which has been researched in a few studies. Poor nutrition among tea garden adolescents owing to improper care from parents engaged in the tea sector affected the health of adolescents of tea labourer households in Assam (Medhi et al., 2007; Roy, 2021) while poverty and malnutrition responsible for high infant mortality among the children in tea plantation of Bangladesh (Barkat et al., 2010), and same was true for the tea plantation sector of India (Olwe, 2020). Das (2013) argued that the health condition and nutrition were very pathetic among the tea plantation labourers in Assam of which diarrhea, malaria, and tuberculosis (TB) were most rampant, moreover, due to a lack of good living conditions and poor conditions of hygiene, labourers were vulnerable to various communicable diseases. Chemical spraying caused health hazards among labourers in tea plantations (Basu, 1980) while Panwar (2017) expressed that lack of proper safety equipment like gloves, hats, and hoes affected labourer health in tea plantations. Poor living condition was the reason for the occurrence of frequent disease and health hazard for tea plantation labourers (Datta, 2017) whereas Majumdar

and Roy (2012) mentioned protein deficient meals made tea labourer physically weaker.

The failure in the implementation of PLA (1951) has been subject to criticism in several studies. Roy and Biswas (2018), and Saha et al. (2019) maintained that the failure to implement PLA (1951) uniformly across the different ownership structures of tea plantations in West Bengal and Assam may be responsible for the backwardness of tea plantation labourers. Tea labourers hardly enjoy the benefits of welfare schemes provided by the government (Singh et al., 2006; Saha and Singha, 2018), and the provision for skill development and training programmes is meager among the tea plantations labourers (Sahu, 2004; Bhadra, 2004). Moreover, improper implementation of PLA (1951) has been highlighted in studies (Bhowmik, 2011; Oxfam International, 2019). The poor implantation and failure to arrive at a fair degree of parity among resident and casual tea labourers and welfare schemes along with geographical differences in wage rate prevalent in the tea plantation sector (John and Mansingh, 2013; Tantri, 2019). Roy and Biswas (2019) established the presence of unexpected inequality in expenses towards welfare provision for tea labourers across the different ownership structures of tea plantations in West Bengal. Furthermore, Roy (2020), and Roy and Biswas (2021) claimed that except for public sector undertaking (PSU) tea plantations the overtime working hours are ignored by public limited company (PLC) ownership tea plantations, while the actual weekly average working hours in proprietorship (PROP) tea plantations was significantly higher than standard weekly working hours in West Bengal tea plantations.

There are several scholarly attempts in examining the factors responsible for consequences of the incidence of poverty and inequality among tea plantation labourers in India and abroad. The tea plantation labourers are confined in the trap of poverty

intergenerationally due to the prevalence of low wage rate and exploitive working conditions, making it difficult for them to meet their household expenditure requirement from meager income (Raman, 1986; Banerjee, 2018; Rajbangshi and Nambiar 2020). Bhadra (2004) confirmed the presence of gender inequality in wage rate among the labourers in tea plantations of West Bengal, with the women receive low wage rate than their male counterparts, thereby giving rise to intersectionality caste, class, and workplace inequalities in the tea industry (Kushwah, 2022). Medhi et al. (2007), Barkat et al. (2010), Roy et al. (2013), Rowlatt (2016), Viswanathan (2021), and Sharma and Koiri (2022) reported the multidimensionality of problems faced by tea plantation labourers such as poor living and working conditions, ill health with high levels of malnutrition, low level of educational attainment, high infant mortality among the children contributes towards poverty among tea labourers in India. In the context of tea labourers in Bangladesh, capability deprivation as a root cause of the incidence of poverty and vulnerability (Das and Islam, 2006; Islam and Al-Amin, 2019). Gogoi and Sumesh (2023) argued that despite the presence of poverty and health inequality among tea plantation labourers in Assam, no measures have been taken either from tea garden management or the state to safeguard the health and safety of those labourers. High incidence of poverty is considerably responsible for childhood adversities and child trafficking in Indian tea plantation sector (Chakraborty, 2013; Ghosh, 2014). Poor socio-economic status of tea labourers, illiteracy, lack of employment opportunities due to retrenchment or closure of tea plantations, and the isolated nature of tea plantations are considered traced responsible for high incidence of poverty and inequality among tea labourers (Nair, 1984; Hazarika, 2012; Viswanathan and Shah, 2013; Borgohain, 2020; Gogoi. 2020). Low level of savings and high debt push labourers towards poverty (Chetia and Baruah, 2014; Hariharan and Kumar, 2014) while the incidence of

poverty among the tea plantation labourer was linked with the land size of tea plantations in Assam (Guha, 2011). On the other hand, Gayathri and Arjunan (2018) maintained that deprivation from basic rights and benefits as prescribed by PLA (1951) is one of the factors for the low level of living and poverty among tea plantation labourers in South India. Scholarly work by Bhadra (1992), and Goddard (2005) argued that tea labourers are more vulnerable and have poor living conditions mostly because of their large dependency on tea management for securing their livelihood. Priydarshan (2019) found that the negligence of tea plantation management towards labourer was responsible for their sufferings while Saha et al. (2019) identified a few exploitative conditions in tea plantations such as wage cut mechanisms, poor provision for housing and living conditions, economic and social insecurities, and absence of basic facilities at the workplace making the tea labourer more vulnerable in the workplace.

1.6 Research Gap

There are several scholarly attempts made so far in examining the livelihood issues, and socio-economic conditions of plantation labourers in general and tea plantations in particular across countries as well at the national level. But, scholarly attempt in examining if the incidence of poverty and inequality among the tea labourer has any association with the ownership structures of tea plantations, is difficult to find in the existing literature. The present study is an attempt to bridge such gap in the literature with household level data collected from tea plantation labourers in primary tea growing regions of Assam. The knowledge about if engagement in particular ownership structures of plantations is responsible for the economic backwardness of labourers can help the policy planner in designing policies and taking measures for helping the needy for welfare improvement of the labourer in those ownership structures of tea plantations in the state.

1.7 Objectives

With the aim of the study being to examine if ownership structures of tea plantation has any association with the economic condition of tea labourer, the following objectives have been framed:

1. To observe the allocation status of public welfare facilities among tea labourers across the districts of Assam.
2. To assess the standard of living among labourers in different ownership structures of tea plantations in Assam.
3. To understand the vulnerability in terms of occupational mobility and factors determining it among the labourers in different ownership structures of tea plantations of the state.
4. To examine the extent of poverty and factors determining it among the labourers in different ownership structures of tea plantations in Assam.
5. To study the pattern of inequality and its determinants among the labourers across the different ownership structures of tea plantations in the state

1.8 Research Questions

The research questions for the proposed objectives are as follows:

1. What is the allocation status of public welfare facilities among tea labourers across the districts of Assam?
2. Are the labourers maintain a decent standard of living in different ownership structures of tea plantations in Assam?

3. Does the labourers are vulnerable in terms of occupational mobility and what are the factors determining it among the labourers in different ownership structures of tea plantations in the state?
4. What is the incidence of poverty among labourers in different ownership structures of tea plantations in Assam and the possible factors influencing it?
5. Whether inequality pattern among labourer varies across different ownership structures of tea plantations in the state and what are factors determining it?

1.9 Organization of Chapters

Chapter 1: Introduction

This chapter includes introduction of the study, a description of tea plantation labourers in Assam, background of the study area, significance of the study, a review of literature, research gap, and the objectives and research questions of the study.

Chapter 2: Conceptual Framework and Methodology

This chapter covers the theoretical framework of the study, data sources, and empirical analysis of the study.

Chapter 3: Status of Tea Labour Welfare in Assam

This chapter has been fragmented into various sub-sections. The initial part portrays India's position in terms of production and export in the global tea market. It also provides insight into the regional level area under tea cultivation, its production, and the average daily number of labourers engage in the tea plantation sector of India in general and Assam in particular. Subsequently, this chapter broadly discusses the status of tea labourer welfare in Assam in terms of access to various welfare schemes and

benefits. Towards the end of this chapter, an attempt has been made to present the inter-district status of welfare facilities among labourers in tea plantation sector of Assam.

Chapter 4: Access to Welfare Facilities and Standard of Living among Tea Labourers in Assam

This chapter covers the statistical analysis tried to sketch the socio-economic and demographic analysis of tea plantation labourers in different ownership structures of tea plantations in Assam. The provision of welfare facilities among labourers in different ownership structures of tea plantations is also analyzed in this chapter. An attempt has been made to understand the standard of living among labourers by using various proxies like the asset ownership index, basic amenities index, and leisure time availed by tea labourers in different ownership structures of plantations in the state.

Chapter 5: Intergenerational Occupational Mobility of Labourers in Different Ownership Structures of Tea Plantations in Assam

This chapter broadly covers the status of occupational distribution among labourers. The analysis of intergenerational occupational mobility and vertical mobility among labourers in different ownership structures of plantations in Assam has been done in this chapter. An attempt also has been made for examining the factors determining occupational and vertical mobility among the labourer in different ownership structures of tea plantations in Assam.

Chapter 6: Factors Determining Poverty and Inequality among Labourers in Different Ownership Structures of Tea Plantations in Assam

This chapter is fragmented into various sections and sub-sections. The initial part of the chapter covers discussion on the incidence of poverty among labourers in different

ownership structures of tea plantations in Assam. Subsequently, the factors determining poverty have been examined. The chapter also explores inequality patterns among labourers and its determinants in different ownership structures of tea plantations in Assam.

Chapter 7: Conclusion and Policy Implications

This chapter includes the principal findings and conclusion of the study. Based on the findings some policy recommendations also have been included in this chapter. The research limitations and scope for future research are also highlighted in the final section of the chapter.

CHAPTER 2

Conceptual Framework and Methodology

This chapter broadly consists of two sections. The first section discusses the theoretical framework and conceptual issues, the subsequent section covers details of data sources and empirical analysis used in the study.

2.1 Conceptual Framework

The measurement of household welfare or standard of living is a question that has not been resolved completely (Sen, 1976). There are many ways one could go about addressing this issue depending on the context, need, and availability of information. Since the quality of life has to take into consideration all direct and indirect consumption, both tangible and intangible items, measuring welfare has become a daunting task. The most common single indicator of welfare in the literature is to generate the value of the consumption basket both market purchases and consumption of own production, using appropriate price measures. The use of monetary income or consumption to identify and measure poverty has a long tradition, right from the study of Rowntree (1901) up to the recent World Bank's (2015) study on global income poverty. In his pioneering study, Rowntree (1901) defined poverty as a level of total earnings that is insufficient to obtain the minimum necessities of life (including food, house rent, and other basic needs) and for the maintenance of physical efficiency. In general, poverty is understood as the inability to meet the basic needs (fooding, clothing, and shelter) necessary for the survival of an individual. Sen (1983) stated that the failure to achieve certain minimum capabilities is poverty; however, capabilities are not fixed over time or in societies. Given such complexities of conceptualizing poverty, the use of the poverty line has become popular among economists and policy maker.

An individual or household is deemed to be poor if his or her income or consumption expenditure fall below the poverty line. The poverty line has been popularly used in the works of Minah (1970), Bardhan (1971), Sen (1976), Preston (1995), Pradhan and Ravallion (2000), Deaton and Dreze (2002), Chen and Ravallion (2007), Ravallion and Chen (2008), Ravallion et al. (2009), Ravallion and Chen (2011), Pokharel (2015), Caglayan-Akay and Sedefoglu (2016), Puurbalanta and Adebanji (2016), Gallardo (2020), and Sravanth and Sundaram (2022). Apart from income and consumption lying below the poverty line, poverty can be measured via various dimensions such as gender, particularly in deprivation of education, health, and democratic rights (Deaton, 2001; Anne and Deaton, 2002). Besides such inabilities, the low level of health and education, poor access to clean water and sanitation, physical security, lack of voice, and insufficient capacity and opportunity to better one's life are defined as a state of poverty by the World Bank (2000).

The measurement of poverty has been an issue of theoretical investigation since Sen (1976) with an ordinal approach while Basu (1985) addressed it through the decomposition of a theorem on affine function normalization axiom. Foster and Shorrocks (1988) attempted to explore the partial poverty ordering of distribution to provide a new perspective on measuring poverty and its relation to inequality and welfare whereas Preston (1995) considered the statistical reliability of poverty estimates via sampling distributions of relative poverty widely used in the policy-making statistics community. World Bank (1991) made an attempt for a better understanding of poverty in Nepal, and to propose an affordable set of measures that covered the micro-economic factors influencing incomes and the constraints faced by the poor. In an attempt to validate the theory of poverty Ravallion (1996) has extended comment on some of the practices such as money-metric utility, the multidimensional

approach of poverty measurement analysis, and its implications. Subsequently, Pradhan and Ravallion (2000) examined subjective poverty by using simple qualitative assessments of perceived consumption adequacy based on a household survey. Clark and Hulme (2010) used three meta-dimensions of poverty relating to depth and severity, breadth and multidimensionality, and time and duration. Relative poverty measurement in terms of social exclusion was done by Anwar and Siddiqui (2005). In recent years the concept of multidimensional poverty has gained significant attention with the development of the Multidimensional Poverty Index (MPI) in 2010 by the Oxford Poverty and Human Development Initiative (OPHI) and the United Nations Development Programme (UNDP) composed of three broad dimensions such as health, education and standard of living with ten different weighted indicators[5].

Conventional measures of poverty such as headcount ratio and income gap ratio are simple to compute and easy to interpret, but they fail to reflect accurate changes in the level of poverty. Sen (1976) pointed out two distinct problems faced while measuring poverty, one is identifying the poor among the total population and the other is a construction of an index of poverty using the available information on the poor. Sen (1983), and Foster and Shorrocks (1988) claimed that identification and aggregation aspects of poverty measurement may be less easy to maintain in practice. In order for identifying the poor Ringen (1985) mentioned researchers must need to know who are deprived both in resources and in the way they live. Desai and Shah (1988) found complexities in revealing poverty since it is a relative phenomenon where income only may not be viable for identifying the poor, however, many other aspects (such as health, education, wealth, ethnic origin, etc.) were to be examined while Abraham and Kumar

[5] Indicators of health composed of nutrition and child mortality; education consist of mean year of schooling and children enrollment while cooking fuel, toilet, electricity, floor, water, asset are considered as the indicators for standard of living.

(2008) stated that the definition of poverty is not only remained in terms of income but also other dimensions such as health, nutrition, and sanitation in such inclusive measures of poverty. Moreover, Brandolini (2010) argued that poverty is not only defined by investigating income or consumption inefficiency but the economic conditions of a household also depend on its real and financial asset holding. Though MPI has broadened the scope of measurement of poverty in recent years, however, the technique is constrained by the collection of data on child mortality, poor health especially deprivation from nutrition and school attendance. Moreover, in the absence of a poverty line, the recognition of the accurate situation of a nation's poverty may not be realistic, it may even be difficult to measurement of poverty via other measures. Furthermore, ignoring the poverty line may lack in presenting of economic strata of a household and public where social welfare programmes need to be better oriented, on the other hand, the poverty line may reflect the basic necessary to existence above the poverty level.

With the popularity of the poverty line easing out measurement problems, the technique has been applied across countries for the enumeration of poverty. Internationally an amount of $ 1 a day was treated as a poverty line by World Bank during the 1990s which was later on revised as $ 1.25 in 2005 purchasing power parity (PPP) and recently in October 2015 it has been set at $1.90 a day. In India, the earliest attempt to estimate poverty using the poverty line was made by Dadabhai Noroji with the poverty line ranging from ₹ 16 to ₹ 35 per capita per year which was based on 1867-68 prices. The proposed poverty line was based on the cost of a subsistence diet consisting of rice, oil, flour, dhal, mutton, ghee, oil, vegetables, and salt. Afterward, in 1938 the National Planning Committee (NPC) estimated a poverty line ranging from ₹ 15 to ₹ 20 per capita per month based on the requirement of minimum standard of living in which

nutritional requirements were considered. Over the years, several committees and groups have been constituted by Planning Commission namely the Working Group (1962), Alagh Committee (1979), Lakdawala Committee (1993), Tendulkar Committee (2009), and recently Rangarajan Committee[6] (2014) for reframing the poverty line in India. Due to the major obscurity of capturing household incomes through surveys over moving sample households, the basket of goods and services is being used in the methodologies of the Alagh, Lakdawala, and Tendulkar committees' underlying metric of living standards using consumption expenditure data. Consequently, the high rate of increase in per capita income and consumption in the recent decade and substantial changes in the structure of the economy as well as people's perspectives on poverty have given a requirement of a fresh look at the poverty line and its composition of the poverty line.

Across the cross-section households of homogeneous sets of people income typically remains the same. Apart from this, households may be drawing incomes from more than one venture where a major proportion of earnings may not be reported during the survey. Even in the absence of under-reporting of incomes, there are serious problems in capturing the incomes of self-employed households, casual wage earners, earnings from non-labour assets, and real wages. The drawbacks of income data are pointed out in different studies including the possibility of underreporting (Mowafi and Khawaja, 2005) while on real wage Ringen (1985). Given the limitations of income data in the measurement of poverty, the use of consumption expenditure has gained popularity amongst researchers and policy makers for analysis of the level of living and poverty.

[6] As per the latest report submitted by Rangarajan Task Force (2014), the Planning Commission of India has introduced the new poverty line that is ₹ 32 per day for rural area and ₹ 47 per day for urban areas of the country on the basis of per day per capita or on the basis of monthly per capita consumption expenditure (MPCE).

Studies by Friedman (1957), Deaton and Muellbauer (1986), Cutler and Katz (1991), Slesnick (1993), Slesnick (1994), Blundell and Priston (1995), Meyer and Sullivan (2003), Banerjee and Duflo (2007), Headey (2008), Heshmati et al. (2019), Wanka and Rena (2019), Shaukat et al. (2020), and Summer et al. (2020) have used of consumption expenditure data in the analysis of poverty. In addition, it was expressed that the current consumption measures material well-being more directly than the current income (Cutler and Katz, 1991; Slesnick, 1993; Meyer and Sullivan, 2003). The estimation of poverty via expenditure method is based on two components. First, information on the consumption expenditures and their distribution, and second, these expenditures by households are evaluated with reference to a given poverty line. Households with consumption expenditure below the poverty line are deemed to be poor and the remaining are non-poor. Studies by Rath (1970), Bardhan (1973), Minhas (1971), Sitaram et al. (1996), Deaton (2003, 2005), Sundaram and Tendulkar (2003), Mittal (2007), Patnaik (2010), Heshmati et al. (2019), and Ram and Yadav (2021) made use of per capita consumption expenditure for measurement of poverty in India.

Given the advantage of consumption expenditure as a better measure of poverty than income. Normally, a household's consumption expenditure consists of permanent and transitory components, while the former covers the expenses on basic needs, health, education, transport, and communication while the latter includes expenses on unforeseen contingencies such as marriage, death, treatment of chronic disease, etc. Normally, the primary spending of a labour household consists of expenditure on cereals, pulses, milk, salt and sugar, edible oil, meat and vegetables, and spices as food items while tobacco and intoxicants, fuel and light, medical expenses, conveyance, clothing and bedding, and education being non-food items, which are permanent in nature. One such development in consumption theory is the Permanent Income

Hypothesis (PIH) as developed by Friedman (1957) likely to address the issue of permanent and transitory components of income and consumption. In contradiction to the Keynesian notion of measured income Friedman (1957) argued that households base their consumption decisions on their permanent rather than current income. Dejuan and Seater (2006) applied PIH for examining the elasticity of household consumption expenditure in the USA while Wang (1995) used the hypothesis for evaluating the relationship between income and wealth with the cross-sectional data on rural and urban households in China. The relationship between aggregate consumption and permanent income was studied by Morley (2007). Under the realm of measurement of poverty via consumption expenditure, the consumption expenditure of an individual consists of two components- permanent component (C_p) and transitory component (C_T) as per Friedman (1957) PIH.

$$C = C_p + C_T$$

Also, an individual total income consists of two components permanent (Y_p) and transitory (Y_T);

$$Y = Y_p + Y_T$$

As income consists of permanent and transitory components for an individual or household whose consumption expenditure is consistent with their long-term average income (daily wages or monthly salary of a labour) that is permanent income while income that is short lived for example if someone loses their job and convert their asset into liquid form for present needs, wages from casual work, windfall gain, etc. may be considered to be transitory income loss or gain. In PIH the mean temporary income is assumed to be zero ($\hat{Y}_T = 0$) across cross-section while the correlation between permanent and transitory components of income is low likewise in case of consumption

{viz; $E\ (Y_p + Y_T) = 0$} and also {$E\ (C_p + C_T) = 0$}. Considering the following Keynesian consumption function

$$C_i = a + bY_i + u_i$$

For the given consumption function $\widehat{MPC} = \frac{Cov\ (Y,C)}{Var\ (Y)}$ which will boil down to $\widehat{MPC} = \frac{Var(\ Y_P)}{Var\ (\ Y_P)+Var\ (\ Y_T)}$ since $E\ (Y_p,\ Y_T) = 0$. It implies consumption is more influenced by permanent income and less by temporary income. It has to be noted that $\hat{b}$ is bounded by 0 and 1, just as we assumed in the Keynesian consumption function. As long as there are some transitory shocks to income $\hat{b} > 0$. Because the variance is by definition positive (i.e. $\hat{b} > 0$). Thus $\hat{b}$ can depend more on permanent income, for example, an economy with stable permanent income but a highly variable business cycle, the $\hat{b}$ will be the smallest. The households will be less responsive to current income. The estimated minimum consumption level (intercept term) being $\hat{a} = (1 - \hat{b})\ \hat{Y}_P$ with $Var\ (\ Y_P) < Var\ (\ Y_T)$ as $\hat{b} \to 1 \quad \hat{a} \to 0$.

Measurement of poverty using the PIH attempted in the works of Bodkin (1959), Darby (1974), Bhalla (1979), Hayashi (1985), Ermini (1993), Costas (2004), and Naga and Bozani (2006) while PIH applied in examining the link between income and consumption of farm household in India (Vakil, 1973; Wolpin, 1982) and in South Africa by Musgrove (1979). Deaton (2015) argues that expenditure depends more on the concept of permanent income than on actual income and thus poverty is very closely associated with permanent income and the PIH also has implications for inequality in consumption, and income. Transitory earnings are less likely to affect their livelihood and reflect the economic status of the labour household. Furthermore, measurement of the level of living and poverty using data on transitory income or consumption shows

less variability of income for the short time period and obscurity in obtaining information. Owing to these complications a researcher may underestimate or overestimate poverty incidence across labour households.

The measurement of inequality is of paramount importance to identify the underprivileged sections of the well-being of a household or nation as a whole. Inequality may be found in various forms, for example, social, economic, cultural, and religious inequality. However, numerous research work has been initiated focusing on economic and social inequality. The measurement of inequality has gained considerable attention in research since Malthus (1798) in his theory highlighted the inequality based on income and social classes. Furthermore, Jensen (1906) generalized inequality states that the expectation of a convex function is larger than the function of the expectation while Dalton (1920) investigated the analytical aspects of the measurement of income inequality which extensively surveyed theories explaining income inequality. The geometric representation of inequality as developed by Lorenz (1905), and was further used by Gini (1912) for estimating the coefficient value of inequality. The inverted U hypothesis of Kuznets (1955) addressed the tradeoff between inequality and economic growth. Theil (1967) has provided both a method for measuring inequality and an introduction to important sets of functional (standard tools used in distributional analysis) forms for modeling and analyzing inequality by axioms that incorporate criteria derived from ethics, institution, or mathematical convenience. Atkinson (1970) made an attempt to understand the problem of inequality of income by bringing in an overall social objective function and measured inequality of an income distribution through the social loss. Sen (1973) has addressed a systematic treatment of the conceptual framework as well as the practical problems of the measurement of economic inequality in which alternative approaches were evaluated in terms of

philosophical assumptions, economic content, and statistical requirements. Evaluation of the inequality in consumption expenditure was attempted in the works of Ray (1985), Lazaridis (2000), and Attanasio and Pistaferri (2016), while studies of Pyatt (1987), Lewis and Ulph (1988), Sen (1992) have tried to address the relationship of welfare and inequality; Deaton (2013) on health inequality while inequality relating to wage rate in India attempted by Gunatilaka and Chotikapanich (2009), Das (2012); Bigotta et al. (2015), Tripathi (2018), Addai et al. (2022), and Ayyash and Sek (2020).

2.2 Data Source and Sample Design

2.2.1 Data Source

The present study is based on secondary as well as primary data. The secondary data for the study has been sourced from various published figures from government and non-government organizations (NGOs). Data on output and export shares of major tea growing countries of the world for the period of 2017-2021 has been collected from the annual report of the TBI. The figures on output, the area under tea plantation, and the average daily number of labour used at the regional level as well as for the nation as a whole have been collected from various issues of Tea Statistics and Tea Digest as published by TBI. State-level data on output, area under plantation, and average daily number labour employed were obtained from various issues of Tea Statistics and Tea Digest as published by TBI. District-level data on the area under tea and production in Assam has been collected from various issues of the Statistical Handbook of Assam as published by the Directorate of Economics and Statistics, GoA. District wise average daily number of labour engaged in tea plantations of Assam during 2000-2005 was collected from various issues of Tea Digest published by TBI. District level data on in kind-benefit received by tea labourers in Assam for the year 2015-2018 has been

collected from the Directorate of Labour Commissioner, GoA. Data on the budgetary provision under the different heads for tea garden labour welfare and their physical achievement was collected from Directorate for Welfare of Tea and Ex-Tea Garden Tribes, GoA. The data relating to wage rate of tea plantation labourers in Assam for the period 2001 to 2020 has been collected from official records of the ABITA, and the average wage rate of general agricultural labourers in Assam from 2001 to 2020 has been obtained from the Ministry of Agriculture and Farmers Welfare, Government of India (GoI). The ownership structure-wise number of tea plantations in Assam has been obtained from Tea Directory, TBI (2015). The primary data on various socio-economic indicators of tea labourers has been collected via a carefully designed household survey. The sampling technique for the selection of labourer households has been explained in the next section.

2.2.2 Sample Design

The present study has been carried out with household level primary data collected from tea plantation labourers of Assam. The study relied exclusively on household level survey data on permanent[7] resident labourers in the tea plantation sector of Assam. The study followed a multi-stage sampling method for the selection of labourer households.

[7] A labourer is considered as permanent resident labourer if he/she resides within the tea plantations and derives all benefits of housing or labour quarter, provident fund (PF), gratuity, bonus, fringe benefits, and ration on a subsidized rate (PLA, 1951). The permanent tea labourer in Assam gets incentives in-cash and kind. As per the report of Assam Branch of India Tea Association (2017) the incentives in-cash wage during FY 2016-17 was ₹ 137 in Brahmaputra Valley and ₹ 115 in Barak Valley per day for minimum of eight hours of work in the field or plucking minimum 24Kg of tea leaf per day; medical facility of ₹16.75 per day per labour household; housing rent ₹ 15.22 per day per labour household; educational facility of ₹ 2.83 per day per labour household; leave with pay and festival holidays of ₹ 14.95 per labourer (entitled for leave and holiday period); provident fund ₹ 16.44 per month per labourer and gratuity of ₹ 6.85 per month per labourer. Incentives in kind are food grain per labour household (3.26 Kg per adult worker, 2.44 Kg per dependent, 1.22 Kg per child per week); firewood per tea labour household (2.20 Cft per annum); dry tea per tea labour household (900 gram per month) and welfare facilities per tea labourer (1 blanket; 1 mosquito net; 1 pair of sleepers; 1 apron; 1 pair of gloves per annum) refer to Appendix B. Currently, a permanent tea labourer receives ₹ 232 in Brahmaputra valley as cash wage while ₹ 210 in Barak Valley for per day minimum eight hours of work in the field or for plucking 24 Kg of tea leaf per day (Labour Welfare Department, GoA, 2022).

As per the report of TBI (2015), tea plantations in India are managed by four ownership structures of firms viz. Public Limited Company (PLC), Proprietorship Firm (PROP), Public Sector Undertaking (PSU), Partnership-based Firm (PBF). PLC is the legal designation of a limited liability company that offers shares to the general public and has limited liability. PROP is a business that legally has no separate existence from its owners and it is not a legal entity. In PROP business the individual who owns the business is personally responsible for its loss and debt with unlimited liabilities. A company or a farm where a majority of the stake (more than 50%) is owned by the central or state government is known as PSU. PBF refers to a formal arrangement by two or more parties to manage and operate a business and share its profits. Initially, two ownership structures of plantations viz. PLC and PROP firms were selected for their significance[8] in the share of Assam tea sector. In the next stage, three tea growing regions viz. Upper Assam, North Bank, and Cachar were decided for their importance in the concentration of tea plantations, the area coverage, and labour employment (Appendix A, C and D). Subsequently, the districts were decided viz. Dibrugarh district from UAR, the Biswanath, Lakhimpur, Dhemaji, and Udalguri districts from NBR, and the Cachar district from CR. The rationale for the selection of four districts from the NBR was due to the unavailability of the required number of PROP tea plantations in a particular district of the NBR (Refer to Appendix A). Next, non-contiguous tea plantations (gardens) were selected from the PLC and PROP ownership structure firms spread over three tea growing regions in six districts of Assam. The present study has selected 36 non-contiguous tea plantations (gardens) by opting 18 each from PLC and PROP ownership structures. Finally, 6-11% of tea labourer households from the

[8] As per the report of the TBI (2015), nearly 53.46% of the tea plantations in Assam belong to PLC ownership structure, while 32.99%, 10.43% and 3.13% were under PROP, PBF and PSU ownership structures respectively (refer to Appendix A).

sampled tea plantations were selected randomly for the primary survey. The household selection was done randomly from the non-contiguous labour lines of sampled tea plantations. The field survey was administered for permanent resident tea labourers by conducting interviews with male or female heads of the household. Thus 204 labourer households were interviewed from each tea growing region with a break up of 102 from PLC and 102 from PROP ownership structure of plantations. In total 612 permanent resident tea plantation labourer households[9] were selected, with 306 households from PLC and 306 from PROP ownership structure of plantations in Assam. The primary data were collected with a structured interview schedule by conducting personal interviews during January 2019 till November 2019. The map of the study area showing the sampled districts and blocks is presented in Figure 2.1.

[9] Tea plantation labourer household in the present study refers to those labourers residing inside the tea plantations with their family. Present study was confined to only field labourer (non-factory work such as pruning, plucking, cleaning forest, field preparation, planting Guatemala and tea nurseries, etc.). They are engaged in Assam tea plantation as intergenerational labourer since the British colonist brought them to Assam from other parts of India to work in the plantations. They live in the labour quarter provided by the tea garden management or self-constructed temporary houses on unregistered land allotted to them till their service period. One or more members of a household are employed in the tea plantations as permanent labourer. Apart from permanent labourer, some members of a household are also engaged as casual basis during the peak plucking season (June-October). Our sample includes only those households who have at least one member of the family engaged on permanent basis in tea plantation; it can either be male (father) or female (mother) or both.

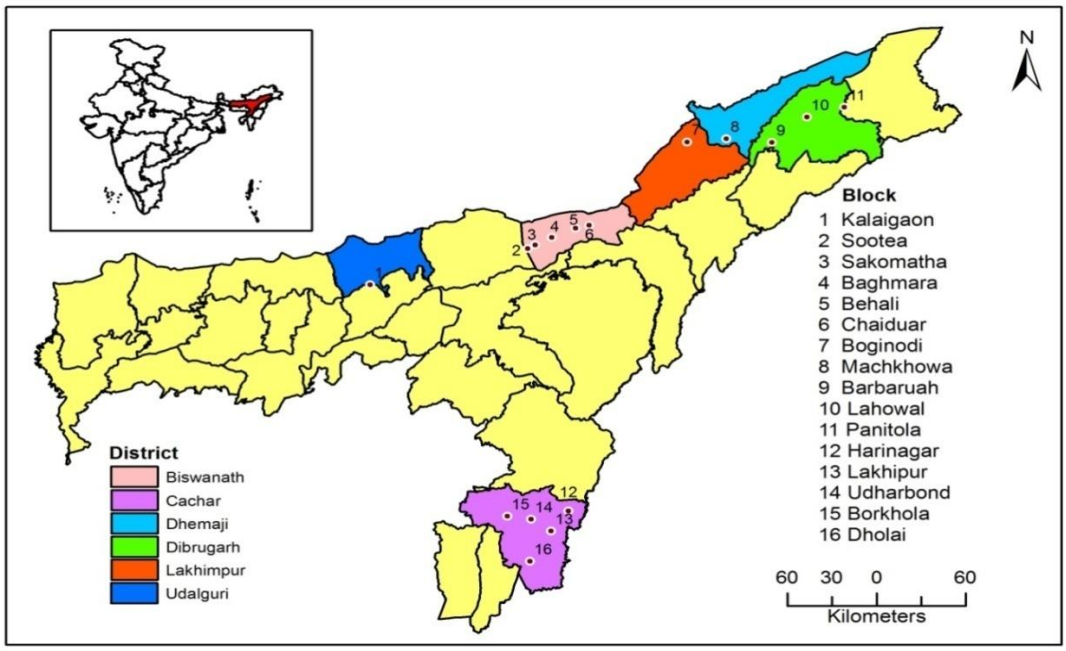


Figure 2.1 Map of Sampled Districts and Blocks in Assam

2.3 Empirical Analysis

This section has been fragmented into various sub-sections. In order for examining the economic status of labourers engaged in the two different ownership structures of tea plantations, the present study used various indicators like ownership of asset, access to basic amenities, and also time for leisure among the labour household. The subsequent sub-section covered the methodology for estimating the occupational mobility of the labourer. The final sub-section of this chapter provided a methodological framework for poverty and inequality used in this study.

2.3.1 Asset Ownership Index

The estimation methodology for asset ownership status among the labourer household has been covered in this section. The present study has considered ownership of ten items as assets viz. By-cycle, electrical fans, mobile phones, television, agricultural land, and livestock such as cows, goats, pigs, hens, and ducks are seen to be considered

as major assets for the tea labourers in the study area. Production assets enable the household to generate further income directly, while consumption assets do not directly assist the income generation process, and hence the labourer households are expected to hold more production assets as compared to consumption assets given the uncertainty in earning (Thapa, 2012).

Having collected the data on ownership of assets as listed, an asset ownership index (AOI) for households has been constructed. A similar set of experiments was done in the study of Thapa (2012), and Bhowmik and Chouhan (2013). The correlation between the monthly income of the households and the possession of these assets as weights and the formula to obtain the asset index is as under;

$$AOI = \sum[(r_1^* AgriLand) + (r_2^* Cow) + (r_3^* Goat) + (r_4^* Pig) + (r_5^* Hen) + (r_6^* Duck) + (r_7^* Bi - cycle) + (r_8^* Electrical\ Fan) + (r_9^* Mobile\ Phone) + (r_{10}^* Television)]/10 \quad (1)$$

Where, r_1, r_2, r_3, r_4, r_5, r_6, r_7, r_8, r_9, r_{10} are the value of correlation between the monthly income of the households and assets possessed by the tea labourer households. Then the value of the AOI can be obtained through normalization by using the formula;

$$\frac{(\text{Observed value} - \text{Minimum value})}{(\text{Maximum value} - \text{Minimum value})} \quad (2)$$

The value of the AOI varies from $0 \leq AOI \leq 1$. When the value of AOI is closer to 0 indicates the low level of possession of assets and the value closer to 1 is considered a higher level of possession of assets among labourer households. The asset index is further decomposed into the production and consumption asset index. The present study considered assets such as by-cycle, electrical fans, mobile phones, and television are

considered as consumption assets, while agricultural land, cows, goats, pigs, hens, and ducks as production assets.

2.3.2 Basic Amenities Index

In order for understanding the level of living among the labourer the basic amenities index (BAI) has been constructed. Following a study by Thapa (2012), the BAI has been calculated by considering the type of houses; availability of water and sanitation facilities, and types of kitchens.

$$\text{BAI} = \sum[(No.ofrooms\ in\ household * typeofhouse) + (2^{*}access\ toiletfacilities) + (1^{*}access\ ofbathroom) + access\ to\ water\ (2^{*}own\ water\ point\ or\ 1^{*}sharing) + kitchentype(2^{*}seperate\ kitchen\ or\ 1^{*}in\ living\ room)]/5 \quad (3)$$

Where, types of houses are 1 for kutcha, 2 for semi-pucca, and 3 for pucca houses. For availability of toilet and bathroom, water point and kitchen. The value of 1 is given if the household has these facilities and the value of 0 if they do not have it. The value of 2 and 1 represents the weights associated with the availability of toilet facilities and the availability of bathroom facilities indicating greater importance of toilet facilities over bathroom facilities. The value of 2 and 1 represents the weights associated with the availability of their own water point and sharing water point respectively, and the value of 2 represents the accessibility of a separate kitchen by the household, and the value of 1 if the household have the kitchen in the living room indicating greater importance of separate kitchen from living over the attached kitchen within the living room. It is a well-known fact that permanent resident labourers in the tea plantation sector of Assam are solely dependent on tea garden management for availing of some basic amenities and facilities such as housing, water, and sanitation. Hence we try to examine the reach

of such facilities among the resident labourer by estimating the BAI. Kumar (2014) mentioned access to basic amenities like drinking water, sanitation, and housing facilities are crucial for an individual as they contribute to their physical well-being and quality of life.

The value of BAI has been obtained through normalization by using the formula as under;

$$\frac{(\text{Observed value} - \text{Minimum value})}{(\text{Maximum value} - \text{Minimum value})} \qquad (4)$$

The value of BAI lies between $0 \leq BAI \leq 1$. Where the value of BAI is closer to 0 indicates a low level of basic amenities facilities and a value closer to 1 is considered as a higher level of basic amenities facilities among labourer households.

2.3.3 Leisure Time

Following the pioneering work by Becker (1965), considerable studies has been carried out to understand the time allocation behavior of individuals toward household welfare. Scholars have long been recognized the connections and potential relationships between leisure and welfare in varied terminology (Mansfield et al., 2020). Liu and Da (2019) maintained that happiness is closely associated with leisure time, leisure space, and leisure activities. On the other hand, a scholarship by Wooden and Bardasi (2006) stated that if an individual does not have enough time for rest and leisure after working whether in the labour market, for domestic work or for other activities regarded as time poverty. A considerable number of researchers have claimed that leisure time defines the standard of living, quality of life, and socio-economic well-being of an individual or a household (Riddell, 1990; Llyod and Auld, 2002; Wooden and Bardasi, 2006; Kalenkoski et al., 2011; Liu and Da, 2019; Chick et al., 2023). The theoretical

underpinning for leisure time has been illustrated using a utility maximization model. Let the utility function faced by a labourer be;

$$U = f\ (Y, L)$$

Where; Y is the real income of the individual; L is leisure time; U is the utility level associated with an alternative combination of L and Y

The indifference curve (IC) for the utility function would be downward sloping because the individual is willing to give up some income to receive additional leisure.

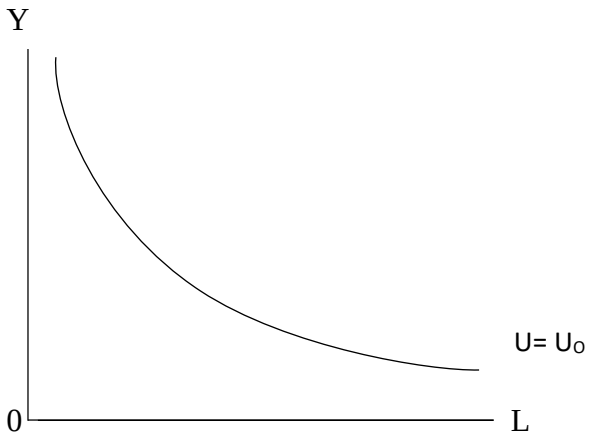


Figure 2.2

Individuals attempt to achieve the highest possible level of utility. The choice among alternative level of Y and L, however, is restricted due to two constraints; time constraints and goods constraints. The time constraint is given by

$$H + L = T \qquad (5)$$

Where,

H is hours of work; L is hours of leisure; T is total time available.

The goods constraints can be defined as;

$$pY = wH \qquad (6)$$

This equation states that the total spending (pY) must equal earnings (wH).

Where,

p is the price index of real income; Y is real income; w is wage rate.

Thus two equations must be satisfied are;

$$H + L = T$$

$$pY = wH$$

Rewriting (5) as;

$$H = T - L \qquad (7)$$

Replacing (7) in (6)

$$Py = w\,(T - L)$$

$$pY = wT - wL$$

$$wT = pY + wL \qquad (8)$$

Equation (8) is called the full income constraint. Economists defines full income as an individual's maximum income potential. Equation (8) states;

$$Full\ Income = [Total\ explicit\ cost\ of\ goods\ and\ services + Total\ implicit\ cost\ of\ leisure\ time]$$

An alternative form of equation (8) can be written as;

$$pY = -wL + wT$$

$$Y = \left(\frac{-w}{PP}\right) \mathrm{L} + \left(\frac{w}{P}\right) \mathrm{T} \qquad (9)$$

This equation describes the relationship between hours of leisure and real income. Equation (9) is the individual budget constraint. The intercept of the budget constraint on the horizontal axis equals T. This is the maximum amount of leisure time an individual can receive. This is shown in Figure 2.3;

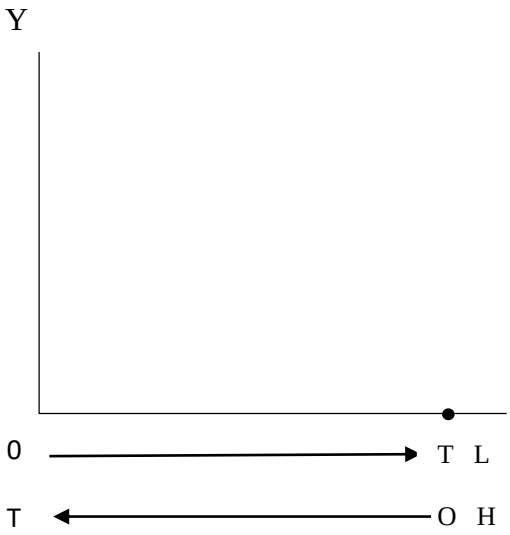


Figure 2.3.

Notice H and L can be measured along the horizontal axis. The level of work effort decreases from T to 0 as the level of leisure time rises from 0 to T. The equation (9) can be shown in Figure 2.4;

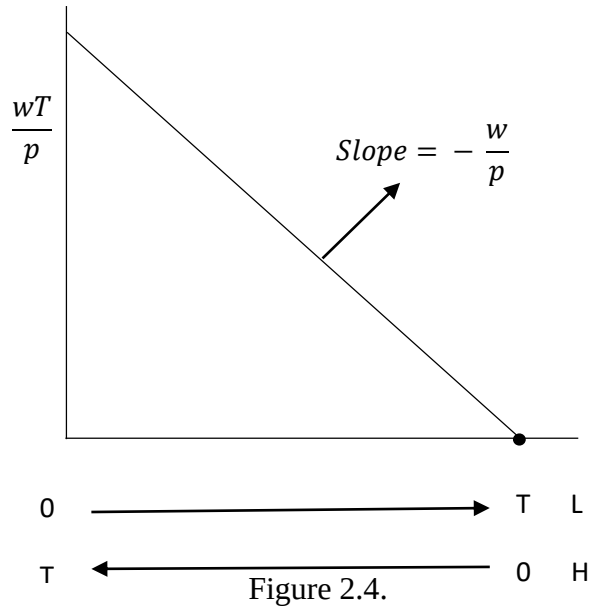


Figure 2.4.

Now the optimal combination of L and Y took place at the tangency of the highest possible IC and the budget line as shown in Figure 2.5. Graphically, the optimal combination of real income (Y*) and leisure (L*) is obtained at the tangency. At this level, the individual chooses to work H* hours.

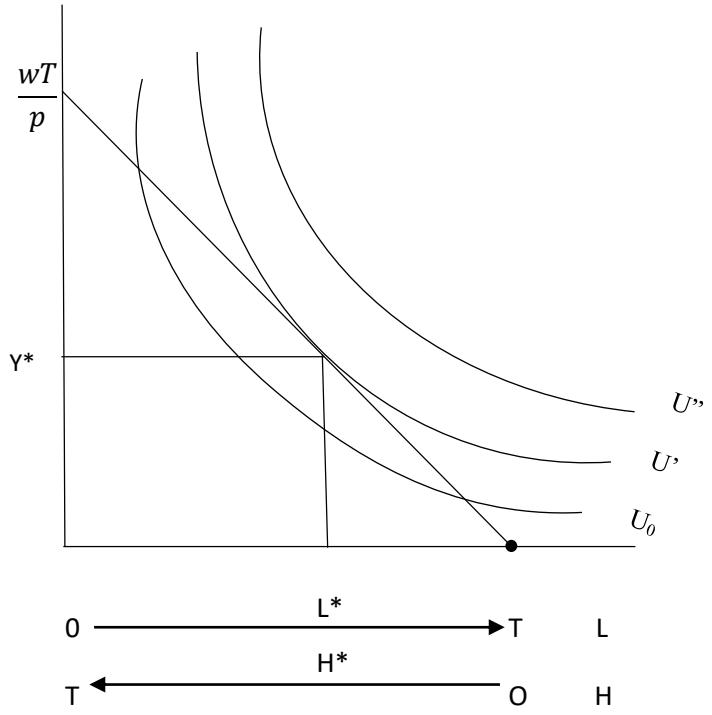


Figure 2.5

With such theoretical backdrop, the present study endeavors to investigate the leisure time among the tea plantation labourers engaged in different ownership structures of tea plantations in Assam. In order to find out the average time spent by tea labourers in different types of activities such as non-market domestic activities, working hours in the tea garden, and leisure time among labourers, descriptive statistics were used. Under non-market domestic activities, we include daily household chores and management activities such as cooking, laundry, cleaning and repairing works in the household, shopping, gardening, caring for children, and attending the elderly and ill members of the family. The time spent working at tea plantation consists of eight hours working daily along with commuting time to and from labourers residences to their workplace.

The leisure time among labourers includes time spent on sleeping, entertainment and social media, recreational activities, and socializing with family and friends. We exclude the time spent on self-preparation by the individual such as bathing, personal care, eating, and drinking as leisure hours.

We have also captured factors determining leisure time among tea plantation labourers in different ownership structures of tea plantations by using multiple linear regression analysis.

$$LT_i = \beta_0 + \beta_i X_i + U_i \qquad (10)$$

Where, *i* indices 1, 2……612 sampled tea plantation labourer households in Assam. *LT* represents the amount of time that the respondent allocated for leisure.

β_o is the constant term.

β_i is coefficient of explanatory variables

X_i is the vector of explanatory variables that may likely influence the leisure time of labourers namely such as gender, age, years of schooling, family size, monthly per capita income, asset ownership, access to agricultural land, ownership structures of tea plantations, and locational dummies such as UAR, NBR, and CR. The CR has been considered as the reference category in the present study.

U_i is the well-behaved error term with $U_i \sim IIND\ (0, \sigma_u^2)$

Rewriting equation (10) as follows;

$$LT_{\mathrm{i}} = \beta_0 + \beta_1 GEN_i + \beta_2 AGE_i + \beta_3 YOS_i + \beta_4 FS_i + \beta_5 FFPI_i + \beta_6 AO_i + \beta_7 AL_i + \beta_8 OS_i + \beta_9 UAR_i + \beta_{10} NBR_i + U_i \quad (11)$$

The model includes ten explanatory variables such as socio-demographic, economic, and enabling factors associated with the labourer household. It is assumed that the gender (GEN) of an individual is an important predictor of leisure time. Conventional wisdom avers that males have significantly more leisure time than females (Shaw, 1985; Bittman and Wajcman, 2000; Šikić-Mićanović et al., 2021). The Age (AGE) is conjectured to have a positive association with leisure time as the elder adults who usually participated in leisure activities have a greater than those of young adults (Garrido et al., 2022; Zhao et al., 2023). We assume that greater years of schooling (YOS) of labourers are associated negatively with leisure time. Ye (2021) found that a higher level of educational attainment is associated with less time spent on leisure and more time on work. The family size (FS) of a household generally influences (negatively or positively) the leisure time of tea labourers in the study area. We conjecture that the leisure time is less in families which are large in size, while small family size has a probability to increase the leisure time among the labourer. It is hypothesized that a higher level of family per capita income (FPI) is expected to yield greater time for leisure among the labourer. Ruben and Ruiter (2010), Borodulin et al. (2015), and Saksiriruthai and Pholphirul (2018) stated a direct relationship between higher level of income and leisure time. The same is true for the ownership of assets (AOS) by a household as Weagley and Huh (2004) maintained that the presence of assets in a household is likely to significantly increase leisure time. The access to agricultural land (AGL) by tea labourer households is assumed to have a negative or positive association with leisure time among the labourer. Further, the ownership

structures of tea plantations (OS) is assumed to be a negative or positive predictor for the leisure time of labourer. The study asserts the location of the tea plantation may have some influence (negative or positive) on the leisure time among tea plantation labourers in the study area. Since the study was carried out in three tea growing regions of Assam, we considered two locational dummies viz. UAR and NBR while considering CR as the reference category.

2.3.4 Intergenerational Occupational Mobility

The intergenerational occupational mobility among permanent tea plantation labourers across different ownership structures of tea plantations in Assam has been measured using transition matrices. Every element in transition matrices represents the workers in different occupations as the proportion of the total number of adult children of fathers in the same occupation *i.* The transition matrices have been popularly used in the works of Matras (1960), Lanjouw (1992), Emran and Shilpi (2011), Mishra et al. (2011), Mishra et al. (2012), Torche (2014), Iversen et al. (2016), and Dipshikha (2018) for examining occupational mobility of labourer. The elements of the intergenerational occupational matrix can be obtained using the formula in equation (12)

$$\beta_{ij} = \frac{\sum M_{ij}}{\sum M_j} \qquad (12)$$

Where,

$\sum M_{ij}$ represents the number of workers in the *i* th occupation whose fathers were in inoccupation *j* and $\sum M_j$ represents the total number of workers whose fathers were in inoccupation *j*. The β_{ij} represents transition probabilities from the father's to the adult

children's occupation. The diagonal element β_{ij}: $i = j$ represents the proportion of workers who have followed the same occupation as their father. Thus, $1-\beta_{ij}$, $i=j$ is taken as the measure of occupational mobility among the adult children of the father who were in occupation j. In order to estimate the intergenerational occupational mobility matrices, we have identified nine different types of occupation categories as commonly found in almost all tea plantations in the study area, and a summary of the same is reported in Appendix E.

With the aim of this study is to understand the occupational mobility of tea labourers as they opted for diversified employment opportunities as per their eligibility. Though tea plantation has remained as the mainstay of livelihood for the intergenerational labourer, but there has been a growing tendency among adult family members in searching for alternative engagement opportunities given the limited scope for earning in tea plantations (Mishra et al., 2012). Since there is lack of consensus on the occupational characteristics of tea labourer and their family members in the existing literature on how workers category has to be empirically classified. Following the study by Mishra et al. (2012), and Dipshikha (2018) the classification of occupation among tea labourers and their family members was done based on their engagement. For the present study, we decided nine occupational categories viz., permanent tea labourer, casual tea labourer, low-paid daily wage non-farm labourer, skilled non-farm labourer, private salaried services, government services, self-employed, cultivators and migrated workers (Appendix E). These nine occupational categories were confirmed after a few rounds of pilot survey in primary tea growing districts of Assam.

A logit regression model has been estimated for examining the factors determining intergenerational occupational mobility among the sampled tea labourers of the study area. Logistic regression is a widely used multidimensional method for modeling dichotomous relations (Ciecka and Donley, 1996; Mishra et al., 2012; Bennouna and Tkiouat, 2019; Zahi and Achchlab, 2020; Jain et al., 2020). It is a suitable method for decision-making issues and is often used in statistical analysis appearing in the economics and finance literature Strzelecka et al. (2020). The model fitted for the determination of occupational mobility among the sampled tea labourers in the study area is specified in the equation below;

$$L_i = Ln\left(\frac{P_i}{1-P_i}\right) = Z_i = \lambda X_i + U_i \qquad (13)$$

Where, L stands for the log of odds ratio

[P_i /1-P_i] is the odds ratio in favour of the adult children of tea plantation labourers who have engaged in an occupation outside the tea plantations.

X is the vector of independent variables. These variables include gender, age, family size, years of schooling, fathers' occupation, family monthly PCI, dependency ratio, skills of sons/daughters, distance to town, ownership structures of tea plantations, and geographical locations.

The generalized functional form of the model in equation (13) is as under;

$$Z_i = ln[\frac{p_i}{1-p_i}] = \lambda_0 + \lambda_1 GEN_i + \lambda_2 AGE_i + \lambda_3 AGE_i^{\,2} + \lambda_4 FS_i + \lambda_5 YOS_i + \lambda_6 FOC_i + \lambda_7 FPI_i + \lambda_8 DR_i + \lambda_9 SOSD_i + \lambda_{10} DOT_i + \lambda_{11} OS_i + \lambda_{12} NBR_1 + \lambda_{13} UAR_2 + U_i \qquad (14)$$

Where, *i* is indices1, 2……612 sampled tea plantation labourer households in Assam.

Equation (14) is called log of odds ratio with (Z_i) in the present case is considered as a dichotomous variable such that,

Z_i=1 if the adult children of tea plantation labourer have engaged in an occupation outside the tea plantation work; =0 otherwise.

λ_o is constant term.

λ_i is coefficient of explanatory variables.

U_i is the well-behaved error term

Similarly, another model was estimated with Z_i as the dummy variable representing upward mobility that takes the value 1 if the average wage rate of adult children working outside the plantation is higher compared to the wage rate of labourer working in the tea plantations and 0 otherwise, either for individuals who witnessed downward mobility or retained within the same wage rate as tea labourer.

The model includes thirteen explanatory variables which are socio-demographic, economic, and enabling factors associated with the labourer household. It is anticipated that the probability of occupational mobility varies with gender (GEN); with occupational mobility assumed to be higher among male labourers relative to their female counterparts. Luke (2021) mentioned females have little choice in their employment, as the majority of them are pre-occupied with household unpaid work and family responsibilities due to traditional and cultural practices, which restrict their physical mobility. It is generally assumed occupational mobility declines with age; while age-square (AGE^2) is also considered to verify if the possibility of mobility declines after a certain age and allows us to model it more accurately (Mitra, 2006; Bachmann et al., 2020). The family size (FS) is normally anticipated to have sign

indifferent association with occupational mobility, while we predict that the probability of occupational mobility may increase as family size increases (Bavel et al., 2011). The years of schooling (YOS) of adult children are conjectured to have a direct association with occupational mobility among them. Bachmann et al. (2020) confirmed that occupational mobility increases with the level of educational attainment while higher educational attainment by adult children of tea labourer households allows them to move out of the plantations in search of alternative employment opportunities due to the unavailability of suitable employment opportunities in tea plantations (Mishra et al., 2011). The father's occupation (FOC), those engaged outside the tea plantations, is likely to encourage sons/daughters to get absorbed in wage employment beyond plantation work. A study by Singh et al. (2021) has found that the occupational choice of children is strongly influenced by their father's occupation in India. Gurung (2021) opined that an increase in total household income is more likely to enjoy greater resilience capacity than those households reliant on tea gardens income. Thus, the dependency of labourers on tea plantation work for their livelihood is likely to decrease with an increase in family monthly PCI (FPI), thereby the family members of such labourers household move outside the plantations for better wage work. The occupational mobility of labourers outside the plantations is assumed to be a positive association with the dependency ratio[10] (DR). Bilsborrow (1977) maintained that an increase in dependency ratio was associated with higher labour force participation urged by financial requirements for feeding more children and the elderly. The majority

[10] Following Harasty and Ostermeier (2020) the dependency ratio (Dr) has been calculated as follows:

$$Dr = \left(\frac{\text{Non working age population}}{\text{Working age population}}\right)$$

Where, Non-working age population is the aggregate of number of persons below the age of 15 years and number of persons aged above 64 years in a household. While number of persons in the age group 15 to 64 years in a household has been considered as a working age population.

of the tea plantation field-based work requires limited skill (Sharma, 2018); hence the skilled family members of tea labourer search for better employment opportunities outside the tea plantations. Therefore, the skill of son's/daughter's (SOSD) is assumed to be a positive predictor of occupational mobility. Proximity to the township (DOT) is normally expected to positively influence the occupational mobility of labourers, as it may provide numerous avenues for employment opportunities outside the plantation (Mishra et al., 2012). As the aim of the study is to understand if occupational mobility among family members of tea labourers has any association with the ownership structure (OS) of tea plantations, the ownership dummy has been introduced. Roy and Biswas (2019) argued that the provision for labour welfare facilities across the tea plantations depends largely on the ownership structures, despite operating under PLA (1951), the tea plantations managed by different ownership structures have different management policies and welfare provisions for their workforce in West Bengal. The study asserts the location of the tea plantation may have some influences (negative or positive) on the occupation mobility of adult children of tea plantation labourers in the study area. Since the study was carried out in three tea growing regions of Assam, we considered two locational dummies viz. UAR and NBR while considering CR as the reference category.

2.3.5 Poverty and its Determinants

For having an understanding about the condition of economic backwardness among tea plantation labourers in the study area, we used descriptive statistics, parametric and non-parametric test, and composite indices. The severity and incidence of poverty among labourers in different ownership structures tea plantations of the state is

examined using the poverty line as suggested by the Tendulkar Committee[11] (2011-12) and Planning Commission popularly known as Rangarajan Committee[12] (2014) on the basis of monthly per capita consumption expenditure (MPCE). The measurement of poverty via MPCE has been popularly used in Dandekar and Rath (1970), Bardhan (1973), Minhas (1971), Visaria (1980), Sitaram et al. (1996), Anne and Deaton (2002), Kumar and Aggarwal (2003), Srivastava and Mohanty (2012), Guha (2019), Heshmati et al. (2019), and Ram and Yadav (2021). The poverty line is the most appropriate tool to identify the poor and non-poor from the MPCE data sets. The measurement of the poverty line in examining poor and non-poor has been used in studies of Minah (1970), Bardhan (1971), Sen (1976), Preston (1995), Pradhan and Ravallion (2000, Deaton and Dreze (2002), Ravallion and Chen (2008), Ravallion et al. (2009), Pokharel (2015), Heshmati et al. (2019), Summer et al. (2020), and Ram and Yadav (2021). Under the backdrop of examining poverty using consumption expenditure of cross-sectional households, following Naga and Bolzani (2006) the consumption poor is defined by a set as follows;

$$C_z = \{i: C_j \leq S_c\} \tag{15}$$

Where, C_Z stands for consumption poor; S_c stands for expenditure poverty line; C_j stands for per capita consumption expenditure (considering C_p component of Permanent Income Hypothesis only) of the j^{th} household.

[11] The Tendulkar Committee (2011-12) has stipulated a benchmark daily per capita expenditure of ₹ 27 and ₹ 33 in rural and urban areas respectively, or ₹ 816 per capita per month in rural areas and ₹ 1,000 per capita per month in urban area in the country as whole. While in Assam, it is ₹ 828 per capita per month in rural area and ₹ 1008 per capita per month in under area.

[12] As per the latest report submitted by Rangarajan Task Force (2014), the Planning Commission of India has introduced the new poverty line that is ₹ 32 per day for rural area and ₹ 47 per day for urban areas of the country on the basis of per day per capita or on the basis of monthly per capita consumption expenditure (MPCE) for ₹ 972 in rural areas and ₹ 1,407 in urban areas as the poverty line at the all-India level.

The present study selected only a few necessary food items (such as rice, wheat, salt, pulses, milk and products, salt, sugar, edible oil, meat and products, vegetables, fruits, and spices) which are permanently consumed by the labourer households. The study considered some necessary non-food items (toiletries and washing, fuel, medical expenses, conveyance, rent, clothing, footwear, expenses on education, bedding, electricity bill, and recreational) that are permanently used across the labourer households. Such items (food and non-food items) were confirmed after a few rounds of pilot survey with labourer households in primary tea growing regions of Assam. Such items as permanently demanded in consumption baskets by labourers across different ownership structures of tea plantations of the state. The uniform list of items in the basket has been considered across cross-sectional households. In order to control for the effect of quality differences in the consumption of any item across the household, the present study considered the average price of a particular variety of items. The expenditure on a particular variety of items for a household is obtained by multiplying the average price of that particular variety of items by the quantity of that item used or consumed. The same exercise is applied for the basket of items used by a family to arrive at total consumption expenditure through the summation of the basket of items used or consumed by that household. In order to control for inflation in the consumption data, the monthly consumption expenditure is deflated using the average consumer price index (CPI) number for agricultural labourers (1986-87=100).

Of course, the practice of evaluating poverty using MPCE is not free from limitation given the possibility of over estimation or underestimation of the level of living as per capita consumption expenditure ignores the household composition that is the number of children and adults in the household. Moreover, children usually need to have lower amount of food and other items compared with their adult counterparts. However, a

household with children may spend more on education while the adult in the same family would be spending a large share in consuming intoxicants (such as tobacco, alcohol, etc.). Therefore, measurement of household poverty through monthly per capita expenditure only confers the household level poverty rather than at the individual level, because an actual share of food and non-food items among adults and children differs within a family. Given the possibility of such error associated with over or under-estimation of poverty, the importance of estimating poverty not only in per capita terms but also at an individual level by obtaining the Adult Equivalence Scale (AES) has been emphasized by social scientists. Household equivalence scales, in theory, provide a way to meaningfully compare material levels of living across households with different demographic compositions whereby the definition of such scales is important to the study of income distribution Nelson (1992). However, estimating poverty in per capita terms ignored the economies of scale in consumption often do exist as the household members share certain goods (Deaton, 2003). If a family size increases, the family may share a certain amount of goods resulting in the occurrence of economies of scale in that particular household such as housing rent, purchase of goods in bulk, and other goods. Thus the cost of children relative to adults and the extent of economies of scale are important for poverty and welfare calculations (Deaton, 2003) while White and Masset (2002) expressed that AES gives the consumption requirements of different groups as a proportion of those of an adult and application of this scales can make a difference to both the level and pattern of poverty. In addition, a better alternative is to scale the required poverty line income for households with children in terms of the number of equivalent adults Kamali and Liu (2013). The works of Deaton and Muellbauer (1980, 1986), Nelson (1992), Phipps (1993), Perali (1999), Bittman and Goodwin (2000), Majumdar and Basu (2006), and Streak et al. (2009) have popularly

used AES. The present study has used AES given by Stone (1953) for obtaining individual level poverty among the labourers in different ownership structures of tea plantations of Assam as it provides the per adult consumption expenditure at the individual level in a household (refer to Appendix F).

For understanding the incidence of poverty among labourers across the different ownership structures of tea plantations in the study area, Sen's Index has been calculated. Sen (1976) proposed an axiomatic approach to poverty research and a specific index that sought to combine the effects of the number of poor, the depth of their poverty, and the distribution of poverty within the group. Later it was used in number of research works on poverty such as (Ahluwalia 1977; Osberg and Xu, 1999; Osberg and Xu 2000; Myles and Picot, 2000; Osberg, 2000; Liberati, 2015; Guha, 2019; Charlier and Legendre, 2019). Following the study by Osberg and Xu (2002), Sen's Index (SI) has been estimated by using the equation given below;

$$\mathrm{SI} = \mathrm{H_o PGI_1^p}\,(1 - \mathrm{G^p}) \qquad (16)$$

Where, H_o is the headcount index, PGI_1^p is the poverty gap index calculated over poor individuals only, and G^p is the Gini coefficient of inequality among the poor. The value of SI varies between the limits of 0 and 1 ($0 \leq SI \leq 1$). If the value of SI is closer to 0 indicates the intensity or incidence of poverty is low and if the value of SI is closer to 1 indicates the intensity or incidence of poverty is high.

For having a comparative analysis of the incidence of poverty among labourers in different ownership structures of tea plantations the present study used parametric and non-parametric test. The binary regression model has been used for the identification of the determinants of poverty in the study area. Studies by Adelman et al. (1985), Gaiha (1985), Friedman and Lichter (1998), Achia et al. (2010), Rusnak (2012), Borko

(2017), Gallardo (2020), and Sravanth and Sundaram (2022) attempted to identify the determinants of poverty using a regression model with the qualitative dependent variable.

The probit regression model is a popular specification for an ordinal or binary response model. It was introduced by Bliss (1934), and a fast method for computing maximum likelihood estimation for them was proposed by Fisher (1935). The probit regression model used for measuring the determinants of poverty in several studies (Lanjouw and Ravallion, 1995; Gerfin, 1996; Fisher, 2005; Olivia et al., 2011; Islam et al., 2016; Caglayan-Akay and Sedefoglu, 2016; Puurbalanta and Adebanji, 2016, Gallardo, 2020; Sravanth and Sundaram, 2022). The probit regression function can be specified as follows;

$$\Pr(Z = 1/X) = \phi\,(X'\Omega) \qquad (17)$$

Where, Pr denotes probability and ϕ is the cumulative distribution function (CDF) of the standard normal distribution. The parameters β are typically estimated by maximum likelihood.

It is possible to motivate the probit model as a latent variable model suppose there exists an auxiliary random variable

$$Z^* = (X'\Omega + \varepsilon_i) \qquad (18)$$

Where $\varepsilon \backsim N(0, 1)$, the Z can be viewed as an indicator for whether this latent variable is;

$$Z = \begin{cases} 1 \; if Z^* > i.e.\; \varepsilon < X'\Omega \\ 0 \quad Otherwise \end{cases}$$

In order to examine factors determining poverty among different ownership structures of tea plantation labourers, the following equations is formulated;

$$Z_i = \Omega_0 + \Omega_i X_i + \varepsilon_i \qquad (19)$$

Where, *i* indices 1, 2……612 sampled tea plantation labourer households in Assam.

Z_i is considered as a dichotomous variable such that,

Z_i= 1 if the individual is poor, = 0 otherwise

Ω_0 is constant term.

Ω_i is coefficient of explanatory variables.

X_i is a vector of individual-specific control variables representing the characteristics of the individual members in the sample. These variables include gender, age, experience, years of schooling, family size, dependency ratio, asset ownership, distance to town, access to agricultural land, leisure time, occupational mobility, ownership structures of tea plantations, and geographical locations.

ε_i is the well-behaved error term.

Equation (19) also be written in the generalized functional form of the model as under;

$$Z_i = \Omega_o + \Omega_1 GEN_i + \Omega_2 AGE_i + \Omega_3 EXP_i + \Omega_4 YOS_i + \Omega_5 FS_i + \Omega_6 DR_i + \Omega_7 AOS_i + \Omega_8 DOT_i + \Omega_9 AGL_i + \Omega_{10} LR_i + \Omega_{11} OM_i + \Omega_{12} OS_1 + \Omega_{13} UAR_i + \Omega_{14} NBR_i + \varepsilon_i \qquad (20)$$

The model includes fourteen explanatory variables which are socio-demographic, economic, and enabling factors associated with the labourer household. It is anticipated that the probability of being poor varies with gender (GEN), as the incidence of poverty is assumed to be higher among female-headed households. Studies by Muleta and Deressa (2014), and Jayamohan and Kitesa (2014) maintained that female-headed family is more vulnerable to poverty relative to their male counterparts in Ethiopia. It is generally assumed incidence of poverty increases or decreases with age. Such a relationship may be because of life cycle impact, in a family with more teenage members, may be subject to poverty than a family with more adults, because more teenage means fewer earning members relative to that families with more adults. The years of schooling (YOS) of household head is conjectured to have a negative association with poverty among them. Herman and Georgescu (2012), and Wanka and Rena (2019) confirmed that a low level of educational attainment is strongly associated with a higher incidence of poverty. The family size (FS) is normally anticipated to have a sign indifferent association with the prevalence of poverty, while we predict that a larger family size is likely to increase the probability of a household being poor (Lanjouw and Ravallion, 1995; Rahman, 2013). However, the opposite is possible in a small family as there would less number of earning members. The probability of being poor among labourers is assumed to have a positive association with the dependency ratio (DR). Scholarship by Shaukat et al. (2020), and Rahman (2013) claimed that households having a higher dependency ratio likely to have a positive association with poverty. Asset ownership (AOS) by a household is predicted to have an inverse relationship with the incidence of poverty (Erenstein, 2011). Turning into the distance to town (DOT) from tea plantation labourer households, the proximity to town from labourers' residence is normally expected to be negatively associated with the incidence

of poverty, while the opposite is true for tea plantation households remotely located from the township. Inhabiting in urban proximity allows higher return from job mobility given the higher investment in human capital (Yankow, 2006; Gould, 2007), urban area also allows the availability of numerous avenues for employment opportunities (Mishra et al., 2012) which may contribute towards the reduction of poverty among the labourer households. Access to agricultural land (AGL) is assumed to be a negative predictor of the incidence of poverty among labourers as it play a crucial role in supporting income security through livestock and agriculturally produced may help in minimizing poverty. The availability of AGL allows a family to make some supplementary earnings via agricultural or animal husbandry activities. Gurung (2021) affirms that the availability of agricultural land among labourers is one of the factors determining poverty in tea plantations of West Bengal. Further, we assumed that leisure time (LT) is negatively associated with poverty. Scholarship by Sletten (2009); Karonen and Niemela (2020) found a negative association between poverty and leisure time as lower income people tend to enjoy less time for leisure compared to high income groups of people. At the same time, occupational mobility (OM) among adult children has been predicted to be inversely associated with poverty among tea labourer households in the study area, since occupational mobility of family members results in a greater inflow of funds into the family thereby helping in poverty alleviation. Dubey and Tiwari (2017) stated the importance of occupational mobility in reducing poverty in India is undeniable. With the aim of the study is to understand if the incidence of poverty among tea labourers has any association with the ownership structures (OS) of plantations, so the ownership dummy has been introduced in the regression model. By anticipating sign indifferent relationship of ownership structures of tea plantations with the incidence of poverty. The study asserts the location of the tea plantation may have some influences (negative

or positive) on the incidence of poverty among tea plantation labourers in the study area. Since the study was carried out in three tea growing regions of Assam, we considered two locational dummies viz. UAR and NBR while CR is considered as the reference category.

2.3.6 Inequality and its Determinants

The present study also attempted to examine the consumption inequality among labourers in different ownership structures of tea plantations in Assam. Gini Coefficient and Lorenz Curve have been estimated for examining inequality in the per capita consumption expenditure among the labourer engaged in the different ownership structures of tea plantations in Assam. Studies by Ray, (1985), Pyatt (1987), Lewis and Ulph (1988), Lazaridis (2000), Idrees and Ahmad (2010), Attanasio and Pistaferri (2016), Guha (2019), and Das (2021) used such techniques in the measurement of inequality. The formula for the calculation of Gini Index (GI) is as under;

$$\mathrm{GI} = 1 - \sum_{i=0}^{n-1}(\delta_{i+1} + \delta_i)(\theta_{i+1} + \theta_i) \qquad (21)$$

Where,

δ_i is cumulative population share; θ_i is cumulative consumption share at the individual level of sample tea plantation labourer households. The Gini coefficient varies between the limits of 0 and 1 ($0 \leq \mathrm{GI} \leq 1$). If the value of GI is closer to 0 indicates perfect equality and if the value is closer to 1 indicates perfect inequality.

In the present study, we also try to investigate the major source of consumption inequality among labourers engaged in different ownership structures of tea plantations in Assam. In order to serve this purpose, we analyze the regression-based inequality decomposition (RBID) developed by Fields (2003), and Fiorio and Jenkins (2007).

However, in the early 1970s, the regression-based decomposition of inequality methodology was proposed (Blinder, 1973; Oaxaca, 1973), but failed to develop much interest until the beginning of the 21st century. Subsequently, the traditional method includes the decomposition by income sources and population sub-groups by Shorrock (1982), and Shorrock (1984), which fail to detect and measure the contribution of individual determinants of inequality (Manna and Regoli, 2012). While the RBID approach enables to include of any factors that may derive the observed inequality, for instance, social, economic, demographic, and policy variables (Manna and Regoli, 2012; Tripathi, 2018). Evaluation of inequality using consumption expenditure was attempted in the works of several scholars (Ray, 1985; Garner, 1993; Lazaridis, 2000; Deaton and Dreze, 2002; Attanasio and Pistaferri, 2016). While several studies measure inequality using RBID (Kimhi, 2009; Guanatilaka and Chotikapanich, 2009; Cai et al., 2010; Manna and Regoli, 2012; Pandey, 2013; Tripathi, 2018; Tettey, 2017; Nwosu et al., 2018; Ayyash and Sek, 2020).

Following Fields (2003), Fiorio and Jenkins (2007), we estimated inequality in MPCE among labourers in different ownership structures of tea plantations in Assam using the RBID method. The model specification for RBID is specified as follows;

$$\ln y = \sum_{i=1}^{k} \beta_i X_i + \varepsilon \qquad (22)$$

Where, *y* represents MPCE of tea labourer households, β_i is coefficient of explanatory variables, X_i is the *i*th explanatory variable, and ε is the well-behaved error term. The Fields method estimates the shares of log-variance of income (MPCE) that is attributed to the *i*th explanatory factor (the relative factor inequality weight) as;

$$Z_i = \frac{\hat{\beta}_i \,.\mathrm{cov}\,(X_i, \ln y)}{\phi^2(\ln\, y)} \qquad (23)$$

Where, $\hat{\beta}_i$ is the coefficient of the *i*th explanatory factor estimated from ordinary least square (OLS) multiple regression, $\phi^2(\ln\ y)$ is the variance of the dependent variable and $\text{cov}(X_i, \ln y)$ is the covariance between the *i*th factor and the dependent variable. The sign of Z_i represents whether the contribution of factor X_i is inequality increasing ($Z_i > 0$) or decreasing ($Z_i < 0$). Thus, it holds that;

$$\sum_{i=1}^{k} Z_i = \frac{\sum_{i=1}^{k} \hat{\beta}_i .\text{cov}(X_i, \ln y)}{\phi^2(\ln y)} = \frac{\phi^2(\ln \hat{y})}{\phi^2(\ln y)} = R^2 \qquad (24)$$

When the error term ε of the regression is considered, its inequality contribution is given by the proportion of inequality unexplained by the explanatory variables included in the income (MPCE) regression, such that;

$$Z_i = 1 - R^2 \qquad (25)$$

For estimating the model following Fiorio and Jenkins (2007) the RBID has been done using Fields (2003), and Shorrocks (1982) decomposition formula. The regression model is given as under;

$$LnMPCE_i = \beta_o + \gamma_i X_i + \varepsilon_i \qquad (26)$$

Equation (26) also be written in the generalized functional form of the model as under;

$$LnMPCE_i = \beta_o + \beta_1 GEN_i + \beta_2 AGE_i + \beta_3 YOS_i + \beta_4 FT_i + \beta_5 FS_i + \beta_6 DOT_i + \beta_7 AOS_i + +\beta_8 AGL_i + \beta_9 OM_i + \beta_{10} OS_1 + \beta_{11} UAR_i + \beta_{12} NBR_i + \varepsilon_i \qquad (27)$$

Where, *i* indices 1, 2……612 sampled tea plantation labourer households in Assam.

lnMPCE represents the monthly per capita consumption expenditure of sample tea labourer households.

β_o is the constant term.

β_i is coefficient of explanatory variables.

X_i is a vector of tea labourer household-specific control variables and few enabling factors. These variables include gender, age, experience, years of schooling, family type, family size, distance to town, asset ownership, access to agricultural land, occupational mobility, ownership structures of tea plantations, and geographical locations of tea plantations.

ε_i is the well-behaved error term.

The model includes twelve explanatory variables which are socio-demographic, economic, and enabling factors associated with the labourer household. It is anticipated that the prevalence of inequality varies with gender (GEN); with consumption inequality assumed to be higher among female labourers relative to their male counterparts as a study by Addai et al. (2022) reported a significant gap in food consumption expenditure per capita diversity scores, with female-headed households have greater risk of consumption inequality relative to male-headed households. The PIH by Friedman (1957) implies that inequality in both consumption and income grows with age. Thus it is generally assumed age (AGE) has an important implication on consumption inequality measures. A study by Deaton and Paxon (1994) argued that within a cohort consumption and income inequality do increase with age while Chen et al. (2017) advocated that population aging has an overall effect of increasing inequality within the society and young cohort, where

consumption inequality is higher than income inequality. The relationship between years of schooling (YOS) of household heads and consumption inequality is assumed to be positive. Education has been a dominant contributing factor to inequality in Malaysia (Ayyash and Sek, 2020) and the same is true for India (Tripathi, 2018). The family size (FS) of sample labourer households in the present study is assumed to have a positive association with consumption inequality. The existing literature has confirmed that family size as an important predictor of consumption inequality (Gunatilaka and Chotikapanich, 2009; Bigotta et al., 2015; Ayyash and Sek, 2020). Distance to the township (DOT) from tea plantation labourer residents might influence positively or negatively consumption inequality among labourers in the study area. As it is evident from the earlier study that the income and consumption inequalities among rural households are higher compared to urban families (Noghanibehambari and Rahnamamoghadam, 2020) while urban inequality is much higher than rural inequality in India (Sarma et al., 2017). We also assumed that asset ownership (AOS) by labourer households as a positive predictor of inequality. Asset inequality among households has emerged as a major contributor to overall asset inequality in India (Sarma, et al., 2017). Scholarship by Chakravorty et al. (2019), and Ayyash and Sek (2020) maintained that the positive association between inequality and access to agricultural land (AGL) as the inequality in rural areas is very high which is relied on variation in access to agricultural land (AGL) in Indian and Malaysia respectively. Occupational mobility (OM) of adult children of labourers may add some income to their family's total income that may have a positive or negative impact on consumption expenditure in the study area. With the aim of the study is to understand if consumption inequality among tea labourers has any association with the ownership structures (OS) of tea plantations, the ownership

dummy has been introduced, and we assumed an association of inequality with ownership structures of tea plantations unpredictable. The study asserts the location of the tea plantation may have some influences (negative or positive) on the consumption inequality among sample tea labourers in the study area. Since the study was carried out in three tea growing regions of Assam, we considered two locational dummies viz. UAR and NBR, considering CR as the reference category.

CHAPTER 3

Status of Tea Labour Welfare in Assam

The present chapter has broadly covered the welfare status of tea plantation labourers in Assam from the secondary data collected from various published sources. The chapter has been divided into a few sub-sections. The first section portrays the position of India's tea sector in the global context, while the next section discusses the area under tea cultivation, production, and employment generation in tea plantations of India in general and Assam in particular. The third section examines the status of in-kind compensation facilities among tea garden labourers in major tea growing districts of Assam, while the public fund allocation and physical facility building for tea labourers are presented in the subsequent section of this chapter. The inter-district physical facility building among tea labourers in Assam is covered in Section 3.6, while the outcomes of public fund allocation on various schemes in the tea plantation of Assam are summarised in Section 3.7. The wage rate differential between agricultural labourers and tea labourers in Assam, and the regional wage rate differential in the tea plantations sector of the state has been covered in Section 3.8 of this chapter, and the conclusion is covered in the final section of the chapter.

3.1 Major Tea Growing Nations in the World

China, India, Kenya, Sri Lanka, and Vietnam are major tea growing countries of the world (refer to Table 3.1). Among the major tea growing nations during (2017-2021), the average production of tea was highest in China followed by India, and it was lowest in Vietnam followed by Sri Lanka. In the case of the compound annual growth rate (CAGR) of tea production during the reference period, China was found to be standing at the top position with a figure of 0.042 followed by 0.041 in Kenya, while it was

negative for (-0.006) in Sri Lanka. During the same period, India also witnessed a low rate of CAGR compared with China and Kenya. Looking into the export of tea by major tea growing nations, on an average, the maximum Kg of tea was exported by Kenya followed by China, while India stands at the fourth position in the export of tea in the world during the reference period. The annual growth rate of tea export by Kenya is the highest while India registered a negative growth rate in export during the period under consideration (2017-2021). The plausible reason for such a result may be the fact that India has largest domestic consumer market accounting for nearly 80% of the total tea produced in the country consumed by the native population of India (India Brand Equity Foundation, 2022; TBI, 2022).

Table 3.1 Major Tea Growing Nation in World (2017-2021)

Descriptive statistics/countries		Mean	SD	CAGR
Production (000 Kg)	China	2791070	240609.57	0.042
	India	1330212	47891.08	0.003
	Kenya	499816	53911.72	0.041
	Sri Lanka	499816	53911.72	-0.006
	Vietnam	183200	5805.17	0.006
	Others	884488	25645.25	0.011
Export (000 Kg)	Kenya	493038	53230.63	0.061
	China	360940	8598.52	0.008
	Sri Lanka	277028	10306.93	0.003
	India	233276	27959.72	-0.048
	Vietnam	135982	6522.78	0.007
	Others	366500	8011.10	0.011

Source: Calculated based on data collected from TBI (Various Issues of Annual Report)

3.2 Status of Indian Tea Plantation Sector

Table 3.2 shows the status of the area under plantation, production, and labour employment of Indian tea at the regional level. It can be seen from Table 3.2 that the average area under tea plantation in India during (1953-2021) was 444605.99 hectares with the North Indian region being stand at the top position (349686.94 hectares)

compared to the average figure of 94919.04 hectares of land devoted for tea plantation in Southern part of India. Whereas it is interesting to note that the annual growth rate of the area under tea plantation was lowest in North India when we compare it with South India during the reference period. The average production of tea was largest in North India compared to the South Indian tea growing region, and also the annual growth rate of tea production was found to be highest in North India with figures of 0.024% compared to 0.021% per annum in South India.

Table 3.2 Area, Production, and Labour Employment in Indian Tea Plantation Sector (1953-2021)

Region/ Descriptive Statistics		Mean	SD	CAGR
South India	Area (in Hectare)	94919.04	37100.02	0.018
	Production (000 Kg)	155719.62	62286.44	0.021
	Labour employment	237747.84	88164.73	0.01
North India	Area (in Hectare)	349686.94	84106.9	0.011
	Production (000 Kg)	549567.26	259668.86	0.024
	Labour employment	795346.52	122234.53	0.005
India	Area (in Hectare)	444605.99	117156.02	0.013
	Production (000 Kg)	705286.88	316977.98	0.023
	Labour employment	1033094.40	200720.81	0.006

Source: Calculated based on data collected from TBI (Various Issues of Annual Report)

Turning to the status of daily average labour employment in the tea plantations sector of India, an average of 1033094.40 were daily labourers engaged in the tea plantation sector of India with 0.006% annual growth rate during 1953-2021.

Table 3.3 represents the regional-level number of tea gardens and areas under tea plantations in India during 2022. It can be noticed from the Table that nearly 1567 registered tea gardens are there in India with 421460 hectares of land under tea

plantation during 2022. The percentage shares of the number of tea gardens and the area under tea plantations were found to be highest in Assam followed by West Bengal during the reference year. The least number of tea gardens (1.02%) and area (0.50%) under tea plantations can be seen in Karnataka during the reference year. Thus among the major tea growing states of India, Assam shares the largest area under plantations and has the highest number of tea gardens during 2022.

Table 3.3 Region-wise Tea Gardens and Area under Tea Plantations in India (2022)

Region/States/Descriptive statistics		No. of Tea Gardens	Area (in Hectares)
North India	Assam	762 (48.63)	232961.73 (55.27)
	West Bengal	449 (28.65)	114479.37 (27.16)
	Other North India	116 (7.40)	12115.93 (2.87)
South India	Tamil Nadu	129 (8.23)	29503.85 (7.00)
	Kerala	95 (6.06)	30306.82 (7.19)
	Karnataka	16 (1.02)	2093.00 (0.50)
All India		1567	421460

Source: Calculated based on data collected from TBI (Annual Report TBI).
Note. Figures in parentheses are percentage shares.

The state-wise situation in Indian tea plantation sector in terms of area under cultivation, production, and labour employment is reported in Table 3.4. It can be observed from the Table that the average area under tea plantations was highest in Assam followed by West Bengal, while it was least in Karnataka followed by Kerala during 2000-2014. We find the highest (0.018%) annual growth rate of the area under tea plantation in West Bengal followed by 0.009% annual growth rate in Assam, while the growth rate was negative in the states like Tamil Nadu and Kerala. Concerning the state-level tea production in India, on an average 503270 thousand kg is produced by Assam followed by 235718 thousand kg in West Bengal with CAGR of 0.020 and 0.039 respectively, while the average production of tea was lowest (5670 thousand kg) in Karnataka with CAGR of 0.012 during 2000-2014. The average number of labour

employment per day was highest (457021.50) in Assam while it was least 4031.20 average labour per day in Karnataka during 2000-2014.

3.4 State-wise Tea Area, Production, and Labour Employment in Plantation Sector of India (2000-2014)

Descriptive statistics/States		Assam	West Bengal	Tamil	Karnataka	Kerala	Others
Area (Hectares)	Mean	299204.00	118993.33	76708.67	2150.00	36577.33	17944.22
	SD	22652.67	11288.47	4385.90	37.23	842.93	4176.45
	CAGR	0.009	0.018	-0.004	0.003	-0.004	-0.021
Production (000 Kg)	Mean	503270	235718	160000	5670	63914.66	14465.3
	SD	65983.96	44236.25	13862.5	411.91	3941.97	4422.43
	CAGR	0.020	0.039	0.016	0.012	-0.003	0.062
Labour Employment	Mean	457021.50	157358.70	49742.70	4031.20	39440.26	500477
	SD	97588.29	27150.77	7130.72	3755	7164.36	140071
	CAGR	-0.005	-0.038	-0.005	0.114	-0.024	0.012

Source: Calculated based on data collected from TBI (Various issues of Annual Report of TBI).

Regarding the annual growth rate of labour employment in tea plantations among major tea growing states of India, barring Karnataka all other states have registered negative growth during the period under consideration (Table 3.4). The possible reason for such a result may be the fact that in the wake of mass casualization labourers in Indian tea plantation sector might have contributed towards the negative annual growth rate of average daily labour employment. Oxfam India (2021) reported there is growing casualization of labourers in the tea plantation sector of Assam with barely 39% of workers engaged as permanent basis, while the remaining 61% being occupied as casual labourers lacking social security and other mandated provisions under the PLA (1951).

3.3 Inter-district Status of Tea Plantations in Assam

Table 3.5 presents the percentage share of labourers engaged in tea growing districts of Assam. Overall, female labour engagement in the tea plantation sector of Assam was higher on a permanent and as well as temporary basis during 2015. We can notice that

the casualization of labourers seems to be high among female (27.02%) compared to their male (16.02%) counterparts. Among the various tea growing districts, the maximum number of tea labourers were engaged in the Dibrugarh, Tinsukia, Sonitpur, Sivasagar, Jorhat, Golaghat, and Cachar districts of Assam. The tea plantation labourer in India is categorized into two types; resident and non-resident labourers. Resident labourers are those who reside inside the tea plantations while non-resident labourers settled outside the plantations. The percentage shares of resident labourers were highest (85.27%) compared to 14.73% non-resident resident labourers in the state during the reference year (also refer to Appendix H).

3.5 District-wise Permanent and Temporary Labour (%) in Assam Tea Plantations (2015)

Districts/ Labour	Permanent		Temporary		No. of Families		Total
	Male	Female	Male	Female	Resident	Non-Resident	
Dibrugarh	26.89	27.48	15.68	29.96	78.30	21.70	118023
Tinsukia	27.10	30.01	15.58	27.31	85.71	14.29	115051
Sonitpur	29.44	32.59	13.20	24.76	89.40	10.60	93532
Sivasagar	27.10	25.71	18.90	28.29	78.67	21.33	79471
Jorhat	33.10	35.95	10.36	20.59	86.82	13.18	52593
Golaghat	26.90	27.90	18.37	26.83	87.07	12.93	49665
Cachar	29.95	28.52	17.68	23.85	95.97	4.03	46492
Kokrajhar	21.17	24.18	19.52	35.14	88.37	11.63	43532
Nagaon	28.42	29.13	13.24	29.21	84.52	15.48	22431
Lakhimpur	24.66	18.16	26.39	30.79	84.61	15.39	21751
Karimganj	44.20	40.52	8.53	6.75	99.45	0.55	11607
Hailakandi	38.04	34.64	9.89	17.43	100.00	0.00	9319
Darrang	27.42	31.11	15.93	25.54	84.07	15.93	2768
Karbi-Anglong	28.18	32.83	15.09	23.89	83.94	16.06	2735
Dhubri	20.26	18.76	16.60	44.39	54.01	45.99	2193
Kamrup	31.21	27.81	18.34	22.63	30.99	69.01	1679
Morigaon	33.00	30.00	12.00	25.00	67.35	32.65	1013
Goalpara	24.20	22.47	19.51	33.83	43.79	56.21	1000
Dimahaso	32.99	41.96	23.42	1.63	100.00	0.00	810
Bongaigaon	15.20	15.40	49.06	20.34	100.00	0.00	679
Dhemaji	10.90	11.63	25.04	52.43	80.52	19.48	491
Assam	27.99	28.99	16.01	27.02	85.27	14.73	676835

Source: Directorate of Labour Commissioner, GoA.

Table 3.6 highlights the district-level situation in the area under tea plantation, production, and yield per hectare in the tea sector of Assam during 2017-2021. The largest (56552.53 hectares) average area under tea plantation was found in the Tinsukia district followed by 52951.59 and 26442.74 hectares in Dibrugarh and Golaghat districts respectively, while the least (250.31 hectares) area under tea plantation was recorded in Dimahasao district of the state during the reference period.

On the other hand, we find the highest annual growth rate of area under tea plantations in the Dhemaji district during the last 5 years period of study. Similarly, on an average, the production of tea was highest in the Tinsukia district followed by Dibrugarh, Sivasagar, and Golaghat districts, while the growth rate of tea production was highest in the Kamrup district. So far as the average yield of tea is concerned, the maximum average yield of tea was found in the Sivasagar district followed by Goalpara and Tinsukia districts, and also the annual growth rate of yield was highest in Sivasagar districts during 2017-2021.

Table 3.6 District-wise Area, Production and Yield of Tea in Assam (2017-2021)

Districts/ Years/ Descriptive Statistics	Area (Hectares)			Production (000 Kg)			Yield (Kg. Per Hectare)		
	Mean	SD	CAGR	Mean	SD	CAGR	Mean	SD	CAGR
Kokrajhar	2638.16	238.30	0.06	3314.67	868.32	-0.16	949.18	236.82	0.05
Dhubri	1232.89	6.84	0.00	2108.33	591.32	-0.17	1711.14	484.91	-0.17
Goalpara	634.14	0.12	0.00	1325.33	248.97	-0.12	2121.69	392.16	-0.12
Morigaon	411.01	0.01	0.00	815.00	255.78	-0.19	1983.19	622.57	-0.19
Nagaon	10705.09	328.30	0.02	10675.00	3582.63	-0.21	1002.67	357.15	-0.22
Sonitpur	26442.74	95.90	0.00	37678.00	10389.07	-0.17	1425.41	395.77	-0.17
Lakhimpur	6779.59	258.59	0.02	10915.00	3528.46	-0.19	1771.88	424.73	-0.14
Dhemaji	1644.51	162.39	0.06	0.00	0.00	0.00	0.00	0.00	0.00
Tinsukia	56552.53	790.27	0.01	119265.67	36616.45	-0.19	2114.41	674.79	-0.20
Dibrugarh	52951.59	743.56	0.01	101915.00	30745.82	-0.19	1929.08	602.44	-0.20
Sivasagar	15124.75	26.63	0.00	64523.33	20880.05	-0.20	3195.85	1266.66	0.07
Jorhat	26281.85	373.99	0.01	47875.67	14414.88	-0.19	1825.29	565.92	-0.19
Golaghat	33018.73	203.28	0.00	57864.33	21285.04	-0.23	1754.17	651.61	-0.23
Karbi-Anglong	5255.05	15.63	0.00	5196.67	2393.69	-0.29	989.64	457.81	-0.29
Dimahasao	250.31	0.27	0.00	14.67	5.03	-0.11	58.92	20.03	-0.11
Cachar	21342.17	28.73	0.00	22853.33	7001.84	-0.19	1071.01	329.00	-0.19
Karimganj	8051.15	0.13	0.00	4212.33	1214.53	-0.18	523.08	150.69	-0.18
Hailakandi	7158.41	0.36	0.00	9964.00	3324.63	-0.21	1392.05	464.63	-0.21
Bongaigaon	955.05	8.70	0.01	1341.67	330.16	-0.16	1406.66	356.70	-0.16
Kamrup	872.93	0.06	0.00	1280.67	301.40	0.04	1467.19	345.30	0.04
Baksa	2509.63	21.33	0.00	2098.00	413.51	-0.12	836.50	169.34	-0.13
Darrang	1246.66	4.04	0.00	2369.00	763.48	-0.20	1900.91	615.40	-0.20
Udalguri	19132.76	432.80	0.01	30467.67	7031.80	-0.14	1595.99	387.16	-0.15
Biswanath	19234.19	514.59	0.02	31765.67	8393.79	-0.16	1657.23	464.01	-0.17
Charaideo	23466.79	1422.69	0.04	0.00	0.00	0.00	708.00	1226.29	-1.00
Assam	343921.39	5679.74	0.01	571492.33	173139.89	-0.19	1666.13	524.51	-0.20

Source: Statistical Handbook of Assam
Note. SD stand for Standard Deviation

3.4 Status of In-kind Compensation Facilities among Tea Labourers in Assam

The basic in-kind compensation facilities across the major tea growing districts of Assam during 2017 are reported in Table 3.7. There seems to be a high disparity in terms of the provision for labour quarter facility (LQF) as the quarter facility was only

available for 20.01% of total tea garden labourers in the Nagaon district, while the provision for LQF was highest at 97.54% in the Sivasagar district during the reference period. Thus considerable segment of tea garden labourers in the Nagaon district is either deprived of LQF or faced with overcrowding. Normally, access to proper sanitation and clean drinking water facilities are important for better health and hygiene. There seems to be a low level of living among the resident tea labourers in the Kamrup district of the state as only 13.23% were having access to toilet facilities (TF) and only 13.57% were having access to water point facilities (WPF). Such facilities seem to be relatively better among the resident tea garden labourers of the Sivasagar, Sonitpur, and Tinsukia districts of the state. The medical and basic health infrastructures are the prerequisite for health and necessary treatment as per need in a region. Out of the total number of tea gardens the hospital facility (HF) and dispensary facility (DF) were available only in 16.67% gardens of Kamrup district in 2017. It implies the majority of the tea gardens in the district are functioning without basic health infrastructure. The doctor's availability is important for the timely treatment of a patient; such a facility is merely lacking across major tea growing districts of Assam.

Table 3.7 Inter-district In-kind Compensation Facilities among Major Tea Growing Districts of Assam (2017)

Districts	Labour quarter and sanitation facility (%)			Health and Medical Facility (%)										Educational facility (ratio)	
	LQF	TF	WPF	HF	DF	AP	AVD	AQMP	AQN	AQM	ANCM	ANA	AHA	TSR	PTR
Nagaon	20.01	67.44	32.99	56.52	86.96	69.57	47.83	47.83	86.96	34.78	34.78	73.91	39.13	3.33	41.79
Golaghat	28.13	51.07	23.25	42.67	24	62.67	32	29.33	5.33	60	69.33	0	40	Na	Na
Cachar	25.08	54.39	19.68	64.71	17.65	63.73	44.12	29.41	45.1	57.84	37.25	44.12	66.67	1.8	56.45
Kamrup	70.1	13.23	13.57	16.67	16.67	0	0	0	0	0	0	0	16.67	Na	Na
Sonitpur	55.99	99.01	25.09	97.22	62.5	96.17	13.89	90.56	94.44	83.89	0	95.83	88.33	2.5	60.03
Jorhat	48.89	68.13	22.49	34.88	47.67	68.6	39.53	33.72	68.6	40.7	30.23	54.65	48.84	1.1	21.33
Dibrugarh	64.7	62.96	17.44	45.76	23.16	53.11	31.64	37.85	50.85	53.11	80.23	86.16	57.63	2.15	50.29
Tinsukia	47.29	98.51	32.61	61.16	52.89	77.69	34.71	47.93	95.87	42.98	59.5	82.31	64.46	2.56	32.49
Sivasagar	97.54	99.28	73.65	21.18	20	62.35	41.18	20	63.53	72.94	14.12	28.24	0	Na	Na

Source: Directorate of Labour Commissioner, GoA.

Notes: Labour quarter facility (LQF), Toilet facility (TF); Water point facility (WPF); Hospital facility (HF); Dispensary facility (DF); Availability of pharmacist (AP); Availability of visiting doctors (AVD); Availability of qualified medical practitioner (AQMP); Availability of qualified nurse (AQN); Availability of qualified midwives (AQM); Availability of nurse-cum midwives (ANCM); Availability of nursing attendants (ANA); Availability of health assistants (AHA); Teacher-school ratio (TSR); Pupil-teacher ratio (PTR).

Though the number of hospitals in the tea gardens of Sonitpur district was satisfactory, there seems to be a shortage in the availability of visiting doctors (AVD) with only 13.89% of tea gardens reported to have AVD. Except for the Sonitpur district, there was poor availability of pharmacists (AP), qualified medical practitioners (AQMP), qualified midwives (AQM), and health assistants (AHA) in the rest of the major tea growing districts of the state during the period under consideration. The educational development of a region is largely reliant upon the presence of an adequate number of schools balanced with an appropriate pupil-teacher ratio (PTR). In this respect, the educational environment seems to be upsetting in Jorhat and Cachar districts with a teacher-school ratio (TSR) of less than 2. Thus tea garden schools of these two districts were having less than 2 teachers available per school for imparting lessons to the children of tea garden labourers. Further, barring Jorhat and Tinsukia districts, the pupil-teacher ratio (PTR) was unsatisfactory in the Sonitpur district with figures of 60:1, 56:1 in Cachar, and 50:1 in the Dibrugarh district (Table 3.7). Thus, PTR in tea garden schools of the state is less satisfactory when compared with PRT of the rest of the schools of Assam in general. As per the Statistical Handbook of Assam (2018), the PTR in Assam was 22:1 in primary school and 18:1 in upper primary school during 2017. Though the GoA has taken an initiative for improving the welfare of tea labourers through in-kind compensation facilities, the reach of the government in this respect seems to be less than satisfactory with disparity prevailing across the tea growing districts of the state. Thus, for the reference period, the districts having the least number of tea gardens and labourers were exposed to relatively better in-kind compensation facilities compared with districts having the largest concentration of tea gardens and labourers.

3.5 Public Fund Allocation and Physical Facility Building for Tea Labourers in Assam

The scheme-wise allocation of funds by the GoA for the tea plantation labour welfare in the state from 2001-2019 is listed in Table 3.8. During the reference period, the state government took various developmental initiatives on education, training and skill development, sports facilities, welfare schemes in general, household-based welfare, and health facilities for a labourer engaged in the tea plantation sector of the state. For the reference period, the allocation of funds on educational upliftment was highest in pre-matric scholarship (PRMS) with an average figure of ₹ 199.41 lakh. The state government outlay on higher studies (FAHS), post-matric scholarship (POMS), and a grant for the non-governmental educational institute (GNEI) was ₹ 143.53, ₹ 126.42, ₹ 96.52 lakhs respectively during the period under consideration. India's Prime Minister Narendra Modi launched the Skill India program in 2015 as a part of the National Skills Development Mission aiming at enhancing skills among the youth via vocational training. During the 19 years study period, the average spending of the government on the purchase of training materials and equipment (PTME) for the skill development of tea labourers was ₹ 98.89 lakh, while another ₹ 98.25 lakh was the outlay for the construction of skill development training centre (SDTC). For the training of ANM/GNM and other technical courses (TRANM/GNM) the government spent ₹ 92.89 lakh. On an average, the provision for books and uniforms (PBU) for tea garden students was lowest during the reference period. The state government allocated some funds for the recreation of tea garden labourers with an outlay of funds for sports facilities (SPF) The average amount of funds spent on SPF for tea garden labourers in the state was ₹ 132.11 lakh. With reference to the welfare scheme in general, the highest amount of funds was allocated to the family-wise source of income-generating schemes

(FWSIS5) while the least was spent towards grants for non-governmental organizations (GNGO).

Table 3.8 Scheme-wise Allocated Fund (₹ In Lakh) for Tea Plantation Labourers in Assam (2001-2019)

Schemes/Descriptive statistics		Mean	SD	CAGR
Education	PRMS	199.41	176.27	0.14
	POMS	126.42	200.02	0.24
	GNEI	96.52	133.41	-1.00
	FAHS	143.53	245.48	0.10
	PBU	4.27	4.56	-1.00
	GH	72.42	115.75	-0.07
	BH	78.53	120.38	-0.07
Training and skill development	PTME	98.89	118.57	0.01
	TRANM/GNM	92.89	100.89	0.11
	SDTC	98.25	205.74	-0.03
Sports	SPF	132.11	202.20	0.04
Welfare schemes in general	CC	33.09	72.41	0.27
	FWSIS	360.32	476.88	-1.00
	GNGO	16.06	31.57	0.20
Household-based welfare	EM	108.21	170.37	0.12
	WS	153.42	240.66	0.16
	SF	37.37	104.70	0.08
Health	FATB&CA	47.85	97.71	0.43
Total		1934.62	1166.69	0.21

Source: Directorate for Welfare of Tea and Ex-Tea Garden Tribes, GoA.

The government also started allocating funds for household-based welfare schemes viz. water supply and distribution of electric meters. The largest amount of funds was spent on water supply (WS) with an average figure of ₹ 153.43 lakh followed by ₹ 108.21 lakh in the electrification of labour houses through the distribution of electric meters (EM). The absence of supplementary earning sources and low wages constrained labourers in tea plantations to move outside the plantation for the treatment of malignant diseases such as Tuberculosis (TB) and Cancer. The average fund allocation on TB and cancer (FATB & CA) related diseases for tea labourers in Assam was ₹ 47.85 lakh during 2001-2019 (Table 3.8). Thus though the government spent on different heads of human development for the welfare of tea plantation labourers during the 19 years

reference period, however, the spending on health and health care of tea garden labourers was relatively lower across the major tea growing districts of the state.

The scheme-wise physical facility building from allocated funds among the tea plantation labourers in Assam during 2001-2019 is listed in Table 3.9. It can be observed that the number of beneficiary was largest in pre-metric scholarships with an average figure of 28,089 followed by the purchase of books, uniforms, and post-metric scholarships. During the reference period, on average 2 girls' hostels (GH) and 1 boys' hostel (BH) were constructed for the children of tea labourers. Barring post-metric scholarship and financial assistance for higher education, the total number of beneficiary in all other educational schemes viz. grants for non-government educational institutes, and purchase of books and uniforms have registered negative growth during the reference period. The average number of beneficiaries for training and skill development schemes in the state tea plantation sector was highest in the purchase of training materials and equipment followed by training of ANM/GNM with average beneficiary figures of 607 and 167. In the case of sports facilities for recreation purposes, the average number of beneficiary in the tea plantation sector of the state was 441 during 2001- 2019. Turning to the number of beneficiary in terms of welfare schemes in general among the state tea plantation labourers; the beneficiary in the family wise source of income generating schemes was highest with an average figure of 6,939 followed by 71 in the cultural circle (CC) and 42 in grant to non-governmental organizations respectively. Under the household-based welfare scheme, the average number of the beneficiary was largest in getting access to electric meters with a figure of 17,277; followed by 3,402 beneficiaries in sanitation during the reference period. The health infrastructure and facilities in tea plantations seem to be lagging behind during the reference period as the number of beneficiary of cancer and TB patients were

meager relative to all other schemes in the state. Thus, no doubt there has been some increase in the number of labourers attending formal education under the initiative of the state government, but the health condition of the worker is a matter of concern.

Table 3.9 Scheme-wise Physical Facility Building out of Funds Allocated among Tea Labourers in Assam (2001-2019)

Schemes/Descriptive Statistics		Mean	SD	CAGR
Education	PRMS	28089	17038.6	-0.08
	POMS	823	1326.26	0.1
	GNEI	185	241.9	-1
	FAHS	635	864.04	0.09
	PBU	976	960.71	-1
	GH	2	2.72	0
	BH	1	2.7	-0.07
Training and skill development	PTME	607	1272.65	0.29
	TRANM/GNM	167	148.31	0.02
	SDTC	13	20.32	-0.03
Sports	SPF	441	681.84	-0.36
Welfare schemes in general	CC	71	109.44	-0.2
	FWSIS	6939	15115.6	-1
	GNGO	42	80.28	-0.07
Household-based welfare	EM	17277	32465	-0.03
	WS	40	109.18	-0.14
	SF	3402	7941.04	0.2
Health	FATB&CA	164	177.23	0.15
Total		59871	47952	-0.03

Source: Directorate for Welfare of Tea & Ex-Tea Garden Tribes, GoA.

3.6 Inter-district Physical Facility Building from Allocated Public Funds for Tea Labourers in Assam

The scheme-wise number of beneficiaries for educational facilities from the allocated public funds across tea plantation labourers in the different tea growing districts of Assam during 2016-2018 is reported in Table 3.10. It can be observed that during 2016, the percentage shares of the number of beneficiaries in PRMS was highest (15.10%) in the Karbi-Anglong district followed by Kamrup and Nagaon districts with shares of 12.01% and 8.67% respectively. With reference to POMS the share was largest in the Dhemaji district in 2016 and 2018 sharing 12.42% and 81.70% respectively, while in 2017, it was highest (33.55%) in the Bongaigaon district of the state.

Table 3.10 District-wise Beneficiaries (%) of Educational Schemes among Tea Labourers in Assam

Districts/Schemes	PRMS			POMS			FAHS		
	2016	2017	2018	2016	2017	2018	2016	2017	2018
Tinsukia	0.58	0.78	0.86	0.27	0.67	1.92	0.09	0.15	0.2
Dibrugarh	0.84	1.68	0.87	0.1	0.85	2.16	0.09	0.15	0.19
Sivasagar	1.45	0.47	0.48	0.31	0.74	1.42	0.09	0.13	0.13
Jorhat	0.24	0	1.63	0.33	0.75	1.74	0.12	0.06	0.2
Golaghat	3.31	1.17	2	1.69	2.11	3.81	0.25	0.38	0.31
Karbi-Anglong	15.1	5.16	2.17	5.61	14.87	6.88	0.45	0.75	0.52
Nagaon	8.67	2.27	3.33	2.23	2.05	3.35	0.38	0.47	0.45
Morigaon	0	0	0	0	0	0	0	0	0
Kamrup	12.01	7.77	8.17	6.16	13.93	12.61	6.05	9.49	9.38
Dhemaji	7.19	20.92	25.49	12.42	16.34	81.7	0	0.65	8.5
Lakhimpur	1.76	0	0	0.19	0	0	0.18	0.16	0.26
Sonitpur	3.63	0.51	0.93	0.84	0.99	2.24	0.21	0.29	0.29
Darrang	0	0	1.48	0	0	0.43	0	0	0
Bongaigaon	0	11.94	12.58	0	33.55	23.87	0	0.97	3.55
Kokrajhar	0.15	0.5	1.3	1.8	0.94	2.2	0.34	0.26	0.24
Dhubri	8.25	0	0	0.09	2.53	3.09	0.09	0	0.09
Goalpara	0	0	0	0	0	0	0	0	0
Cachar	1.26	0	0.28	0.08	0.04	0.29	0.13	0.09	0.13
Hailakandi	0	0	1.98	1.06	0.94	2.11	0.15	0.3	0.03
Karimganj	2.28	3.62	3.3	0.07	2.21	0.86	0.08	0.1	0.12
Dimahasao	0	0	0	0	0	0	0	0	0
Total	6899	3370	4447	2383	4212	7875	641	834	938

Source: Directorate for Welfare of Tea & Ex-Tea Garden Tribes, GoA.

The beneficiary coverage of FAHS was largest in Kamrup district relative to the rest of the tea growing districts of Assam. Thus though the beneficiary coverage under POMS and FAHS has increased during the three years reference period in Assam, whereas the same has decreased in the account of PRMS in the state. Hence, though the government has taken various initiatives for the educational upliftment of tea garden tribes of Assam through various schemes the reach of the government in this respect was meager in the districts having a greater concentration of tea gardens and tea labourers.

In order for easing communication and promotion of self-employment the state government in recent years has taken measures. In this respect distribution of smart phone to line sardar (DSPLS) has been initiated since 2018 in the tea plantation sector of Assam. Nearly 9.68% of line sardar in the Bongaigaon district benefitted from DSPLS followed by 7.31% in Dhubri and 6.08% in the Goalpara district. However,

none of the tea gardens in Karimganj district have benefited from DSPLS during the reference period (Table 3.11). With an aim to encourage and motivate meritorious girl students belonging to the tea tribe's community of the state, GoA started the distribution of scooters (DST) for them since 2018. Such a scheme has not even benefitted 1% of labourers across tea growing districts of Assam. Another notable initiative for the promotion of self-employment generating schemes for educated unemployed youth (SEGSEY) by providing auto vans, and pick-up vans to the tea labour community of Assam. Nearly 2.61% of labourers in the Dhemaji district benefitted from SEGSEY followed by 0.65% in Bongaigaon and 0.26% in Goalpara district, while not even a single beneficiary was reported in Morigaon, Dimahasao, and Cachar, Hailakandi, and Karimganj districts of Assam during the reference year. The number of beneficiaries in DSPLS; DST and SEGSEY aggregate in the Assam tea sector was 9,976; 100 and 128 respectively in 2018 (Table 3.11).

Table 3.11 District-wise of Beneficiary (%) of Assets among Tea Labourers in Assam (2018)

Districts/Schemes	DSPLS	DST	SEGSEY
Tinsukia	2.74	0.03	0.01
Dibrugarh	3.78	0.04	0.04
Sivasagar	1.06	0.02	0.03
Jorhat	2.13	0.03	0.03
Golaghat	3.96	0.05	0.05
Karbi-Anglong	3.89	0.07	0.22
Nagaon	3.53	0.07	0.05
Morigaon	4.76	0.00	0.00
Kamrup	3.03	0.20	0.20
Dhemaji	2.61	0.00	2.61
Lakhimpur	3.24	0.01	0.01
Sonitpur	2.28	0.02	0.07
Darrang	4.38	0.00	0.00
Bongaigaon	9.68	0.00	0.65
Kokrajhar	0.56	0.00	0.01
Dhubri	7.31	0.00	0.09
Goalpara	6.08	0.00	0.26
Cachar	2.73	0.00	0.00
Hailakandi	3.41	0.00	0.00
Karimganj	0.00	0.00	0.00
Dimahasao	1.90	0.00	0.00
Total	9976	100	128

Source: Directorate for Welfare of Tea & Ex-Tea Garden Tribes, GoA.

The district-wise number of beneficiaries of financial assistance to tea plantation labourers in Assam during 2018 is reported in Table 3.12. It can be observed that the percentage shares of beneficiaries for a grant to women self-help groups (GWSHG) of the tea plantation sector of the state was highest (5.23%) in the Dhemaji district followed by 5.16% in the Bongaigaon district. The government also provides monetary support to labourers suffering from cancer, TB, and malignant diseases (CTMD) for the labourer engaged in the tea sector of Assam. About 1.51% of labourers in the Kamrup district benefitted from CTMD, while only 0.04% of labourers in the Jorhat district benefitted from the scheme during the reference year. The financial assistance for old and infirm persons (FAIP) for the tea community of the state was largest (5.16%) in the Bongaigaon district followed by Kamrup and Dhemaji districts with shares of 3.83% and 3.27% respectively. Similarly, the percentage shares of financial assistance to widow and single women (FAWSW) was largest in the Bongaigaon district followed by the Kamrup district of the state. The one-time grant of disabled persons belonging to the tea tribe's community (GDPBTC) was highest in the Bongaigaon district during the year 2018. The number of beneficiaries of training like TRANM/GNM being initiated by the government was observed to be highest in the Kamrup district during the study period. The percentage shares of the number of beneficiaries of TRANM/GNM during the reference years was recorded highest in the tea plantations of Kamrup district followed by the Bongaigaon district. Thus, the beneficiary of financial assistance was highest in the districts having the least number of tea gardens and labourers relative to that of the districts having a higher concentration of labourers and tea gardens in the state during the reference period.

Table 3.12 District-wise of Beneficiary (%) of Financial Assistance among Tea Labourers in Assam (2018)

Districts/Beneficiaries	GWSHG	CTMD	FAIP	FAWSW	GDPBTC	TRANM/GNM
Tinsukia	0.04	0.09	0.07	0.13	0.07	0.1
Dibrugarh	0	0.06	0	0.04	0.02	0.24
Sivasagar	0.12	0	0.16	0	0	0.19
Jorhat	0.15	0.04	0.36	0.44	0.09	0.29
Golaghat	0.53	0.28	0.53	0.57	0.21	0.18
Karbi-Anglong	2.62	0	0	0.15	0.22	2.24
Nagaon	1.89	0.67	0.49	0.27	0.06	0.23
Morigaon	0	0.79	0	0	0	0.16
Kamrup	1.72	1.51	3.83	7.16	1.31	4.54
Dhemaji	5.23	0	3.27	0	1.31	2.61
Lakhimpur	0.21	0	0	2.18	0	0.58
Sonitpur	0.14	0.1	0.31	0.41	0.06	0.3
Darrang	0.49	0	2.53	0	0	0.19
Bongaigaon	5.16	0	5.16	12.58	4.19	4.52
Kokrajhar	0.21	0.27	0.01	0.12	0.12	0.03
Dhubri	0	0	0	0	0	0.09
Goalpara	0	0	0	0	0	0.26
Cachar	0	0	0	0.22	0	0.04
Hailakandi	0.21	0.38	0.8	0.94	0.43	0.03
Karimganj	0.1	0.17	0.69	0	0.63	0.04
Dimahasao	0	0	0	0	0	0
Total	772	455	854	1157	338	830

Source: Directorate for Welfare of Tea and Ex-Tea Garden Tribes, GoA.

3.7 Some Outcomes of Public Fund Allocation on Various Schemes

As per the Directorate for Welfare of Tea and Ex-Tea Garden Tribes, GoA (2020), nearly 800 students belonging to tea tribes enrolled in higher studies who were availing of FAHS in 2019. Out of 800 students, 90 (11.25%) students enrolled for bachelor degree, 10 (1.25%) in the doctor of philosophy, 1 (0.13%) in the master of Philosophy, 36 (4.50%) in Bachelor of Medicine and Bachelor of surgery, 5 (0.63%) in engineering, and remaining 658 (82.25%) students were enrolled in master degree. During the reference period, 1014 students belonging to tea garden tribes enrolled in ANM/GNM courses in the state. Out of a total of 6284 tea tribes' students who appeared for the Board of Secondary Education of Assam (SEBA) nearly 5177 (82.30%) were promoted with better results. Furthermore, a library-cum-auditorium in Dibrugarh and a

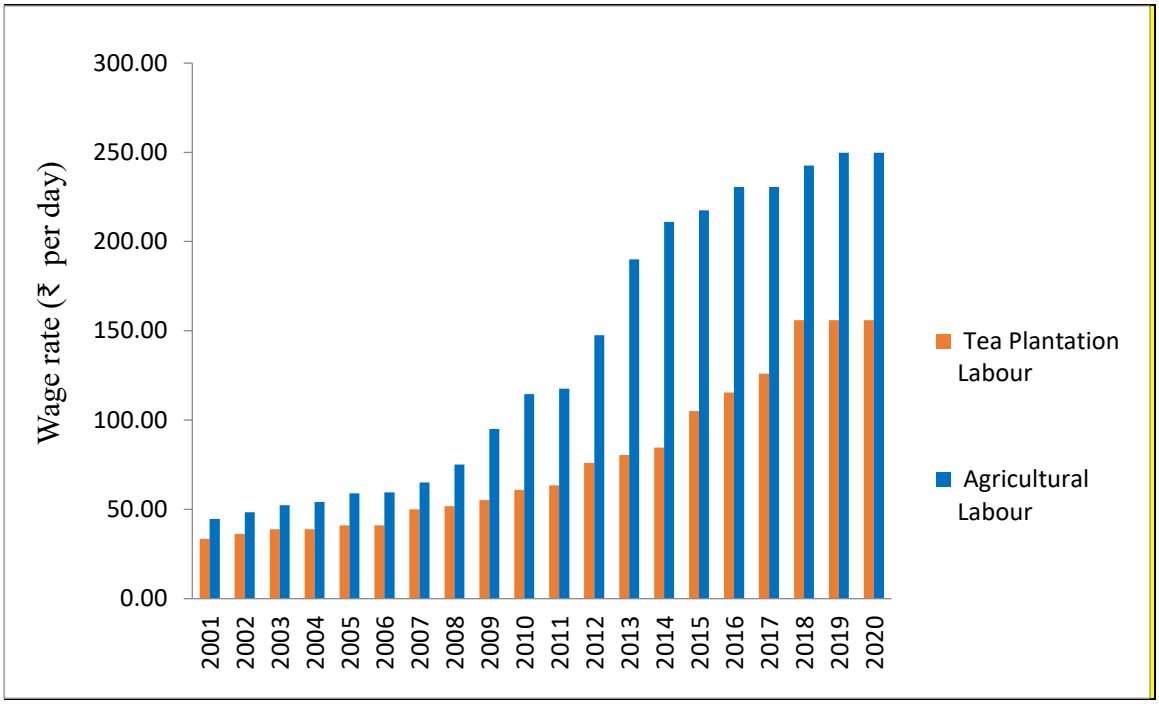
conference hall in Guwahati were constructed for the tea garden tribes of Assam. Till 2020, 71 skill development and training centres have been set up across the different tea growing districts of Assam. Nearly 4,270 (50.71%) from the tea garden community of Assam have completed training, and 1425 trainees have been offered placement in different flagship companies out of a total of 8421 trainees enrolled in the skill development training centre till the first quarter of 2020. Construction of two patient rest houses for the tea garden community has been completed in the Dibrugarh and Cachar districts of Assam during the reference period. For the betterment of the tea garden tribe's community of Assam, the government has maintained a rest house-cum-cultural centre, a museum complex, an auditorium, a library-cum-auditorium, 17 library-cum cultural centre, and 22 handloom and handicrafts production centres across the tea growing district of the state.

3.8 Wage Rate Status among Tea Labourers in Assam

Apart from various in-kind facilities, the tea plantation labourers are also entitled for daily cash wages in the Indian tea plantation sector. The presence of wage rate differential between agricultural labourers and tea plantation labourers is apparent in Assam during the past two decades (refer to Figure 3.1). It is clear evidence from the Figure that over the years (2001-2020) the minimum cash wage rate of tea plantation labourers was low compared to the general agricultural labourers in Assam. The plausible reason for such difference may be that the owner of the tea plantation describes the tea labourer wages in terms of the total value of in-kind benefits and cash wages assuming it meets their minimum wage level. But, the Minimum Wage Act of India (1948) has described that in-kind benefits facilities received by labourers may not be added to their minimum wage rate. However, this Act seems not implemented in the

tea plantations in Assam as the Act is not enforced in the tea plantation sector of Assam and West Bengal.

Figure. 3.1 Average Wage of Tea Plantation and Agricultural Labourers in Assam

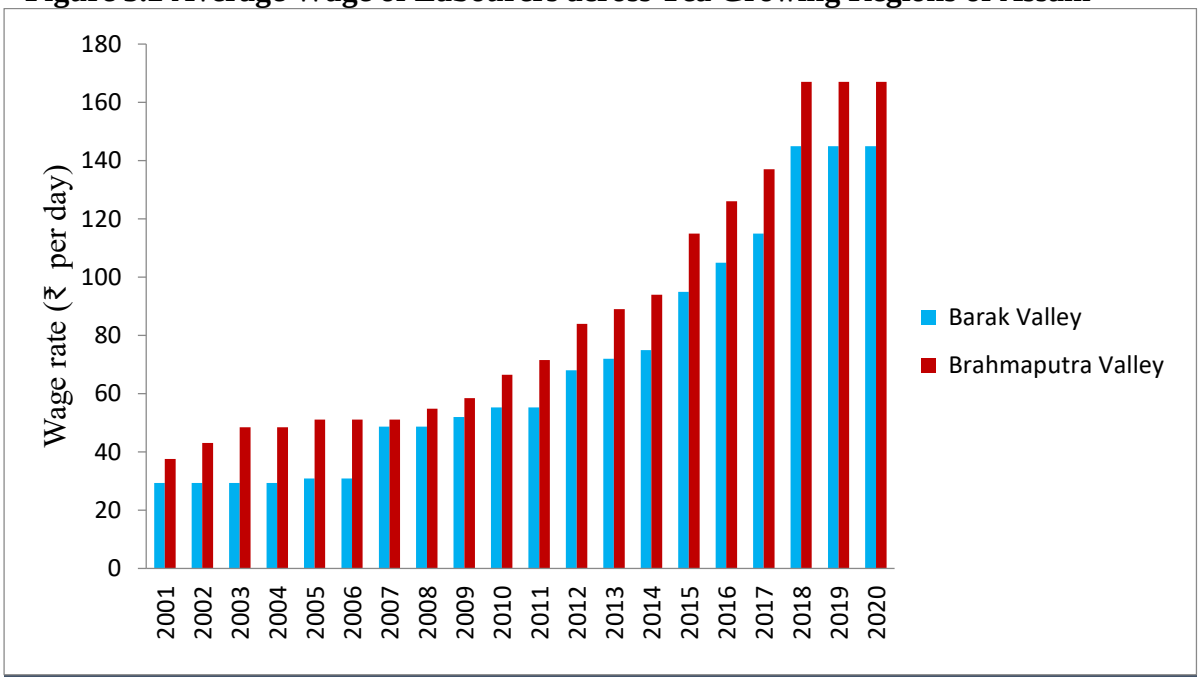


Source: ABITA; Ministry of Agriculture and Farmers Welfare, GoI.

Moreover, we also find regional differences in daily wage rate among tea plantation labourers in Assam continued during 2001-2020 (see Figure 3.2). It has been observed that given the uniform hours of work across the two major tea growing regions of Assam viz. the Brahmaputra Valley and Barak Valley, there is a presence of wage rate differences across the region. As is evident from Figure 3.2, the daily wage rate of labourers engaged in the Barak Valley tea plantations was low compared to the labourers engaged in tea plantations of the Brahmaputra Valley. The reason for the differences in wage rate between the two regions may be because of the different interest of labour unions as the tea plantation labourers in Brahmaputra Valley is affiliated with Assam Chah Mazdoor Sangha (ACMS), while Barak Cha Shramik Union (BCSU) in the Barak Valley. Another reason for the disparity in wage rate between the two major tea growing reasons may be the geographical factor as the tea

plantations of Barak Valley are remotely located compared to the Brahmaputra Valley. The tea plantations in the Barak valley incur additional cost in the transportation of inputs such as petroleum, lubricants, coal, etc., and thus the cost of production is consequently adjusted by lowing the wages of tea plantation labourers in that region (Sentinel, 2022). Though the tea plantation sector of both tea growing regions of Assam receives equal incentives from the government the labourers performing the same work (minimum eight hours a day) earn differential wage rate. There is a hike in wage rate in both the region in the recent past with ₹ 232 per day in Brahmaputra Valley and ₹ 210 in Barak Valley.

Figure 3.2 Average Wage of Labourers across Tea Growing Regions of Assam



Source: ABITA.

3.9 Conclusion

Given the backwardness of the tea plantation labourer in Assam, the GoA has taken various initiatives from time to time for their welfare gain over the years. There is a presence of inter-district disparity with respect to the number of beneficiaries of in-kind compensation facilities in Assam, with the number of beneficiaries being meager, especially in the districts having a larger concentration of tea labourers and gardens.

The presence of wage rate differential in general agricultural and tea plantation labourers has continued in Assam during the past two decades. Moreover, the present study also find regional differences in wage rate among the tea labourers with labourers in the Barak valley region subject to low wage rate compared with Brahmaputra valley region.

CHAPTER 4

Access to Welfare Facilities and Standard of Living among Tea Labourers in Assam

The present chapter investigates the access to welfare facilities and standard of living among tea labourers in different ownership structures of tea plantations in Assam. The chapter consists of five sections. Section 4.1 covers summary statistics of the socio-economic and demographic characteristics of tea plantation labourer households in the study area. The basic amenities facilities accessed by labourer households across the different ownership structures of the plantation are reported in Section 4.2, while possession of consumption and production assets among the labourer households is analyzed in Section 4.3. In the subsequent section, leisure time among the labourers in different ownership structures of tea plantations has been examined, and the conclusion is covered in the final section of the chapter.

4.1 Socio-economic and Demographic Profile of Tea Plantation Labourer

The summary statistics of the socio-economic and demographic profile of sample labourer households in different ownership structures of tea plantations are reported in Table 4.1. There seems to be no significant difference in the age of labourers and their sons/daughters (adult children hereafter) across different ownership structures of tea plantations so far as the value of t-statistic is concerned (see Table 4.1). The average age of tea labourers was 43.14 years, while the average age of their adult children was 26.31 years. There was no significant difference in terms of years of schooling among labourers engaged in different ownership structures tea plantations with average figures of 3.53 and 3.30 years of schooling in PLC and PROP ownership structures

respectively. While the significant difference in years of schooling among adult children of tea labourers has been identified in the present study with the average years of schooling among adult children in PLC being higher compared to those in PROP tea plantations. The level of formal educational attainment among labourer and their adult children in sampled tea plantations was seen to be very low as they only completed less than 5 years of schooling on an average. Sahu and Bhuyan (2022) found that the low level of earnings of tea labourer families compelled their children to leave school and engage themselves in wage work to support their family financially in Assam. There is a significant difference in the experience of labourers engaged in different ownership structures of tea plantations with labourers in PROP tea plantations found to have a higher level of experience compared to labourers in PLC tea plantations. On the other hand, there is no significant difference in terms of family size of labourers across the sample households in the different ownership structures of tea plantations. On an average, there were nearly 5.13 family members in a household in the study area.

Interestingly, given the uniform wage rate, there has been a significant difference in the monthly PCI income of households in the different ownership structures of tea plantations. On an average, the monthly PCI of labourer households in PLC is higher than the labourer engaged in PROP ownership tea plantations (Table 4.1). The result shows that there are no significant differences in terms of distance to town from tea plantations, gender, and family type across the tea plantation of different ownership structures. With reference to distance to town, the sampled tea labourer households were remotely located with an average distance of 22.22 kilometers between the residence and the nearest town. With reference to gender classification of work status in tea plantations, on average 0.44 women were working in tea plantations on a permanent basis in the sample households.

Table 4.1 Descriptive Statistics

Variables	Unit	PLC	PROP	Overall	Mean difference (PLC & PROP)	t-statistic
		Mean (SD)	Mean (SD)	Mean (SD)		
Age (Head)	Years	41.40 (8.90)	44.88 (8.86)	43.14 (9.04)	-3.48	-4.85
Age (Son/Daughters)	Years	26.00 (4.34)	26.62 (5.40)	26.31 (4.90)	-0.61	-1.55
Years of Schooling (Head)	Years	3.53 (3.49)	3.30 (3.59)	3.42 (3.54)	0.23	0.8
Years of schooling (Son/Daughters)	Years	4.76 (3.91)	4.07 (4.05)	4.42 (3.99)	0.7	2.17**
Experience (Head)	Years	14.29 (9.12)	17.40 (20.73)	15.84 (16.08)	3.1	2.40***
Family size	Numbers	5.16 (1.75)	5.10 (1.83)	5.13 (1.79)	0.06	0.43
Monthly PCI of household	₹	881.70 (340.74)	817.78 (290.60)	849.79 (318.03)	64.02	2.50**
Distance to town	Kilometer	22.73 (12.33)	21.71 (14.99)	22.22 (13.72)	0.92	0.92
Gender (Head)	=1 if female	0.47 (0.49)	0.42 (0.48)	0.44 (0.49)	0.049	1.22
Family type	=1 if joint family	0.46 (0.50)	0.35 (0.48)	0.41 (0.50)	-0.11	-2.9
Occupation (Fathers)	= 1 if the individual is engaged outside the tea plantation.	0.49 (0.50)	0.32 (0.47)	0.40 (0.49)	0.17	4.43***
Occupation (Sons/Daughters)	= 1 if the individual is engaged outside the tea plantation.	0.83 (0.38)	0.56 (0.50)	0.70 (0.46)	0.27	7.52***
Skills (Sons/Daughters)	=1 if the individual is engaged as a skilled labourer outside the tea plantation.	0.13 (0.33)	0.04 (0.20)	0.08 (0.28)	0.08	3.81***

Source: Estimated based on field survey.
Note. ***p < 0.01, **< 0.05; SD stand for Standard Deviation

While taking account of occupational mobility, we found that there is a statistically significant difference among fathers who work [13] outside the plantations across the different ownership structures of tea plantations, and the same is true for the adult children of tea labourers working outside the tea plantations. On an average, fathers working outside the tea plantations are higher from the PLC ownership structures compared to PROP tea plantations. Similarly, the adult children of tea labourers

[13] Work like low-paid daily wage non-farm work (lower-tier work hereafter), skilled non-farm work, private salaried services, government services, self-employed, cultivators, and migrated in search of employment.

working outside tea plantations were seen to be higher in PLC relative to PROP ownership tea plantations in the study area. Unfortunately, the skill formation among tea labourers in the sample household was found to be minuscule. However, there is a significant difference in the skill formation and skilled adult children working outside the plantations in different ownership structures of tea plantations. It has been observed that the number of skilled adult children working outside plantations was higher (0.33 on an average) in PLC compared to (0.04 on an average) in PROP tea plantations (Table 4.1).

4.2 Status of Basic Amenities in Tea Labourer Households

The summary statistics for the basic amenity facilities of tea labourers in different ownership structures of tea plantations in Assam are reported in Table 4.2. According to PLA (1951), tea plantation employers are mandated to provide medical facilities, clean drinking water, toilet, and urinals to the labourers in plantation areas. It can be seen that the maximum (68.63%) number of labourers in PLC ownership tea plantations live in the labour quarter provided by tea garden management, while nearly 40.52% of labourers from PROP ownership tea plantations live in their own constructed houses in the study area. Evidences from filed visit suggests that the self-constructed houses by tea labourers are kutcha-type houses made of bamboo and mud on unregistered land being provided by the tea garden management till their service period in the tea plantations. The housing facilities provided by the government through Indira Awas Yojana (IAY) are less impressive with overall figures of nearly 2.94%. We also find that the majority (83.99%) of labourers from PROP tea plantations live in Kutcha houses while the provision for pucca-type housing facilities is minuscule with figures of 0.33% in the study area. From the field survey, it was found that the maximum number of tea labourer households were using firewood and kerosene for preparing

their food. As is evident from Table 4.2 the majority of households have a kitchen within the living room with no proper ventilation which is likely to have negative health consequences, as the smoke from burning firewood and kerosene may lead to acute respiratory illness and impaired lung function (Bede-Ojimadu and Orisakwe, 2020). During 2014 the GoI launched Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY) for the rural areas with the objectives of electrification of all un-electrified villages recorded in the Census (2011), and similarly, Pradhan Mantri Sahaj Bijli Har Ghar Yojana-Saubhagya was launched in 2017 for electrification of rural and urban poor households in the country. However, such facilities seem to be less satisfactory among the labourer households in the tea plantations of Assam. Nearly 82.84% of sample labourer households were having access to electricity facilities in the overall sample, with figures higher (86.27%) among the households in PLC ownership plantations relative to 79.41% of labourer households in PROP ownership structures of tea plantations. Thus nearly 17.16% of tea labourer households seem to have no access to electricity facilities in the study area. The access to water and sanitation facilities among the labourer household is less impressive in the study area. Nearly 35.29% of the labourers in PROP households go for open defecation as they do not have access to toilet facilities on the premises. The availability of water facilities is of paramount importance for better health and hygiene. In the overall sample households, only 25% of labourer households have their own constructed water point, while reaming 75% of labourer households survive by sharing water points provided by the tea garden management and government (Table 4.2).

4.2 Basic Amenities among Tea Labourers in Assam

Basic Facilities/Descriptive Statistics		PLC	PROP	Overall
Ownership of Houses	Provided by Government (IAY on unregistered land)	1.96	3.92	2.94
	Provided by Garden (Labour Quarter)	68.63	55.56	62.09
	Own (on temporary land provided by garden)	29.41	40.52	34.97
Types of Houses	Kutcha (Mud and Straw)	51.96	83.99	67.97
	Semi-pucca	47.71	15.69	31.7
	Pucca	0.33	0.33	0.33
Kitchen	in Living Room	88.56	87.25	87.91
	Separated	11.44	12.75	12.09
Access to Electricity	In premises	86.27	79.41	82.84
Access to Bathroom	In Quarter	9.8	12.09	10.95
Toilet Facilities	Open	29.08	35.29	32.19
	Provided by Government	12.42	11.76	12.09
	Provided by Garden	58.5	52.94	55.72
	Own	36.27	27.12	31.7
Water Source	Provided by Government	31.37	22.55	26.96
	Provided by Garden	36.93	49.02	42.97
	Own	29.41	20.59	25
Ration Card	Not Access	13.4	16.34	14.87
Access to Job Card	Card Holder	36.6	39.54	38.07
Bank Account	Account Holder	94.44	94.77	94.61

Source: Estimated based on field survey.

Apart from daily cash wage, PLA (1951) has made provisions for the entitlement of incentives and in-kind benefits for the labourers in the tea plantations of India. Table 4.3 presents the various in-kind welfare facilities to the labourers in different ownership structures of tea plantations in the state. It can be seen that the distribution of blankest among labourers in PROP tea plantations was the lowest (33.33%) relative to 72.22% of labourers who received the blanket in PLC tea plantations. Similarly, the distribution of in-kind benefit facilities such as a pair of sleepers, aprons, umbrellas, and firewood was found to be lowest among the labourers engaged in PROP tea plantations compared to PLC tea plantations in the study area. The labourers in PROP ownership structures

of tea plantations were lagging behind for the entitlement of wheat and dry tea leaves, while it was better among the labourers working in PLC ownership structures of tea plantations in both items. We also find that the availability of playgrounds for labourers is higher in PROP tea plantations, while there has been inadequate provision for access to child care facilities and drinking water supply in the working place of the labourer in PROP tea plantations relative to PLC tea plantations in Assam. Thus barring playground facility, the labourers engaged in PROP ownership structures of tea plantations were seen to be lagging for the rest of the in-kind welfare facilities when we compared with the labourers engaged in PLC ownership structures of tea plantations in reference (Table 4.3).

Table 4.3 In-kind Welfare Facilities among Tea Labourers in Assam

In-kind facilities/ Descriptive statistics	PLC	PROP	Overall
Blanket	72.22	33.33	52.78
Pair of sleepers	77.78	38.89	58.33
Apron	72.22	38.89	55.56
Umbrella	77.78	44.44	61.11
Firewood	66.67	27.78	47.22
Wheat	72.22	54.25	63.24
Dry tea leaves	100.00	94.44	97.22
Play Ground	55.60	61.10	58.30
Child care facilities	11.10	5.60	8.30
Water supply to labourer in the working place	83.30	44.40	63.9

N=612

Source: Estimated based on field survey.

As per PLA (1951), tea plantation labourers are entitled for health and educational facilities. Using descriptive evidence, we explore whether the managerial intervention has any influence on the provisions for health and educational facilities among labourers in the tea plantations sector of Assam reported in Table 4.4. The results does not show any significant difference in the provision of doctor and compounder facilities among the labourers in different ownership structures of tea plantations in the study

area. However, it can be noticed that the availability of doctors and compounder facilities was relatively lower in PROP compared to PLC ownership structures of tea plantations. Though no significant difference in terms of the availability of ANM/GNM, hospital beds, and ambulance services has been found across different ownership structures of tea plantations. It is evident from Table 4.4 that on an average, the availability of ANM/GNM, hospital beds, and ambulance services was relatively lower in PROP tea plantations than that in the PLC ownership structure of tea plantations. The availability of primary schools and teachers is seen to have statistically significant difference across the different ownership structures of tea plantations in Assam. The availability of primary schools and teachers was relatively lower in PROP tea plantations with average figures of 0.83 and 1.72 respectively. Thus barring the availability of ANM/GNM, beds in the hospital, and the availability of teachers in schools, the tea garden management made no arrangement for providing at least one doctor, compounders, and ambulance services for the welfare of labourers in the tea plantation sector of Assam with the availability of school facility was also meager in the study area. More or less in line with the existing evidence that tea garden labourers are highly dependent on their employers for their health checkup and education facilities, however, provision for such facilitates were not satisfactory among the tea plantations labourers in India (Rajput et al., 2022). Hence the present study find evidence that there is inadequate provision for health and educational facilities among labourers, with the labourers engaged in PROP ownership tea plantations facing an acute shortage of such facilities compared to the labourers in PLC ownership structures of tea plantations in the study area.

Table 4.4 Health and Educational Facilities of Tea Labourers in Assam

Facilities/Descriptive statistics	Overall	PLC	PROP	Mean difference PLC & PROP	t-statistic
	Mean(SD)	Mean(SD)	Mean(SD)		
No. of doctors	0.72 (0.45)	0.78 (0.43)	0.67 (0.49)	0.11	0.73
No. ANM/GNM	1.61 (0.77)	2.00 (0.77)	1.22 (0.55)	0.78	3.5***
No. of hospital beds	14.06 (12.43)	20.28 (14.84)	7.83 (3.97)	12.44	3.43***
No. of ambulance services	0.78 (0.59)	0.94 (0.64)	0.61 (0.50)	0.33	1.74*
No. of compounder	0.86 (0.35)	0.89 (0.32)	0.83 (0.38)	0.06	0.47
No. of primary schools	0.92 (0.28)	1.00 (0)	0.83 (0.38)	0.17	1.84**
No. of teachers	2.47 (1.21)	3.22 (0.94)	1.72 (0.90)	1.50	4.73***

Source: Estimated from the field survey data.
Note. ***p<0.01,**<0.05; SD stands for standard deviation; ANM and GNM stand for Auxiliary Nursing Midwife and General Nursing and Midwife respectively.

4.2.1 Basic Amenities Index among Tea Labourer Households

Table 4.5 shows the BAI of tea labourers in different ownership structures of tea plantations in Assam. It was observed that basic amenities among the tea labourers are less satisfactory in the study area as the overall value of BAI is just 0.49. Considering the basic amenities among the labourers in different ownership structures of tea plantations, labourers in PLC are found to be in a better position with BAI value of 0.52, while it was poor (0.46) among labourers in PROP ownership tea plantations in the study area. Such differences may be because of the disproportion of welfare and in-kind benefits among labourers in different ownership structures of tea plantations in the state as discussed in the previous sections. Thus it has been observed that labourers are lagging behind in terms of basic amenities as the BAI value of overall sample households is just 0.49, while it is more worsening among the labourers engaged in PROP tea plantations relative to the labourers in PLC ownership structures of tea plantations in the state. Such result lend credence with the finding by Oxfam India (2019) as it was mentioned that labourers in tea plantation sectors of Assam lacking in

terms of basic amenities such as timely and good quality healthcare, proper housing facilities, access to clean drinking water, and provide their children with a decent education, which led them to backward sections in the state.

Table 4.5 Basic Amenities Index

Ownership structure/Index	BAI
PLC	0.52
PROP	0.46
Overall	0.49

Source: Estimated based on field survey.

4.3 Status of Assets Possession by Tea Labourer Households

The tea plantation labourer households in the study area were seen to possess some production and consumption assets as reported in Table 4.6. In terms of possession of production assets, nearly 66.77% labourer households possess agricultural land, followed by possession of hen, cow, and goats with figures of 52.12%, 25.65%, and 24.67% respectively in the overall sample. The possession of ducks and pigs is low with figures of 15.1% and 7.03% respectively in the overall sample. Turning into the ownership-wise possession of assets, we find that the possession of production assets viz. agricultural land, cow, goat, hen and duck were low among labourers in PROP ownership tea plantations relative to labourers in PLC tea plantations barring possession of pigs.

Table 4.6 Possession of Assets among Tea Labourers in Assam

Asset Ownership		PLC	Prop	Overall Sample
Production Asset	Agricultural Land	72.22	61.11	66.77
	Cow	29.09	22.22	25.65
	Goat	25.49	23.86	24.67
	Pig	5.56	8.48	7.03
	Hen	52.61	51.63	52.12
	Duck	16.67	13.73	15.1
Consumption Asset	Bi-Cycle	63.4	57.84	60.62
	Electrical Fan	41.18	37.91	39.54
	Mobile Phone	68.63	66.34	67.48
	Television	37.91	31.7	34.8

Source: Estimated based on field survey.

At the same time, nearly 67.48% of labourer households owned mobile phones followed by 60.62% by-cycle in the overall sample households. The labourer household

having a television and electrical fans is seen to be meager with percentage figures of 34.80% and 39.54% respectively. While concerning the possession of consumption assets in different ownership structures of tea plantations, the labourer households in PROP tea plantations were found to be lagging behind in all respects compared to labourer households in PLC tea plantations in the study area under consideration.

4.3.1 Asset Ownership Index among Tea Labourer Households

To understand the economic status of plantation labourer households, AOI has been calculated. From Table 4.7, it can be seen that in the overall sample, the value of production assets was highest (0.54) compared to the value of possession of consumption assets is 0.52. Considering the value of AOI across the different ownership structures of tea plantations, labourers in PROP tea plantations have a low value of production and consumption assets as compared to the labourers in PLC ownership tea plantations in the study area. Thus, it is found that the tea labourer households in PROP tea plantations were in a disadvantaged situation in terms of possession of both production and consumption assets. The possible explanation for such results may be the fact that labourers engaged in PROP ownership structures of tea plantations were deprived of some of the basic amenities and welfare facilities to be provided by the tea plantation management as per the guidelines of PLA (1951) refer to Table 4.2 and 4.3. Thus given the differences in ownership of assets among labourers in different types of tea plantation management, the ownership of assets among the sampled labourer households was also found to be less satisfactory across the tea plantations of the state. In consonance with the existing evidence claims that the low level of possession of assets among tea plantation labourers restricts them to diversify their livelihood and move out of poverty (Gurung, 2021).

Table 4.7 Asset Ownership Index

Ownership structure/Index	Production Asset	Consumption Asset
PLC	0.65	0.53
PROP	0.44	0.52
Overall	0.54	0.52

Source: Estimated based on field survey.

4.4 Allocation of Labour and Leisure Time among Tea Labourer

With leisure time being considered as a proxy for the standard of living, quality of life, and socio-economic wellbeing of an individual or household (Riddell, 1990; Llyod and Auld, 2002). In the present section, an attempt has been made to quantify the level of living among tea labourers in terms of availing leisure. The leisure calculation has been obtained by decomposing the time allocation in different types of activities viz. leisure, non-market domestic activities, and working hours in tea plantations by labourers of sample households (Table 4.8).

Refer to Table 4.8, barring non-market domestic activities, the time allocation in leisure, and working hours in tea plantations are seen to be significantly different among labourers in different ownership structures of tea plantations in the study area. As per the estimated result, the labourers engaged in PROP ownership structures of plantations spent longer time working in the tea plantations and less time on leisure as relative to labourers engaged in PLC ownership structures of tea plantations in the state. On an average, the labourers engaged in PROP tea plantations spent nearly 10.71 hours in tea plantation duties while 9.99 hours being spent by labourers in PLC ownership structures of tea plantations. We noticed that the leisure hours enjoyed by the labourers in PROP structures of tea plantation was relatively less (8.28 hours) as compared to the average leisure hour (9.12 hours) enjoyed by the labourers engaged in PLC ownership structures of tea plantations in the study area (see Table 4.8). Notably, the labourers engaged in

PLC tea plantations used to spend more time on non-market domestic activities relative to labourers in PROP tea plantations. Thus results of descriptive statistics confirm the presence of difference in time leisure enjoyed by labourers engaged in different ownership structures of tea plantations, while labourers in PROP ownership structures of tea plantations avails less leisure relative to labourers working in PLC tea plantations. A possible explanation of such result might be because of differences in hours of work (tea garden duty) per day among labourers across different ownership structures of tea plantations, with labourers engaged in PROP tea plantations spending more hours working in tea plantations relative to labourers in PLC ownership structures of tea plantations. Such finding is in credence with a study by Roy and Biswas (2021) as it was claimed that under the uniform wage rate, there was a difference in working hours of labourers engaged in different ownership structures of tea plantations, while the labourers engaged in PROP tea plantations had to work more compared to PLC, PBF and PSU types of ownership tea plantations in West Bengal. Hence the standard of living and the quality of life in terms of leisure time is found to be low among the labourers engaged in PROP ownership structures of tea plantations relative to the PLC ownership structure of tea plantations. The existing literature claims that leisure time has a positive association with the standard of living and quality of life of an individual or a household (Riddell, 1990; Llyod and Auld, 2002; Wooden and Bardasi, 2006; Kalenkoski et al., 2011; Liu and Da, 2019; Chick et al., 2023).

In the next section, we carried out an econometric analysis to investigate the factors that influence leisure time among the labourers in different ownership structures of tea plantations in the study area.

Table 4.8 Leisure Time- A Descriptive Statistics

Descriptive statistics	PLC (SD)	PROP (SD)	Overall (SD)	Mean Difference (PLC & PROP)	t-statistic
Leisure time	9.12 (1.04)	8.28 (0.93)	8.70 (1.07)	0.84	10.48***
Domestic Activities	3.18 (1.23)	3.13 (0.97)	3.16 (1.12)	0.049	0.55
Working hours in tea garden	9.99 (0.81)	10.71 (0.74)	10.34 (0.85)	-0.72	-11.50**
N = 612					

Source: Estimated from the field survey data.
Note. *** p < 0.01, ** < 0.05 ; SD stands for standard deviations.

4.4.1 Determinants of Leisure Time among Tea Labourer

The regression result for leisure time equation (11) is reported in Table 4.9. The results do suggest a significant role for gender, years of schooling, family size, monthly PCI, asset ownership, access to agricultural land, ownership structures of tea plantations, and geographical location in shaping the leisure time among the labourers in tea plantations of Assam. The coefficient of gender is statistically significant with negative sign implying female-headed households enjoyed less leisure hours. The plausible explanation for such a result may be the fact that apart from working in the tea plantations, females are normally pre-occupied with various domestic responsibilities[14] in their household, which might be the reason for limited time for leisure relative to their male counterparts. Our finding is more or less similar to previous studies that over the generation females engaged more in domestic activities than their male counterparts, thereby enjoying less time for leisure (Chatzitheochari and Arber, 2012; Haller et al., 2013; Cerrato and Cifre, 2018). Educational attainment is claimed to be an important factor influencing the moderate relationship between leisure activities and cognitive development (Park et al., 2019). Present findings also do suggest that years of schooling among labourers have a direct association with leisure time. At the same

[14] Such as cooking, cleaning, marketing, taking cares of children and the elderly etc.

time, the coefficient of family size is found to be statistically negatively significant association with leisure time, indicating that an increase in family size was inversely associated with the leisure time of the household head. Given the meager income to support the cost of living, urges all the family members to engage in income generation activities (supplementary earnings) besides tea plantation work thereby leaving limited or no time for leisure. The present result also confirms that households with a higher level of monthly per capita income and better possession of assets are seen to enjoy longer leisure hours. An intuitive explanation of such result may be the fact that the income effect is stronger than the negative substitution effect of increase in income on preference for leisure which is the underlying idea behind the backward bending supply cure of labour. The present results are consistent with the empirical findings that leisure time is significantly higher among individuals with high-income and better possession of assets at the household level (Verbooy et al., 2021; Koranen and Niemela, 2022).

The estimated coefficient of access to agricultural land is positively significant implying that access to land by tea labourer households as offered by tea garden management allows the household to practice agriculture and animal husbandry activities, thereby assists income and increase their leisure hours. In consonance with the existing evidence that leisure increase with agricultural activities that has many positive effects; it increases the household incomes of farmers and expand employment capacity, and promotes development in the rural economy (Giaccio et al., 2018; Wang et al., 2022). Interestingly, the coefficient of ownership structures of tea plantations is statistically positive and significant indicating that the leisure hours among the labourers vary with the ownership structures of tea plantations. As we move from PLC to PROP ownership structures of tea plantations, the leisure time among the labourers decreases (Table 4.9). Such result might be due to managerial interventions which force

labourers to work more than standard hours of work per day at a uniform wage rate across the different ownership structures of tea plantations.

Table 4.9 Determinants of Leisure Time among Tea Labourers in Assam

Variables	Coefficients/others
Gender (1= female; 0 Otherwise)	-0.01** (0.00)
Age	0.01 (0.02)
Experience	0.02 (0.01)
Years of Schooling	0.02*** (0.00)
Family Size	-0.06*** (0.01)
Monthly Family PCI	0.14*** (0.05)
Asset Ownership	0.04** (0.01)
Agricultural Land (1=Access; 0 Otherwise)	0.01*** (0.5)
Ownership Structures (1=PLC; 0 Otherwise)	0.04*** (0.00)
Upper Assam Region	0.03*** (0.01)
North Bank Region	0.01 (0.05)
Constant	0.47** (0.19)
F – statistic	27.10***
R^2	0.32
Mean Vif	3.28
BP-CW test	5.53**
N = 612	

Source: Estimated from the field survey data.

Note. ***p<0.01, **<0.05; Figures in parentheses are standard error; Cachar Region is considered as reference category.

This is more or less in line with the existing literature that the actual weekly average working hours in PROP tea plantations of West Bengal were significantly higher than standard weekly working hours in PLC, PBF and PSU ownership tea plantations (Roy, 2019). Hence, apart from social, economic, and demographic factors, the managerial interventions in tea plantations are seen to play a crucial role in determining leisure time among labourers in the sampled households of the study area.

4.5 Conclusion

The present chapter made an attempt to examine the standard of living among permanent resident labourers engaged in different ownership structures of tea plantations in Assam. We find that given the uniform wage rate, the average monthly PCI was low among the labourer households in PROP ownership structures relative to the labourer household in PLC tea plantations. The average years of schooling and skill formation among adult children of the labourer were also found to be meager in PROP tea plantations relative to PLC. However, the overall figures of the level of formal educational attainment among labourer and their adult children in sample tea plantations were seen to be very low with less than 5 years of schooling on an average. Thus the provision for welfare facilities among the labourers in the tea plantations of the state was seen to be less satisfactory with the situation being worse in PROP plantations compared to PLC tea plantations. The availability of health and educational facilities among labourers engaged in PROP ownership structures of tea plantations was also found to be limited compared to labourers engaged in PLC tea plantations. Moreover, labourers in PROP ownership tea plantations are lagging behind in terms of possession of assets and access to basic amenities facilities in the state. We also found low level of living among the labourer engaged in PROP tea plantations with labourer in PROP plantations seen to work longer hours for drawing uniform wages like the worker in PLC tea plantations of the study area. The backward bending supply curve of labour supply model is operative in the study area with the income effect is stronger enough than the negative substitution effect of increase in income on preference for leisure. Moreover, it was also observed that apart from social, economic, and demographic factors, the ownership structures of tea plantations also played a crucial role in determining leisure time among labourers in the sample households of the study

area, with labourer in PROP structure tea plantation seen to be more disadvantaged in position.

CHAPTER 5

Intergenerational Occupational Mobility of Labourers in Different Ownership Structures of Tea Plantations in Assam

The present chapter examines the occupational mobility among tea labourers and factors influencing it across the different ownership structures of tea plantations in Assam. This chapter consists of four sections. The first section covers the discussion on the status of occupational characteristics of tea plantation labourers and their adult children. In the subsequent section, intergenerational occupational mobility among sampled labourer households is analyzed. The determinants of occupational mobility and the upward mobility of tea labourer households have been discussed in the subsequent section. The conclusion of the chapter is summarized in the final Section.

5.1 Status of Occupational Distribution among Tea Plantation Labourer

The descriptive statistics of the occupational distribution of fathers and their adult children are reported in Table 5.1. The percentage shares of fathers engaged on permanent basis was higher in PROP tea plantations with not much difference for casual employment across the different ownership structures. Conversely, the percentage engaged on permanent basis among adult children was higher in PLC tea plantations while on casual basis it was higher in PROP tea plantations (refer Table 5.1). With PROP tea plantations being largely profit motivated, the depressionary trend in Indian tea sector urged greater casualization of labourer in such plantations might be possible explanation for such result. We found that there is presence of stickiness in lower-tier work among the sampled labourers engaged outside the tea plantations with high retention rate in such work. Across the sampled households, the engagement outside tea plantations among majority of fathers and adult children was on lower-tier unskilled work relative to skilled work. Limited skill formation of tea labourer and their family

members might have constrained them in placement to skill-based works. The percentage of workers engaged in the public sector service was meager among the fathers and adult children. Besides increasing competition in public sector service, the exclusion of tea labourers from ST status possibly is the reason for their marginality in public sector service. Interestingly, father's work participation ratewas relatively higher than adult children in respect of self-employment and cultivators. Such result may be because of limited interest of youths in agriculture and increasing opportunities in the non-farm sector in recent years (FAO, 2014; Kumar, 2016; Mishra and Singh, 2018; Liu and Wang, 2022). Inadequate gainful employment opportunities and low wages in Assam tea plantations urged labourers in migrating to other states or urbanized areas in search of remunerative engagement with migration percentage was 2.3% and 16.55% respectively among fathers and adult children.

Table 5.1 Occupational Characteristics of Tea Plantation Labourers in Assam

Occupation	Fathers			Sons/daughters		
	PLC	PROP	Total	PLC	PROP	Total
Permanent tea labourer (O_1)	155(50.3)	172(57.33)	327(53.78)	32(14.29)	20(10.36)	52(12.47)
Casual tea labourer (O_2)	19(6.2)	18(6.0)	37(6.09)	26(11.61)	51(26.42)	77(18.47)
Low-paid daily wage non-farm labourer (O_3)	59(19.2)	57(19.0)	116(19.08)	58(25.89)	56(29.02)	114(27.34)
Skilled non-farm labourer (O_4)	22(7.1)	21(7.0)	43(7.07)	44(19.64)	23(11.92)	67(16.07)
Private salaried service (O_5)	14(4.5)	5(1.67)	19(3.13)	17(7.59)	7(3.63)	24(5.76)
Government service (O_6)	2(0.6)	0(0.0)	2(0.33)	3(1.34)	0(0.0)	3(0.72)
Self-employed (O_7)	12(3.9)	10(3.33)	22(3.62)	3(1.34)	4(2.07)	7(1.68)
Cultivator (O_8)	17(5.5)	11(3.67)	28(4.61)	3(1.34)	1(0.52)	4(0.96)
Migrated worker (O_9)	8(2.6)	6(2.0)	14(2.3)	38(16.96)	31(16.06)	69(16.55)
Total	308	300	608	224	193	417

Source: Estimated from the field survey data.
Note. Figures in the bracket represent percentages to column total.

Hence there seems to be diversity in intergenerational mobility (immobility) patterns among the sampled labourers in the tea plantation sector of Assam, with majority of adult children akin to the occupation opted by his/her father. However, such diversity

was in the form of transitioning toward lower-tier engagements among the labourer household in reference.

Table 5.2 illustrates some basic characteristics of average wage rate of labourer working within and outside the tea plantations, showing information for the upward and downward transition of adult children of tea labour households in the study area.

Table 5.2 Average Wage Rate of Labourer Working Inside/Outside Tea Plantations

Occupation	Wage rate (₹ per day)
Permanent tea labourer (O_1)	167
Casual tea labourer (O_2)	167
Low-paid daily wage non-farm labourer (O_3)	154.33
Skilled non-farm labourer (O_4)	350.25
Private salaried service (O_5)	291.82
Government service (O_6)	365.55
Self-employed (O_7)	103.33
Cultivator (O_8)	158.33
Migrated worker (O_9)	404.92

Source: Estimated from the field survey data.

It can be seen that average daily wage rate of tea plantation labourers for both permanent and casual worker was ₹ 167 during the study period (Financial Year, 2019-20). The downward occupational mobility in the present case has been considered as engagement in occupations such as dailywage non-farm labourer, self-employed, and cultivator as the average daily wage rate in these occupations was seen to be lower than the tea plantation labourer in the study area (Table 5.2). While transition to occupation such as skilled non-farm labourer, private salaried service, government service and labourer physically migrated for work elsewhere has been referred as upward occupational mobility in the present study as average daily wage rate in such profession seen to be higher than the wage rate provided to tea plantation labourer (Table 5.2).

Though the figures of upward occupational mobility (39.09%) was higher relative to horizontal (30.94%) and downward (29.98%) mobility among adult children in the overall sample (Appendix G). However, there was limited upward occupational mobility among adult children relative to horizontal and downward occupational transition in an aggregate (60.92%) in the study area. Since horizontal or downward transition is considered as low earning livelihood alternative among adult children either out of choice or out of compulsion (Mishra et al., 2012) thereby lock themselves in wage stickiness and demotion in job ladder. Notably, upward mobility was higher among the adult children in PLC ownership structure while downward mobility was relatively higher among the adult children in PROP ownership structure of plantation (Appendix G).

5.2 Intergenerational Occupational Mobility among Tea Labourer

The results of intergenerational occupational mobility among tea plantation labourer engaged in different ownership structure of plantations (PLC and PROP) is reported in Table 5.3. For the fathers occupied on permanent basis in tea plantations, the probability of transitioning to permanent job within tea plantations among adult children was higher in PLC type firms while transitioning to casual work was higher in PROP firms. With tea plantation labour work being intergenerational in nature, making it relatively easy to get absorbed into parents' jobs in PLC tea plantations as all managerial decisions relating to production and employment are taken jointly by the shareholders in tea plantations of PLC structure. The most visible transition to downward occupational mobility has been seen in PROP tea plantation with 34.3% engaged in lower-tier works in contrast with 25.3% in PLC ownership plantation. Evidences from Table 5.1 and 5.2 shows downward occupational transitions among the labourer engaged in lower tire work outside the plantations as the daily average wage rate of such workers is seen to

be lower than the prevailing wage rate among the labourers in the tea plantations of Assam. Besides low skill, limited opportunities in PROP tea plantations urged the labourer to absorb in any lower-tier works outside the teaplantations in the study area possibly be the reason for such result. Though the average daily wage rate of public sector services is higher than the wage rate of tea plantation labourer, the engagement in public sector service was nil among the adult children whose fathers were working in PROP, with a minuscule(1.8%) of adult children engaged in government jobs for the fathers working in PLC. The exclusion of tea labourers from tribal status together with lower educational attainment and skill making it difficult for them to absorb in secured public sector services (Karmakar, 2019). The preceding analysis reflects that occupational mobility among adult children was higher in PLC ownership type of tea plantations where their father was engaged on permanent basis. However, such occupational transition was not in the vertical direction among adult children. While referring to the occupation of fathers who were engaged on a casual basis in tea plantations of Assam, a significant section (41.2%) of their adult children in PROP plantations migrated to other Indian states to engage themselves in the informal sector on contractual or part-time work followed by 18.6% as casual tea labourer while 28.6% of adult children from PLC ownership structure move out of plantation by engaging themselves in lower-tier work. For the fathers engaged as casual labourers in the PROP tea plantation there was prevalence of upward occupational mobility among their adult children with the average daily wage rate among migrated labourers was higher than those engaged in tea plantations (Table 5.3). Inferences from summary statistics suggest that the drive towards casualization of labourers was relatively higher in PROP plantations than PLC ownership structure. Gradual casualization in job market poses greater livelihood risk thereby influencing migration decision among labourers (Stark

and Bloom, 1985; Stark, 1991). Greater uncertainty of welfare facilities due to the casualization of labourer and irregularity in source of earning (Langford, 2021), might have insisted adult children from PROP tea plantations taking decision to migrate other Indian states in search of employment.

With reference to fathers engaged as lower-tier daily wage labourer, occupational immobility among adult children was seen to be higher in PROP relative to PLC ownership structure of plantations. Nearly 30.6% of adult children in PROP plantations remained in the same occupation as their fathers. Again, while considering the fathers who were occupied as skilled non-farm labourer outside the plantation, the percentage of adult children imitating their father's occupation was high (exceeding 50%) and the figures of PLC tea plantations were closer to PROP firm. Such result shows the possibility of the networking effect which might have influenced adult children in following their father's occupation. For the fathers engaged as skilled non-farm work outside the plantation, nearly 16.7% of adult children occupied as casual labourers in the PROP structure of the plantation, while transition to lower-tier work was 17.2% and 13.3% respectively in PLC and PROP tea plantations. Insufficient education, skill, and technical knowledge constrained the upward occupational mobility of working age younger generation of tea labourer (Gurung and Mukherjee, 2018). With reference to fathers employed in private sector salaried services, the probability of transitioning towards father's occupation was higher in PLC relative to PROP type of tea plantations. The low occupational mobility of adult children in PROP tea plantations might be because of easy access to tea garden casual workthereby surrendering themselves as casual labourer inside the plantation. Across the sampled household in the study area, none of the household heads (father) was government service employees in PROP type plantations; with a few labourer in PLC plantations as engaged in government service

indicating the upward occupational transition. For the fathers in public sector service, a considerable percentage of adult children engaged as skilled and unskilled lower-tier work outside PLC tea plantations.

For fathers managing their living by self-employment, the transition to lower-tier jobs was uniformly higher among the adult children in both ownership structures of plantations; with lower-tier work was more preferred by the adult children in PLC plantations while self-employment was more popular option for those moving out of PROP ownership structure. Farming activities were carried out by less percentage of adult children in both ownership structures of plantation with the percentage share seen to be relatively higher among the adult children in PLC plantation relative to PROP ownership structure. The access to agricultural land provided by tea plantation management was relatively higher among the labourers in PLC ownership structures of plantations (Refer to Chapter 4), which might be the reason for their greater involvement in farming activities. The farmers with a large agricultural land holding were likely to have less occupational mobility as compared to the marginal and landless farmers in rural India (Reddy and Swaminathan, 2014). With fathers undertaking farming activities, the skilled and unskilled lower-tier work was popular among adult children in PLC ownership structure of plantation while in PROP ownership structure migration to other states for employment opportunities or engagement in tea plantation work on casual basis was more favored. With the fathers migrating to other states in search of employment opportunities, nearly44.4% and 37.5% of adult children from PLC and PROP plantations also migrated to other statesin search of employment. Given the limited livelihood opportunity within the plantation economy, migration to cities or other states for gainful employment opportunities was the next best alternative for tea labourer and their family members.

Table 5.3 Intergenerational Occupational Mobility among Tea Labourer

Father's occupation

Son's/daughter's Occupation	PLC ownership tea plantation								
	O1	O2	O3	O4	O5	O6	O7	O8	O9
Permanent tea labourer (O_1)	**0.164**	0.127	0.255	0.182	0.064	0.018	0.000	0.000	0.191
Casual tea labourer (O_2)	0.214	**0.071**	0.286	0.143	0.071	0.000	0.071	0.000	0.143
Low-paid dailywage non-farm labourer (O_3)	0.128	0.179	**0.256**	0.179	0.103	0.000	0.026	0.000	0.0128
Skilled non-farm labourer (O_4)	0.000	0.000	0.172	**0.586**	0.138	0.000	0.000	0.034	0.069
Private salaried service (O_5)	0.043	0.043	0.087	0.304	**0.478**	0.043	0.000	0.000	0.000
Government service (O_6)	0.000	0.000	0.200	0.400	0.000	**0.400**	0.000	0.000	0.000
Self-employed (O_7)	0.053	0.105	0.474	0.053	0.000	0.000	**0.105**	0.000	0.211
Cultivator (O_8)	0.000	0.000	0.167	0.333	0.056	0.000	0.056	**0.167**	0.222
Migrated worker (O_9)	0.111	0.000	0.222	0.222	0.000	0.000	0.000	0.000	**0.444**

N = 306

Son's/daughter's Occupation	PROP ownership tea plantation								
	O1	O2	O3	O4	O5	O6	O7	O8	O9
Permanent tea labourer (O_1)	**0.131**	0.253	0.343	0.111	0.040	0.000	0.030	0.000	0.091
Casual tea labourer (O_2)	0.000	**0.186**	0.118	0.166	0.118	0.000	0.000	0.000	0.412
Low-paid dailywage non-farm labourer (O_3)	0.102	0.265	**0.306**	0.082	0.000	0.000	0.020	0.000	0.224
Skilled non-farm labourer (O_4)	0.000	0.167	0.133	**0.567**	0.000	0.000	0.067	0.000	0.067
Private salaried service (O_5)	0.000	0.000	0.125	0.125	**0.375**	0.000	0.125	0.000	0.250
Government service (O_6)	0.000	0.000	0.000	0.000	0.000	**0.000**	0.000	0.000	0.000
Self-employed (O_7)	0.000	0.200	0.200	0.000	0.000	0.000	**0.400**	0.000	0.200
Cultivator (O_8)	0.071	0.214	0.143	0.071	0.071	0.000	0.071	**0.071**	0.286
Migrated worker (O_9)	0.125	0.250	0.000	0.250	0.000	0.000	0.000	0.000	**0.375**

N = 306

Son's/daughter's Occupation	Overall (PLC + PROP) tea plantation								
	O1	O2	O3	O4	O5	O6	O7	O8	O9
Permanent tea labourer (O_1)	**0.148**	0.187	0.297	0.148	0.053	0.010	0.014	0.000	0.144
Casual tea labourer (O_2)	0.097	**0.129**	0.194	0.161	0.097	0.000	0.032	0.000	0.290
Low-paid dailywage non-farm labourer (O_3)	0.114	0.227	**0.284**	0.125	0.045	0.000	0.023	0.000	0.182
Skilled non-farm labourer (O_4)	0.000	0.141	0.312	**0.320**	0.043	0.000	0.021	0.010	0.153
Private salaried service (O_5)	0.033	0.033	0.100	0.233	**0.567**	0.033	0.000	0.000	0.000
Government service (O_6)	0.000	0.000	0.200	0.400	0.000	**0.400**	0.000	0.000	0.000
Self-employed (O_7)	0.063	0.125	0.313	0.063	0.000	0.000	**0.188**	0.000	0.250
Cultivator (O_8)	0.032	0.129	0.194	0.193	0.065	0.000	0.032	**0.129**	0.226
Migrated worker (O_9)	0.071	0.143	0.143	0.286	0.000	0.000	0.000	0.000	**0.357**

N = 612

Source: Estimated from the field survey data.

From the preceding analysis, it can be understood that transition to occupations such as daily wage lower-tier work (both skilled and unskilled), self-employment, and migration to other statesin search of employment opportunities were popular livelihood options among the adult children whose fathers were engaged on permanent or casual basis in tea plantation sector of Assam. Barring occupations like self-employment

and cultivators, in most cases, adult children have imitated their father's occupation by engaging themselves outside tea plantation works. However, such transition to outside plantation work in the study area was characterized by engagement in lower-tier works. Evidence suggests that greater percentage of adult children of tea labour household in PROP ownership structure were engaged on casual basis in tea plantation works (Table 5.2); which contributed to their low occupational transition. Present findings also suggest obstacles to upward mobility prevalent in both ownership structures of plantations with the transition towards private salaried, government service, skilled non-farm labourer and migration to other states of India remained meagre, while the lower-tier work seen to be a popular livelihood option among the adult children in the study area. The low education and skill, besides insufficient employment opportunities for the remoteness of the tea plantations in Assam possibly insisted the children of tea labourer opt for lower-tier work.This is more or less in line with the existing evidence that lack of basic minimum education, lackof skill and training, relative backwardness of the regions, and low level of interaction with outside tea population economy were the constraints in finding better job opportunities outside plantation (Sarkar, 2015; Gurung and Mukherjee, 2018).

5.3 Determinants of Occupational Mobility and Upward Mobility

The Model I and Model II shows the results of the factors determining the intergenerational occupational mobility and upward mobility among the tea plantation labourer in Assam as reported in Table 5.4. The results from the logistic regression suggest that nine out of thirteen independent variables have turned out to be statistically significant in the Model-I. Our regression results do suggest significant role of gender, years of schooling, the skill of adult children, family size, father's occupation, family monthly PCI, dependency ratio; enabling factors like the ownership structure of

plantation and geographical location in shaping the occupational mobility in the study area. We find definite gender pattern in transitioning as sons were more likely to move into wage employment opportunities outside tea plantation while daughters were more likely to retain themselves inside the plantation in manual or casual work. The odds ratio shows that as we move from daughters to sons, the odds in favour of occupational mobility increase by 9.59 times. In the Indian tea sector, females are considered as the reserve army and are mostly preferred for field-based work during the peak season by employing them on casual basis, preoccupied with domestic responsibility; low skills and education constrain them from moving outside the enclave of low-paid plantation work (Bhadra, 1985; Gurung and Mukherjee, 2018). As conjectured, the family size seems to be a positive significant predictor of occupational transition in the study area implying probability of occupational transitioning among adult children increases with an increase in family size. Present findings thus lend credence to the existing literature that the large family size complements occupational transitioning towards unskilled work in Belgium (Bavel et al., 2011; Mu and Chen, 2022). As conventional wisdom avers that the chance of occupational mobility from low paid to higher paid wage employment increases with the improvement in the level of educational attainment. The years of schooling yield a positive significant association with occupational transition. Thus, an additional year of schooling among adult children increases the odds in favour of occupational mobility by 1.14 times in the study area. Present results corroborate the findings of Bhowmik (1980), Mishra et al. (2011) as they connoted low level of educational attainment among tea labourers restricted them within the plantation resulting in frustration among them. The father's occupation to some extent influences the career of their children. We found that the professional engagement of fathers outside tea plantation work has a positive significant association with the occupational

transition of adult children. An intuitive explanation of such results may be the networking effect or imitating fathers' profession among adult children. Podolny and Baron (1997), Calvó-Armengol and Jackson (2004) maintained that having a large and sparse network of informal ties helps to facilitate mobility for better employment opportunities in the labour market. As anticipated, the income level of a household exerts a positive significant effect on occupational transition among adult children of tea labourers. A plausible explanation for such a result may be the fact that higher earnings or family income reduces the dependency of family members on tea plantation work. Present results are in line with the findings of Mitra (2006), Henriksson et al. (2021) as they asserted that inflow of income in a family assists occupational mobility. The value of dependency ratio is positive significant implying that the probability of transitioning to outside tea plantation work increases with an increase in dependency ratio in labourer households.

It is a general understanding that the skill of an individual considerably influences the choice of occupation with unskilled labourer being left with limited options relative to those skilled labourers. As anticipated, there is a positive relationship between the skills of individuals with occupational transition across the sampled households in the study area. This indicates as we move from unskilled to skilled adult children, occupational mobility increases by 15.89 times.The skilled adult children of tea labourer prefer to move out of plantation work, given the majorpart of plantation activities being field-based (plucking of green leaves, pruning, spraying pesticides, plucking, cleaning, and digging) which can be handled by unskilled labourer (Mishra et al, 2011; Sharma, 2018).

Table 5.4 Determinants of Occupational Mobility among Tea Labourer

Variables	Model-I Occupational Mobility		Model-II Upward Occupational Mobility	
	Coefficients	Odds ratio	Coefficients	Odds ratio
Gender (1=Male; 0 Otherwise)	2.26***(0.32)	9.59***(3.05)	2.20***(0.0.40)	9.05***(3.67)
Age	0.05 (0.06)	1.06 (0.07)	0.01(0.08)	1.01(0.08)
Age^2	-0.0004 (0.0007)	0.99(0.0007)	-0.0001(0.001)	0.99 (0.001)
Family size	0.19***(0.07)	1.21***(0.08)	0.49 (0.09)	1.05 (1.10)
Years of schooling	0.13***(0.03)	1.14***(0.04)	0.28***(0.05)	1.31***(0.06)
Father's occupation (0=Outside garden; 0 Otherwise)	0.83***(0.25)	2.30***(0.58)	0.86***(0.33)	2.36***(0.78)
Family per-capita income	0.001***(0.0001)	1.001***(0.0001)	0.001***(0.001)	1.00***(0.002)
Dependency ratio	0.28***(0.09)	1.33***(0.12)	0.08 (0.10)	1.10 (0.11)
Skills (1=Skilled; 0 Otherwise)	2.77***(0.64)	15.89***(10.25)	3.32***(0.54)	27.68***(14.98)
Distance to town	-0.006 (0.009)	0.99 (0.01)	-0.42**(0.02)	0.96***(0.02)
Ownership structures (1=PLC; 0 Otherwise)	1.28***(0.25)	3.58***(0.89)	1.37***(0.36)	3.95***(1.43)
North Bank Region	0.27 (0.29)	1.31 (0.38)	0.33 (0.43)	1.39 (0.61)
Upper Assam Region	0.75***(0.31)	2.11***(0.64)	0.68*(0.41)	1.99*(0.82)
Constant	-7.31***(1.49)	-	-7.03***(1.89)	-
Variance Parameters				
LR χ^2	311.11***	311.11***	356.56***	356.56***
Pseudo R^2	0.38	0.38	0.55	0.55
Log-Likelihood	-251.55	-251.55	-140.81	-140.81
Wald χ^2	151.78***	151.78***	134.79 ***	134.79***
Hosmer-Lemeshow χ^2	5.85 [0.77]	4.85.07 [0.77]	4.04 [0.85]	4.04 [0.85]
N = 612				

Source: Estimated from the field survey data.
Note. ***p < 0.01, ** p < 0.05 *p < 0.10; Figures in the ( ) are standard errors; Figures in [ ] represents Prob > Chi^2; Cachar Region is considered as reference category.

Interestingly, the ownership structure of tea plantations has a significant and positive association with occupational mobility among adult children. As we move from PROP

to PLC structure of plantation the occupational transition among adult children increases by 3.58 times. With PROP tea plantations being largely profit motivated, the depressionary trend in the Indian tea sector urged greater employment of adult children on casual basis (see Table 5.2). In addition, limited access to in-kind benefits and inadequate outlay on human capital primarily in health and education among the labourers in PROP structure of plantation (see Chapter 4) might have created invisible obstacle for them in moving out of tea plantation work. Poor health conditions can be a major source of capability deprivation and hence a cause for unemployment and poverty (Sen, 1999). Roy and Biswas (2019) reported there was unexpected inequality in expenses toward welfare provision for tea plantation labourer in West Bengal across different ownership structures despite being operational under the same legislation. Roy (2020) found actual weekly average working hours in PROP tea plantations of West Bengal was significantly higher than standard weekly working hours. So far as the estimate of locational dummy is concerned, occupational transition was significantly lower among the labourers in the Cachar tea growing region relative to that of Upper Assam region. The possible explanation for such a result may be the fact that the tea plantations in Upper Assam seem to be closer[15] to the township relative to that of North Bank and Cachar tea growing region thereby offering greater avenues and alternatives of supplementary earning opportunities for the labourer. The present result corroborates the findings of Mishra et al. (2012) as it was reported that proximity of tea plantations to urban locations positively influenced the occupational transitioning of labourer. The natural disadvantage of being located remotely and the absence of

[15] As per the data collected from the field survey, the average distance to town from the tea plantations was least (12.96 km) in Upper Assam region while it was highest (30.29 km) in North Bank region and nearly 23.42 km in Cachar region in the study area.

transportation facilities besides higher commuting cost to the township discouraged labourer mobility in tea plantations of West Bengal (Sarkar and Ghosh, 2021).

With reference to the determinants of upward transition as in Model-II, it can be seen that eight variables out of 13 independent variables are turned out to be statistically significant (Table 5.4). Our results do suggest that significant role for gender, years of schooling, father's occupation, average monthly family per-capita income, skills of adult children, distance to the township, ownership structures, and geographical locations in shaping the upward transition in the study area. It has been observed that relative to female the adult male labourer in tea plantation are more likely transitioning towards upward occupational category, as we move from daughters to sons, the odds in favour of upward occupational mobility increases by 9.05 times. Poor educational attainment, lack of training and skill development, and limited interactions to the external world limits the ability of women labourer to engage outside tea plantation work (Gurung and Mukherjee, 2018). The educational attainment is a crucial factor assisting the occupational transition towards upward direction (ILO, 2020). It can be seen that additional years of schooling among the adult children of tea labourers assisted in upward occupational transition among them. For the fathers working outside the plantations, there was upward occupational mobility among their adult children. This is more or less in line with the existing evidence that social network associated with parents' occupations likely to help in searching for better job opportunities among adult children (Granovetter, 2005; Singh et al., 2021). Skills considerably influences ability of labourer in searching for new opportunities and adapt to the changing labour market requirements which enable unemployed youth to take up new better salaried jobs (ILO, 2020). The skills among the adult children seen to have positive significant effect on upward occupational transition, the odd ratio shows that as we move from unskilled to

skilled adult children, upward occupational mobility increases by 27.68 times. The distance to township from tea plantations reveals negative significant association with upward occupational transition. Todaro (1969) maintained that urban areas are more likely to attract rural migrants for better wage employment opportunities than rural areas. Study by Ahsan and Chatterjee (2017) claimed that adult children inhabiting in the periphery of township has a greater advantage with higher probability of being employed in better occupation than their parents in India. Interestingly, ownership structures of tea plantation has been found to be positive significant predictor of upward occupational transitions among the adult children of tea labourer in the study area. The odd ratio confirms that as we move from PROP to PLC ownership structures tea plantation the odds in favour of upward occupational mobility increases by 1.39 times. The low level of skill formation and educational attainment among labourers in PROP ownership structure plantation (Table 5.1) may be a reason for such results. Our findings thus lend credence to the existing literature that the level of education and skills play a vital role for acquiring better wage employment in India (Jha and Pandey, 2015). The value of pseudo R^2 shows our model is fit over no model. The value of Wald χ^2 indicates that the independent variables as a predictor significantly enhance the prediction performance of our model, and the Hosmer-Lemeshow test confirmed that we have at least an acceptable fitting model.

5.4 Conclusion

This chapter made an attempt to understand if intergenerational occupational mobility of labourers has any association with the ownership structure of plantations in Assam. An attempt has also been made to examine the factors determining intergenerational occupational mobility and upward mobility among labourers. The results from the transition probability matrix suggest that the occupational mobility ofadult children was

low among the labourers engaged in PROP tea plantations relative to PLC ownership structure. Though upward occupational mobility was higher among adult children in PLC ownership structure at the disaggregate level. But, there was limited upward occupational transition in both ownership structures of plantations relative to horizontal and downward occupational transition in the overall sample. The transition towards private salaried and government service being meager, the lower-tier wage work outside tea plantation was seen to be a popular livelihood option among the adult children in the study area. The regression results suggest a significant role of gender, years of schooling, the skill of adult children, family size, father's occupation, family monthly PCI, dependency ratio; enabling factors like ownership structure of plantation and geographical location in shaping the occupational transition and upward occupational mobility in the study area.

CHAPTER 6

Factors Determining Poverty and Inequality among Labourers in Different Ownership Structures of Tea Plantations in Assam

This chapter made an attempt to examine the incidence of poverty and inequality, and factors determining such phenomenon among the labourers across different ownership structures of tea plantations in Assam. The chapter has been fragmented into various sections and sub-sections; Section 6.1 covers discussion on the incidence of poverty among tea labourers in Assam. The subsequent section examines the determinants of poverty in the study area. The level of inequality and its determinants has been discussed in Section 6.3 of this chapter. The final section covered the conclusion of this chapter.

6.1 Incidence of Poverty among Tea Labourers in Assam

The severity and incidence of poverty among labourers in different ownership structures of tea plantations of the state is examined using the poverty line as suggested by the Tendulkar Committee (2011-12) and Planning Commission popularly known as Rangarajan Committee (2014) on the basis of monthly per capita consumption expenditure (MPCE) data. Of course, the practice of evaluating poverty using MPCE is not free from limitation given the possibility of over estimation or underestimation of the level of living as per capita consumption expenditure ignores the household composition that is number of children and adults in the household. Given the possibility of such error associated with over or under estimation of poverty, the importance of estimating poverty not only in per capita terms but also at individual level by obtaining the Adult Equivalence Scale (AES) has been emphasized by social

scientists. The present study has used AES given by Stone (1953) for obtaining individual level poverty among the labourers in different ownership structures of tea plantations in Assam.

Refer to Table 6.1 presents the percentage of labourers who fall below the poverty line (BPL) following the methodology suggested by the Tendulkar Committee and Rangarajan Committee across the different ownership structures of tea plantations in Assam. Considering the tea labourer in the study area, we found that more than 50% of the sample labourers were under BPL, with figures of 53.92% and 61.76% as per the TC and RC poverty line methodologies respectively. The incidence of poverty is seen to be higher among the labourers in PROP structures of tea plantations relative to those engaged in PLC tea plantations of the study area. Hence, it has been observed that the labourers working in PROP tea plantations were economically in more disadvantageous situation than that of those in PLC in the study area. In addition, the incidence of poverty has been found to be higher among the labourers engaged in PROP tea plantations relative to those engaged in PLC ownership structures of tea plantations in the study area.

Table 6.1 Percentage of Tea Labourers under BPL

Below Poverty Line/Ownership Structures	PLC	PROP	Overall
Tendulkar Committee	46.41	61.44	53.92
Rangarajan Committee	53.92	69.61	61.76
N=612			

Source: Estimated from the field survey data.

An attempt has also been made to examine the prevalence and severity of poverty among labourer using Sen's index (1976) which captures three distinct aspects of poverty measures: a headcount of the poor, the income gap, and the Gini index among the poor and these three measures represent incidence, depth, and distribution of poverty respectively (Bishop et al., 1997; Xu and Osberg, 2002; Liberati, 2015). The

higher value of Sen's index corresponds to the lower level of social welfare due to the prevalence of poverty. Table 6.2 shows the prevalence and intensity of poverty among labourers working in different ownership structures of tea plantations in Assam. Overall, the prevalence and intensity of poverty is higher among the labourer engaged in PROP tea plantations with a figure of 0.25 compared to 0.17 in PLC ownership structure of tea plantations in Assam. As far as the prevalence and poverty intensity across labourers in different ownership structures of tea plantations is concerned, the intensity of poverty is found to be higher among the labourers in PROP tea plantations than those engaged in PLC ownership structures of tea plantations. The plausible reason for the greater prevalence of poverty among labourers in PROP tea plantations may be the disproportion in the distribution of benefits in-kind facilities across the ownership structures of tea plantations. As is evident from the descriptive statistics in earlier chapter 4, the labourers in PROP tea plantations were receiving low benefits in-kind facilities in every respect relative to labourers in PLC tea plantations of the study area. In addition, the limited possession of production assets by labourer households in PROP tea plantations may be another reason for being poorer, in such respect the labourer in PLC ownership structure of plantation is seen as richer. Thapa (2012) mentioned that a higher asset ownership position (mainly production assets) is likely to have a positive impact on the living standard of plantation labourer households as it helps in further income generation that strengthens their livelihood.

Table 6.2 Prevalence and Poverty Intensity among Tea Labourer

Sen's Index/Ownership Structures	PLC	PROP	Overall
Tendulkar Committee	0.14	0.20	0.17
Rangarajan Committee	0.22	0.28	0.25
N=612			

Source: Estimated from the field survey data.

Since the labourers in PROP tea plantations were seen to be having limited time for leisure as they had to work more than the standard hours of work per day in the field

and their overtime hours of work being ignored by the tea plantation management constraining them to go for supplementary earnings might also be responsible for their economic backwardness. A study by Guha (2019) maintained that limited opportunity for supplementary earning kept tea plantation labourer in backward sections in Assam. In addition, the limited scope for occupational and upward mobility among the tea labourer in general and labourers in PROP plantations, in particular, might be another reason for the higher incidence of poverty among the labourer households engaged in PROP tea plantations of the state. Hence the incidence of poverty is seen to be higher among the labourer engaged in PROP ownership structures of tea plantations relative to labourers working in PLC tea plantations of the study area. In the next section, an attempt has been made to examine the factors determining poverty taking account of socio-demographic, and other economic and enabling factors viz. ownership of assets, leisure time of labourers, and occupational mobility. The probit regression model methodology was followed for examining the factors determining poverty among the labourer in different ownership structures of tea plantations in Assam. Two separate probit regression models were estimated for the poverty line suggested by Tendulkar Committee and Rangarajan Committee.

6.2 Determinants of Poverty among Tea Labourers in Assam

Refer to Table 6.3 presents the probit regression result for factors determining poverty among tea labourers in different ownership structures of tea plantations as per the poverty line suggested by Tendulkar Committee (2011-12) and Ranjarajan Committee (2014) in Model I and Model II respectively. Eleven out of fourteen estimated coefficients of independent variables have turned out to be statistically significant. Our regression results do suggest that significant role of gender, years of schooling, family type, dependency ratio, asset ownership, distance to town, access to agricultural land,

time leisure, occupational mobility, and enabling factors like the ownership structures of tea plantation and geographical location in determining the poverty among tea labourers in the study area.

It has been observed that the gender of the household head has a positive significant effect on poverty among labourers in Assam tea plantations. As we move from male to female-headed households the probability of being poor is likely to increase by 16%. This is more or less in line with the existing literature that female-headed household is more likely to be poor than their male-headed counterpart (Rajaram, 2009; Awan et al., 2011; Finnoff, 2015). Conventional wisdom avers that the probability of transitioning from poor to non-poor is strongly associated with the increase in additional years of schooling. We also find that the level of educational attainment has a negative significant association with the incidence of poverty among tea labourers in the study area. Few studies have claimed that educational attainment is an important component for the reduction of poverty in many developing countries (Tilak, 2005; Abaidoo, 2021; World Bank, 2021). The size of a family is seen to have a positive significant influence on poverty among the tea plantation labourers in the study area. The value of marginal effects shows that with an additional member in a household, the probability of increasing poverty is likely to increase by nearly 18%. In consonance with the existing evidence that economic backwardness is high among the household with large number of family members in developing countries, the probability of becoming poor progressively increases for every addition of members to the family (Lanjouw and Ravallion, 1995; Anyanwu, 2014). The dependency ratio in a household is one of the important indicators to measure poverty. Vijayakumar (2013) has maintained that the dependency ratio of a household considerably influences poverty as a higher dependency ratio has a higher probability to increase poverty. Our result suggests that

the probability of being poor among tea labourer households is likely to increase with a greater dependency rate in the household.

Table 6.3 Determinants of Poverty among Tea Labourer

Variables	Model- I with TCPL		Model- II with RCPL	
	Coefficients	dy/dx	Coefficients	dy/dx
Gen (1=female; 0 Otherwise)	0.76*** (0.19)	0.16*** (0.04)	0.72*** (0.20)	0.12*** (0.03)
Age	0.01 (0.01)	0.00 (0.00)	0.01 (0.01)	0.00 (0.00)
Experience	0.00 (0.01)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Years of schooling	-0.10***(0.02)	-0.02*** (0.03)	-0.05***(0.02)	-0.01** (0.00)
Family size	0.89*** (0.15)	0.18*** (0.03)	1.62*** (0.18)	0.28*** (0.03)
Dependency ratio	0.40*** (0.05)	0.03*** (0.01)	0.52*** (0.07)	0.09*** (0.01)
Asset ownership	-1.59** (0.73)	-0.33 **(0.15)	-1.80** (0.81)	-0.31** (0.14)
Distance to town	0.03*** (0.01)	0.01*** (0.00)	0.03*** (0.01)	0.01*** (0.00)
Agricultural land (1=Access; 0 Otherwise)	-0.64***(0.14)	-0.13*** (0.03)	-0.61***(0.15)	-0.11*** (0.02)
Leisure time	-0.13* (0.07)	-0.03* (0.02)	-0.20** (0.08)	-0.04** (0.01)
Occupational mobility (1=Mobility; 0 Otherwise)	-1.37***(0.17)	-0.28*** (0.03)	-1.17***(0.17)	-0.20*** (0.02)
Ownership structure (1=PLC; 0 Otherwise)	-0.41***(0.15)	-0.08*** (0.03)	-0.58***(0.16)	-0.10*** (0.03)
Upper Assam Region	-0.34** (0.17)	-0.07** (0.04)	-0.56** (0.19)	-0.10*** (0.03)
North Bank Region	-0.05 (0.18)	-0.01 (0.04)	0.17 (0.20)	0.03 (0.03)
Constant	0.11 (0.70)	-	0.50 (0.78)	-
Variance Parameters				
LR $\chi 2$	396.79***		432.51***	
Pseudo R^2	0.47		0.53	
Log- Likelihood	-223.92		-190.85	
Wald $\chi 2$	218.94***		204.02***	
Hosmer-Lemeshow $\chi 2$	7.32		6.41	
N	612.00		612.00	

Source: Estimated from the field survey data.

Note. ***p < 0.01, ** p < 0.05; Figures in the ( ) are standard errors; Cachar Region is considered as reference category; dy/dx represents marginal effects; TCPL stands for Tendulkar Committee Poverty Line, RCPL stands for Rangarajan Committee Poverty Line.

The likelihood of poverty is found to be low for households that possessed greater assets in value (Table 6.3). The locational influence on poverty is apparent in the study area. It can be noticed that the tea labourers residing remotely from the township are more likely to be poor; as the distance to the township increases by one unit the probability of being poor increases by 0.01%. Mishra et al. (2012) reported families residing in the proximity of the township have more scope for occupational diversification and supplementary earnings, which indirectly influences their economic status. The estimated coefficient of access to agricultural land has a significant negative significant association with poverty among the tea plantation labourers in the study area. Apart from daily wage working in the tea plantations, the availability of agricultural land allows the labourers to keep some production assets such as hens, ducks, cows, pigs, goats, and buffalo besides practicing the cultivation of vegetables and other crops for self-consumption thereby assisting them to increase their supplementary earnings, which likely to influence the economic status of the family. Cotula et al. (2006) claimed that agriculture is the main economic activity in developing countries, and access to agricultural land is fundamental for the poor who can ensure their household food supplies and generate income from agricultural land.

Number of studies have claimed leisure time reflects the standard of living and quality of life of an individual or a household (Llyod and Auld, 2002; Liu and Da, 2019). The estimated coefficient of leisure time seems to have negative significant association with the probability of being poor among tea labourers in Assam. Thus a unit increase in leisure time reduces the likelihood of being poor by 0.03% (Table 6.3). Occupational mobility outside the tea plantations was seen to be considerably helped the household to move out of poverty among the labourers in the tea plantations sector of Assam. The value of marginal effect indicates that greater occupational mobility outside the

plantations is likely to reduce poverty among tea labourers by 28%. The adult children of tea labourers working outside the tea plantation are likely to contribute to their family income, thus the probability of falling into the trap of poverty is lower in families with greater occupational mobility of family members. Our result is in line with the existing literature that occupational mobility is an important factor in the reduction of poverty among low-income households (Mitra, 2006; Dartanto et al., 2020). Notably, the managerial intervention and working conditions in the tea plantations also considerably influenced the economic condition of labourers in the study area. The estimated coefficient of ownership structures of tea plantations seen to have significant negative association with poverty with the reference category is PROP tea plantations. The value of marginal effect indicates that as we move from PROP to PLC ownership structures of tea plantations the probability of incidence of poverty among labourers is likely to reduce by 0.08%. On the contrary, as we move from PLC to PROP ownership structures of tea plantations the probability of incidence of poverty among labourers is likely to increase by 0.08%. Hence the incidence of poverty is found to be higher among the labourer engaged in PROP ownership structures of tea plantations than those working in PLC tea plantations in the study area. Moreover, the geographical location of tea plantations was also found to be an influencing factor in determining poverty among the labourers, as we move from the Upper Assam region to the North Bank and Cachar regions the likelihood of being poor seems to increase among the labourers in the sampled tea plantations. Our probit regression result seems to be robust to Rangarajan committee methodology of the poverty line as reported (Model II) in Table 6.3. Most of the factors influencing poverty in Model II akin to the sign and significance level like the Model I. The value of pseudo-R^2 shows our model is fit over no model. The value of Wald χ^2 indicates that the independent variables as a predictor significantly

enhance the prediction performance of our model, and the Hosmer-Lemeshow test confirmed that we have at least an acceptable fitting model.

6.3 Inequality and Its Determinants among Tea Labourers in Assam

The present study also attempted to examine the consumption inequality among labourers in different ownership structures of tea plantations in Assam. Gini coefficient and Lorenz curve have been estimated for examining inequality in the per capita consumption expenditure among the labourer engaged in the different ownership structures of tea plantations in Assam. In the present study, we also try to investigate the major source of consumption inequality among labourers engaged in different ownership structures of tea plantations in Assam by using regression-based inequality decomposition (RBID) developed by Fields (2003). Refer to Table 6.4 reporting the consumption inequality among the labourers in terms of Gini index value across the different ownership structures of tea plantations in Assam. The values of the Gini index vary between 0 and 1, with 0 representing equal income or consumption distribution and higher values representing higher levels of income or consumption inequality. It can be noticed from Table 6.4, in the overall value of Gini Index is 0.20 which implies that there is the presence of moderate inequality in consumption expenditure among labourers in the tea plantation sector of the state. The magnitude of consumption inequality was seen to be higher among the labourer in PROP ownership tea plantations with figures of 0.22, while it was relatively lower (0.18) among the labourers in PLC tea plantations. Graphical representation of such differences in inequality among sample tea plantations labourers across the different ownership structures of the plantation has been presented using Lorenz curve (see Figure A1). The disproportion in the provision of welfare benefits among labourers across different ownership structures of the tea plantation with labourers engaged in PROP tea plantation was

marginalized in terms of in-kind compensation facilities and benefits from tea garden management unlike labourers engaged in PLC received higher in-kind facilities in the study area (refer to Chapter 4). Moreover, ownership of assets by labourer households and limited occupation mobility and upward mobility might be responsible for the higher rate of consumption inequality among labourers in PROP tea plantations in the state. In the next section, we explore the implication of occupational mobility and asset ownership by labourer households while estimating the RBID of consumption inequality among the labourer engaged in different ownership structures of tea plantations in the study area.

Table 6.4 Gini Index for Consumption Inequality among Tea Labourer

Ownership Structures/Index	Gini Index
PLC	0.18
PROP	0.22
Overall	0.20

Source: Estimated from the field survey data.

Refer to Table 6.5 presents the RBID result of consumption expenditure for labourers across different ownership structures of tea plantations in Assam. Most of the signs of the estimated coefficients of explanatory variables are statistically significant and in line with the theoretical expectations. Nine explanatory variables out of thirteen variables were found to be statistically significant. Our results do suggest a significant role for the gender of the household head, years of schooling, family type, household size, distance to town, access to agricultural land, occupational mobility, ownership structures of tea plantations, and geographical locations in shaping the consumption expenditure inequality among the labourers in the study area.

Refer to Table 6.5, it can be seen that the gender of the household head has a positive statistically significant association with consumption expenditure implying that female spends more on household consumption than their male counterpart. This result is more or less in line with the existing evidence that males spend less on

consumption expenditure than females indicating gender inequality in consumption expenditure in India (Tripathi, 2018). The level of educational attainment of labourer has a positive significant effect on consumption inequality indicating that an additional year of schooling contributes to 0.008 increase in consumption expenditure inequality among tea labourers. The plausible explanation for such a result is that in the tea plantation sector of Assam, a few numbers of labourer family could able to go for higher education, while the majority of them ended up with a low-quality primary level of education or remain illiterate. In such a situation, labourer with higher levels of educational attainment encourages their family to diversify their occupation for better wage and employment opportunities, while the remaining might be engaged within the tea plantations earning thereby subject to a low level of income. A study by Kearney and Phillip (2017) has confirmed that a low level of human capital investment among low-income individuals contributed towards higher rates of income or consumption inequality while educational inequality seems to be directly associated with a rise in income or consumption inequality as individuals from poor households only able to access lower-quality education (Moyo et al., 2022). Cai et al. (2010) reported that education is an important determinant for an increase in inequality after the liberalization in India. The positive and significant coefficient of household size indicates that the larger family size positively influences consumption inequality among labourer households in the study area. Our result is consistent with the existing literature that the increasing size of households is strongly associated with higher inequality in China (Gradin and Wu, 2019).

Table 6.5 Regression-based Inequality Decomposition among Tea Labourer

Variables	Coefficients/Others
Gender (1=female, 0 otherwise)	0.176*** (0.012)
Age	0.001 (0.001)
Experience	0.001 (0.000)
Years of Schooling	0.081*** (0.002)
Family Type (1= Joint; 0 Otherwise)	0.074*** (0.011)
Household size	0.015** (0.003)
Distance to Town	0.033*** (0.054)
Asset Ownership	-0.133 (0.054)
Agricultural Land (1=Access; 0 Otherwise)	0.094*** (0.010)
Occupational Mobility (1=Mobility; 0 Otherwise)	0.033*** (0.008)
Ownership Structures (1=PLP; 0 Otherwise)	-0.126*** (0.001)
Upper Assam Region	-0.026** (0.012)
North Bank Region	0.014 (0.013)
Constant	2.898*** (0.033)
R^2	0.453
F	38.11***
N=612	

Source: Estimated from the field survey data.

Note> ***p < 0.01, ** p < 0.05 *p < 0.10; Figures in the ( ) are standard errors

It can be seen that the estimated coefficient of distance to town from the tea plantations is positive significant predictor of consumption inequality among labourers implying remoteness of tea plantations contributed towards increasing inequality among the labourers in the study area (Table 6.5). A plausible reason for such a result is that the majority of tea plantations are remotely located from the township normally disadvantageous in terms of lack of avenues for social and occupational mobility constraining them from better earning opportunities (Sharma,

2018), which might have resulted in greater inequality among them. Apart from the households and demographic factors determining inequality, access to agricultural land is also seen to be a positive predictor of consumption inequality in the study area. Subject to the availability the tea plantation management offers low-lying area unfit for tea plantation to the labourer household for doing agriculture and animal husbandry activities (Guha, 2019). Given the limited availability of land, the garden management in the different ownership structures of plantations does not allow uniform access to land by the labourer households which might be responsible for differences in supplementary earning across the household thereby contributing towards their inequality. Das and Srivastava (2021) established the fact that unequal ownership of land lead to income inequality among agricultural households in India. The occupational mobility of adult children of tea labourers adds some additional income to their total family income but such mobility is limited across the labourer households in the tea plantation sector with limited occupational mobility and upward mobility (Gurung and Mikherjee, 2018). Our results suggest that very few adult children from tea labourer households could able to go beyond the plantations for higher earnings resulting in additional income and higher consumption expenditure among less number of households, thereby contributing towards consumption inequality among the labourer household in the study area. Despite uniform legislation for labourers under PLA (1951), the managerial intervention across the plantations seems to play a crucial role in determining their consumption patterns. Interestingly, the negative and significant coefficient of ownership structures of tea plantations indicates that when we move from PROP to PLC ownership structures of tea plantations the consumption inequality among labourers in PLC tea plantations decreases, unlike the labourers engaged in PROP tea plantations the consumption

inequality increases when we move from PLC to PROP tea plantations. Such result indicates labourers in PROP tea plantations continued to face higher consumption inequality relative to PLC tea plantations. The possible explanation for such a result may be the fact that in-kind and welfare facilities provided by tea plantation management in Assam are low among the labourers engaged in PROP ownership tea plantations compared to PLC (refer to Chapter 4). Roy and Biswas (2019) claimed that though tea plantation labourer fall under the same legislation of PLA (1951), there was a disproportion in the distribution of benefit in-kind and welfare facilities across the different ownership structures of tea plantations in West Bengal. As far as the regional dummy determining consumption inequality is concerned, we find a negative significant effect on consumption inequality among labourers when the reference category is Cachar region implying moving from Cachar to the Upper Assam tea growing region the consumption inequality among sample tea labourer decreases. Despite various factors such as gender, level of educational attainment, family size, distance to the township from tea plantations, access to agricultural land, geographical locations, and occupational transitions of adult children determining consumption inequality among tea labourers, the ownership structures of tea plantation has also found to play a crucial role in shaping the consumption inequality among the labourers in tea plantation sector of Assam.

Table 6.6 shows the results of decomposing consumption expenditure inequality among sample tea plantation labourers in Assam. The inequality weight of each factor is estimated as a function of the corresponding OLS coefficient, the covariance between the logMPCE and the factor, and the variance of logMPCE. The inequality weights associated sum up to 45.312 is the value of R^2 from the above regression reported in Table 6.5, and the remaining proportion (54.69) is attributed to the

residual term. Column 2 of Table 6 presents the percentage contributions of each factor to the explained inequality level among the tea plantation labourers in the study area.

Table 6.6 Factors Contributing to Consumption Inequality among Tea Labourer

Variables (X_i)	logMPCE /Factor inequality weight Z_i*100	Predicted value of logMPCE /Percentage contribution net of residual
Gender (1=female, 0 otherwise)	12.32	27.18
Age	0.32	0.70
Experience	0.25	0.55
Years of Schooling	5.34	11.79
Family Type (1= Joint; 0 Otherwise)	8.72	19.25
Household size	2.64	5.82
Distance to Town	1.64	3.63
Asset Ownership	0.27	0.59
Agricultural Land (1=Access; 0 Otherwise)	3.98	8.79
Occupational Mobility (1=Mobility; 0 Otherwise)	2.48	5.48
Ownership Structures (1=PLP; 0 Otherwise)	6.46	14.27
Upper Assam Region	0.17	0.36
North Bank Region	0.73	1.60
Residual	54.69	-
Total	100	100

Source: Estimated from the field survey data.
Note. The sign of Z_i indicates whether the contribution of factor X_i is inequality-increasing ($Z_i > 0$) or decreasing ($Z_i < 0$); Cachar Region is considered as a reference category.

Refer to Table 6.6, it can be seen that the gender of labourers emerged as the major contributing factor to consumption expenditure inequality among tea plantation labourers in Assam with nearly 21.18% of the total explained inequality by gender followed by 19.25% family size. The managerial intervention across the tea plantations of the state has also been found to be another dominant factor contributing

to consumption inequality; as we move from PLC to PROP ownership structures of tea plantations the inequality level of log MPCE accounted for nearly 14.27% of the total explained inequality. Educational attainment is another dominating factor contributing to inequality in the study area with a figure of 11.79% of the total explained inequality. Our result also suggests that access to agricultural land by tea labourer household influence consumption inequality by 8.79%. Furthermore, the occupational mobility of adult children of labourers was also found to be an important factor determining consumption inequality among the labourers which is nearly 5.48% attributed to the explained inequality. While smaller weights for factors determining consumption inequality among the tea labourers were the locational dummy (0.36% in the Upper Assam region), experience (0.55%), asset ownership (0.59%), and age (0.79%). Hence it has been observed that despite several socio-economic factors contributing to the consumption inequality, the managerial intervention in the tea plantation sector also has a crucial role in determining consumption inequality among labourers in the study area.

6.4 Conclusion

This chapter attempted to examine the incidence of poverty and inequality and its determinants among labourers in different ownership structures of tea plantations in Assam. It has been observed that the incidence of poverty was higher among the labourers engaged in PROP ownership structures of tea plantations relative to the labourers working in PLC tea plantations. Apart from various socio-demographic factors, occupational mobility and leisure time have a significant role in influencing poverty among the labourers; with a higher level of occupational mobility and leisure time found to have a negative association with the incidence of poverty among the labourers in the study area. Interestingly, the managerial intervention is found to be

significantly influencing the probability of an increase or decrease in poverty among the tea labourers in the study area. The likelihood of incidence of poverty among tea labourers increases when we move from PLC to PROP ownership structures of tea plantations.

The consumption inequality was higher among the labourer engaged in PROP tea plantations than those engaged in PLC ownership structure of plantations. The RBID result indicates that apart from the demographic factors such as gender, family size, and age of labourers, the occupational mobility of adult children and access to agricultural land by labourer households has a significant role in influencing consumption inequality. Moreover, it is interesting to note that ownership structures of tea plantations considerably influenced the consumption patterns of tea labourers with a higher level of consumption inequality being observed among the labourers engaged in PROP tea plantations in the study area.

CHAPTER 7

Conclusion and Policy Implications

Through a carefully designed survey data from 612 tea labourer households in primary tea growing regions of Assam, the present study aims at examining the incidence of poverty and inequality and its determinants across different ownership structures of tea plantations in Assam. An attempt has also been made to navigate the intergenerational occupational mobility among tea labourer households and the factors determining it. The study also seeks to assess the standard of living of the labourer in terms of possession of assets, basic amenities and hours of leisure. The study also tried to portray the macro-picture of the tea plantation sector in general and the tea plantation labourer of Assam in particular through the lens of secondary data collected from various published sources. Primary data have been collected from the labourer households in PLC and PROP ownership structure of tea plantation for their significant share in the Assam tea sector. For examining the status of tea plantation labourer welfare facilities in Assam, we used descriptive statistics. In order to understand welfare facilitates and living standards among tea plantation labourers in the study area, we used the asset ownership index, basic amenities index, and leisure time of labourers in different ownership structures tea plantations. Further, the transitional probability matrix has been estimated for examining intergenerational occupational mobility among sampled labourer households in different ownership structures of tea plantations, and a logit regression model was estimated for examining the factors determining occupational mobility and upward mobility among the sampled labourer households. Subsequently, to examine poverty among the labourers, we used the poverty line suggested by Tendulkar Committee (2011-12) and Rangarajan Committee (2014) based on monthly consumption expenditure

data. The present study applied the PIH theory as developed by Friedman (1957) considering only permanent consumption items by sample tea labourer households. The AES developed by Stone (1953) was used to arrive at individual level poverty in the study area. The Sen's Index was used for examining the incidence of poverty among the labourers engaged in different ownership structures of tea plantations. The probit regression model was estimated to investigate the factors influencing poverty among labourers in the study area. The extent of inequality among labourers in the study area has been examined using Gini coefficient and Lorenz curve based on per capita consumption expenditure data. Finally, following Fields (2003) the RBID of inequality was done to explore the determinants of consumption inequality among the labourer in sample tea plantations of the study area.

This chapter summarizes the findings of the study, policy implications, and limitations of the research. The chapter consists of various sections and sub-sections. The findings from secondary and primary data are covered in the first section of this chapter. The policy implications of the study are covered in the subsequent section. The final section of this chapter outlined the limitation of the study.

7.1 Findings of the Study

7.1.1 Findings from Secondary Data Analysis

Given the backwardness of the tea plantation labourer, the GoA has taken various initiatives for their welfare in Assam over the years. There is a presence of inter-district disparity with respect to the number of beneficiaries of in-kind compensation facilities in Assam, with the number of beneficiaries being meager, especially in the districts having a larger concentration of tea labourers and gardens. The presence of wage rate differences between general agricultural and tea plantation labourers is also observed as the tea plantation labourer receives a wage rate less than the agricultural

wage rate in Assam. The living wage rate of tea plantation labourers in Assam is significantly lower than the daily wage rate of tea labourers in Kerala, Tamil Nadu, and Karnataka respectively (Kalita, 2022). The Minimum Wage Rate Act (1948) stipulates that benefits in-kind facilities to labourer should not be part of the minimum wage rate, however, the tea plantation of Assam and West Bengal are exception in this respect. Moreover, the present study also found a regional difference in wage rate among the labourers engaged in major tea growing regions of the states. The wage rate for tea plantation labourers in the Brahmaputra valley receives a relatively higher wage rate than labourers working in the Barak valley tea plantation in Assam.

7.1.2 Findings from Primary Data Analysis

Given the uniformity in wage rate, the average monthly PCI was lower among the labourer households in PROP ownership structures of plantations relative to labourer households in PLC tea plantations. The mean years of schooling and skill formation among adult children was lower among the labourer in PROP tea plantations relative to PLC. There has been inadequate provision for welfare facilities among the labourers in tea plantations of the state with the worsening situation being observed among the labourer engaged in PROP tea plantations relative to PLC. The availability of health and educational facilities among labourers engaged in PROP ownership structures of tea plantations was unsatisfactory relative to labourers engaged in PLC tea plantations. In terms of assets ownership and basic amenities facilities, the labourers in PROP tea plantations were lagging behind compared to labourers in PLC tea plantations. We also found the presence of difference in leisure hours enjoyed by labourers engaged in different ownership structures of tea plantations, while labourers in PROP ownership structures of tea plantations enjoy less leisure hours relative to labourers working in PLC ownership tea plantations in the study area. The

labourers in PROP tea plantations had to work more than the actual working hours but the additional hours of work done by labourers in the PROP tea plantations were ignored by the management and thus exempted from overtime work benefits. Apart from socio-economic and demographic factors, the ownership structures of tea plantations played found to be a significant determinant of leisure time among the labourers households in the study area.

The results from the transition probability matrix suggest that the occupational mobility of adult children was low among the labourers engaged in PROP tea plantations relative to PLC ownership structure. Though upward occupational mobility was higher among adult children in PLC ownership structure at the disaggregate level. But, there was limited upward occupational transition in both ownership structures of plantations relative to horizontal and downward occupational transition in the overall sample. The transition towards private salaried and government service being meager, the lower-tier wage work outside tea plantations was seen to be a popular livelihood option among the adult children in the study area.

The logit regression results suggest a significant role of gender, years of schooling, the skill of adult children, family size, father's occupation, family monthly PCI, and dependency ratio; enabling factors like the ownership structure of the plantation and geographical location in shaping the occupational transition and upward occupational mobility of labourer household in the study area.

There is moderately high incidence of poverty in the study area with the incidence of poverty being higher among the labourers engaged in PROP ownership structures of tea plantations relative to the labourers working in PLC. Apart from various socio-demographic factors, occupational mobility and leisure time significantly influenced poverty among the labourers in the study area. The higher level of occupational

mobility and leisure time has a significant negative association with the incidence of poverty in the study area. Interestingly, the managerial intervention significantly influenced the probability of increasing or decreasing poverty among the tea labourers in the study area. The likelihood of incidence of poverty among labourers increases when we move from PLC to PROP ownership structures tea plantations. The plausible reasons for higher incidence of poverty and inequality among labourers engaged in PROP tea plantations compared to laboourers engaged in PLC ownership tea plantations have many folds. Evidences suggests that the labourers in PROP tea plantations were the meager beneficiary of in-kind compensation facilities relative to labourers in PLC tea plantations in the study area.

The extent of consumption inequality was higher among the labourer engaged in PROP tea plantations than the labourers in PLC ownership structure of tea plantations. The RBID confirms that apart from the socio-demographic factors such as gender, family size, and age; occupational mobility and access to agricultural land were significant contributors to consumption inequality among the labourers in the study area. Moreover, it is interesting to note that ownership structures of tea plantations also significantly influenced the consumption pattern of tea labourers in the study area; as we move from PLC to PROP tea plantations the consumption inequality among labourers seems to increase.

Limited possession of production assets by labourer households in PROP tea plantations may be another reason for being poorer and increasing consumption inequality among them. Thapa (2012) mentioned that a higher asset ownership position (mainly production assets) is likely to have a positive impact on the living standard of plantation labourer households as it helps in further income generation that strengthens their livelihood. Notably, the labourers in PROP tea plantations enjoyed less leisure

time as they had to work more than the standard hours of work per day in the field, and their overtime hours of work being ignored by the tea plantation management, which constrains their supplementary earnings. Roy (2021) reported that labourers in PROP tea plantations in West Bengal were exempted from additional hours of work, while the limited opportunity for supplementary earning kept them backward sections in Assam tea plantations (Guha, 2019). Further, the limited occupational mobility and upward mobility might be responsible for greater incidence of poverty and inequality among the labourer households engaged in PROP tea plantations of the state. Dubey and Tiwari (2017) stated that occupational mobility is crucial for the reduction of poverty in India. The low level of educational attainment and skill formation among labourers especially those engaged in PROP tea plantations also contributed towards higher rate of poverty and inequality in the tea plantations sector of Assam. Deficient skills and education of tea labourers besides various binding regulations of the company constrain them from moving outside the plantation economy in search of better employment opportunities (Gurung and Mukjerjee, 2018; Sarkar and Ghosh, 2021). Hence, besides socio-economic and demographic factors determining poverty and inequality among labourers, managerial intervention, leisure time, and occupational mobility considerably influenced the economic status of labourer in the tea plantation sector of Assam.

7.2 Policy Implication

There is need for even distribution of public welfare funds should draw attention of policy planners, by emphasizing the concentration of labourers in tea growing regions of the state. The recent declaration of the state government to establish of model high school with the provision of midday meal and qualified teachers in Assam tea plantations (Goswami, 2022) is likely to augment the academic environment among

labourer households. Under Skill India Mission reactivating the defunct skill centers lying in tea garden areas as promised by the former chief minister (Dey, 2016) with proper management and funds (Drishtiias, 2019) can be helpful in skill formation among adult children of tea labourers. With distance to township constrained occupational and vertical mobility of labourer, improvement in all-weather road connectivity to remotely located tea plantations of the state likely ease labourer in commuting to the nearest township. Given the pitfall in the implementation of PLA (1951) provisions in their true spirit (Tantri, 2019) there is a need for ensuring uniformity in statutory benefits and minimum wages through proper coordination between union and state government with the tea board (Rajput et al., 2022). Policy decisions should stress upon appropriate monitoring mechanisms ensuring uniformity in working conditions and facilities, management rules and regulations in the labour market across the different ownership structures of tea plantations. In addition, provision for wage rate equivalent to the minimum living wage rate is necessary. Measures should be taken for improved awareness among tea labourers regarding various government welfare schemes through the camp, fair and exhibition, or other informal educational arrangements.

7.3 Limitations of the Study

The exclusion of labourers engaged in PSU and PBF ownership structures of tea plantations from the study is one of the caveats of this study. The study failed to cover the role played by Labour Union such as Assam Tea Tribes Student Association (ATTSA), ACMS, and BCSU in Assam towards collective bargaining. The study could not classify the occupational categories based on the national classification of occupations of the National Career Service. The study is restricted geographically only in three major tea growing regions of Assam viz. Upper Assam, North Bank,

and Cachar region. The study is restricted to permanent resident field labourers only, and could not cover non-residents, factory, and casual labourers in the present study.

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Appendix

Appendix A: Number of Tea Gardens as per the Ownership Structure in Assam (2015)

Tea Growing Regions (TGR)	Districts	PLC	PROP	PRF	PSU	Total
Upper Assam Region (UAR)	Dibrugarh	61	70	22	5	158
	Tinsukia	60	21	17	0	98
	Sivasagar	42	38	9	3	92
	Golaghat	41	17	7	4	69
	Jorhat	37	43	8	4	92
	Total	241	189	63	16	509
North Bank Region (NBR)	Sonitpur + Bishwanath	57	3	2	1	63
	Udulguri	20	1	3	0	24
	Darrang	4	0	0	0	4
	Lakhimpur + Dhemaji	9	2	0	0	11
	Total	90	6	5	1	102
Cachar Region (CR)	Hilakandi	9	6	4	0	19
	Karimganj	10	9	0	4	23
	Cachar	28	26	3	0	57
	Total	47	41	7	4	99
Central Assam Region (CAR)	Nagaon	11	6	2	3	22
	Morigaon	0	1	0	0	1
	Total	11	7	2	3	23
Hills Region (HR)	Karbi-Anlong	6	9	2	0	17
	Dimahasao	2	0	0	0	2
	Total	8	9	2	0	19
Lower Assam Region (LAR)	Baksa	4	0	0	0	4
	Bongaigaon	1	0	0	0	1
	Kokrajhar	3	1	0	0	4
	Kamrup	2	0	1	0	3
	Dhubri	3	0	0	0	3
	Total	13	1	1	0	15
Assam		410	253	80	24	767

Source: TBI.

Appendix B: PLA (1951) and Incentives In-cash and Kind for Permanent Labourer in Tea Plantations of Assam

The Incentives In-Cash for Permanent Labourer in Tea Plantation of Assam		
Heads	Duration	Amount (₹)
Cash wage per labourer	Per day (8 Hours)	137
Medical facilities per labour household	Per day (8 Hours)	16.75
Housing Facilities per labour household	Per day (8 Hours)	15.22
Education facilities per labour household	Per day (8 Hours)	2.83
Leave with pay and festival holidays wages per labourer	For entitled leave and holiday period	14.95
Provident fund per labourer	Per Month	16.44 = 12 % of Cash Wage
Gratuity	Per Month	6.85 = [Cash Wage x 15 days] / 300 days
The Incentives In-Kind for Permanent Labourer in Tea Plantation of Assam		
Item	Duration	Quantity (Unit)
Food grain per tea labour household	Per Week	3.26 (Kg) per adult worker 2.44 (Kg) per dependent 1.22 (Kg) per children
Firewood per tea labour household	Per Annum	2.20 (CFT)
Dry tea per tea labour household	Per Month	900 (Gram)
Welfare facilities per tea labour	Per Annum	1 Blanket; 1 Mosquito Net; 1 pair of Sleeper; 1 Apron; 1 pair of Gloves

Source: Source: ABITA (2017), Assam.

Note. The daily cash wage of ₹ 137 per day was paid to the labourers against the plucking of targeted 24 Kg of tea leaf per day or the targeted hours of work assigned to the labourers by the tea management; workers plucking over the targeted 24 Kg tea leaf and up to 30 Kg in a day get an additional ₹ 1 per Kg, up to 35 Kg per day get ₹ 1.50 per Kg while plucking above 35 Kg of tea leaf per day get additional ₹ 1.75 per kg; besides all incentives in Cash and kind only factory labourer use to get additional compensation of ₹ 7.50 per day during Ticca Period (peak season).

Appendix C: District-wise Permanent and Temporary Labourer in Assam (2015)

Name of District	Permanent		Temporary		Total	Resident	Non-Resident
	Male	Female	Male	Female			
Bongaigaon	154	156	497	206	1013	272	0
Cachar	13036	12417	7698	10381	43532	21798	915
Darrang	759	861	441	707	2768	892	169
Dhemaji	74	79	170	356	679	62	15
Dhubri	554	513	454	1214	2735	1557	1326
Dibrugarh	31737	32429	18502	35355	118023	40841	11316
Dimahasao	162	206	115	8	491	189	0
Goalpara	196	182	158	274	810	247	317
Golaghat	13359	13856	9123	13327	49665	23489	3488
Hailakandi	3545	3228	922	1624	9319	4825	0
Jorhat	17409	18908	5447	10829	52593	25910	3932
Kamrup	524	467	308	380	1679	308	686
Karbi-Anglong	618	720	331	524	2193	1636	313
Karimganj	5130	4703	990	784	11607	9074	50
Kokrajhar	9842	11242	9073	16335	46492	13506	1778
Lakhimpur	5363	3949	5741	6698	21751	5404	983
Nagaon	6374	6535	2970	6552	22431	8821	1615
Sivasagar	21539	20429	15023	22480	79471	27734	7519
Sonitpur	27539	30485	12349	23159	93532	37481	4445
Tinsukia	31177	34526	17928	31420	115051	45239	7545
Morigaon	330	300	120	250	1000	363	176
Assam	189421	196191	108360	182863	676835	269648	46588

Source: Directorate of Labour Commissioner, GoA.

Appendix D: District-wise Number of Tea Gardens and Area Under Tea Plantation in Assam (2015)

Districts	Total number of tea garden	Gross area (in Hectare)	Area under tea plantation (in Hectare)
Baksa	4	2768.08	2047.35
Bongaigaon	1	574.5	473.57
Kokrajhar	4	2336.82	1770.97
Kamrup	3	3118.21	765.39
Dhubri	3	1520.97	1100.51
Dibrugarh	158	53354.94	33597.33
Tinsukia	98	54425	35780.85
Sivasagar	92	40806.26	24386.44
Golaghat	69	31102.34	19215.36
Jorhat	92	33748.49	21138.18
Hailakandi	19	18898.14	7023.39
Karimganj	23	20357.34	7577.96
Cachar	57	59413.11	21884.3
Nagaon	22	12995.33	7511.22
Morigaon	1	718.68	400.00
Sonitpur	63	45484.2	29773.09
Udalguri	24	15469.62	10702.18
Darrang	4	1520.5	1204.41
Lakhimpur	11	6935.48	4678.24
Karbi-Anglong	17	3093.25	1435.85
Dimahasao	2	909.30	240.50
Assam	767	409550.6	232707.10

Source: TBI.

Appendix E: Work Status Classification of Tea Labourer and Family Members in Assam

Permanent tea labourer (O_1)	All wage permanent resident field labourers in tea plantations who are offered labour lawprotection under PLA 1951 and are entitled to social security benefits.
Casual tea labourer (O_2)	All wage labourers whose appointment is limited to less than six months working days engaged in plucking and earth cutting or road construction inside the tea plantations.
Low-paid dailywage non-farm labourer (O_3)	All informal lower-tier daily wage workers who work outside the plantations on anirregular basis comprise coolies, construction of buildings and roads, brick industry, and collection of firewood.
Skilled non-farm labourer (O_4)	All informal daily wage labourers who work outside the plantations on an irregular basis such as copartners, masons, plumbers, electricians, mechanics, painters and welders.
Private salaried service (O_5)	All private salaried workers engaged as security guards, salesmen, private drivers and worked in hotels or shops.
Government service (O_6)	All formal salaried workers engage as clerks or assistants, teachers, nurses, Accredited Social Health Activists (ASHA) and lab technicians.
Self-employed (O_7)	It includes small businesses or shops, tailoring, auto driver or rickshaw driver.
Cultivators (O_8)	Workers who engaged in agricultural activities.
Migrated worker (O_9)	Migrated to other states of India in search of wage employment opportunities. The migrated worker engaged themselves in occupations as per their eligibility in works such as in aluminum industries, hotels, construction sites, drivers, operators and security guards.

Source: Developed by Authors from the field survey data.

Appendix F: Adult Equivalent Scale

Age group (Years)	Male	Female
Below 14	0.52	0.52
14-17	0.98	0.9
18 and above	1	0.9

Source: Stone (1953).

Appendix G: Dimension of Occupational Mobility among Adult Children of Tea Labourer Household

Occupational mobility	PLC	PROP	Overall
Upward	102 (45.54)	61 (31.61)	163 (39.09)
Downward	64 (28.57)	61 (31.61)	125 (29.98)
Horizontal	58 (25.89)	71 (36.79)	129 (30.94)
Total	224	193	417

Source: Estimated from the field survey data.

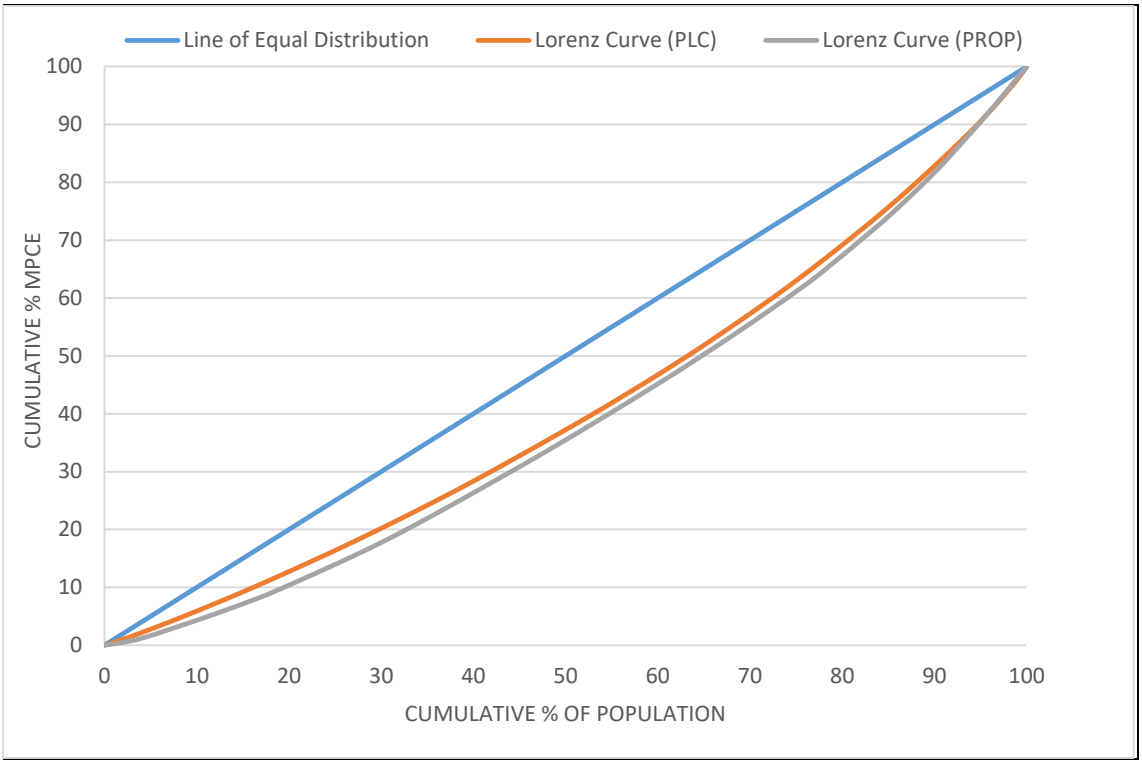
Note. Figures in the bracket represent percentages to column total; Upward mobility refers to adult children who worked outside the plantation with a daily wage rate higher than the daily wage rate of tea labourer, while wage rate lower than tea labourer has been considered as downward occupational mobility, and horizontal occupation mobility refers to continuation of service in the tea plantation on permanent or casual basis and earn daily wage (₹ 167 per day) prevalent in tea plantations of Assam (refer Table 2 and 3 for more detail).

Appendix H: District-wise Average Daily Labour Employment in Tea Plantations of Assam

State	Districts/Year	Resident			Outside						Total			Number of benefited dependents		
					Permanent			Temporary								
		2003	2004	2005	2003	2004	2005	2003	2004	2005	2003	2004	2005	2003	2004	2005
ASSAM	Darrang	87654	88849	89920	12790	12810	12619	18286	16126	15327	118730	117785	117866	133924	133919	149205
	Goalpara	5284	5388	5361	283	276	263	4413	4321	4356	9980	9976	9980	9281	9288	9218
	Kamrup	7552	7691	7691	376	377	355	1478	1383	1404	9406	9451	9450	1660	1699	1712
	Dibrugarh	154863	157469	158480	20215	20243	20013	27134	25013	24752	202212	202725	203245	203194	205800	205650
	Lakhimpur	8583	8675	8921	1279	1295	1206	4298	3880	3738	14160	13850	13865	19921	19494	19424
	Nagaon	12509	12729	12863	2413	2410	2361	4338	3986	3886	19260	19125	19110	27124	27244	27256
	Sivasagar	118492	119853	120830	14311	14313	14084	27270	24970	24329	160073	159136	159243	166149	166860	167102
	Karbi-Anglong	3471	3535	3519	303	298	279	1124	1072	1092	4898	4905	4890	4294	4311	4321
	N.C. Hills	8753	8900	8808	405	402	395	1543	1470	1472	10701	10772	10675	10674	10705	10715
	Cachar	50781	51666	51902	2473	2456	2344	16648	15671	15569	69902	69793	69815	79098	79383	79419
Total Assam		457942	464755	468295	54848	54880	53919	106532	97892	95925	619322	617518	618139	655319	658703	674022
Total West Bengal		216090	220332	220952	12227	12200	12019	32019	30140	29731	260336	262672	262702	327353	327632	327916
Total North India		684914	696119	700361	68184	68186	67007	143174	132412	130132	896272	896717	897500	993242	996911	1012513
Total South India		237403	247631	250853	18275	18306	17848	104260	94956	92599	359938	360893	361300	231621	232819	233239
India		922317	943750	951214	86459	86492	84855	247434	227368	222731	1256210	1257610	1258800	1224863	1229730	1245752

Source: Tea Digest, Tea Statistics, TBI

Figure: A1 Consumption Inequality among Labourers in Different Ownership Structures of Tea Plantations in Assam



Source: Estimated from the field survey data.