

**Analysing Livelihood Choices Of Landless Labour Households,
Production And Accumulation Methods Of Cultivating Households**

An Investigation of a Village in Bihar

*A thesis submitted to the University of Hyderabad in partial fulfilment of the
requirements for the award of the degree of*

DOCTOR OF PHILOSOPHY

**in
Economics**

by

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June 2024



DECLARATION

I, **Mrityunjay Pandey**, hereby declare that this thesis entitled “**Analysing Livelihood Choices of Landless Labour Households, Production And Accumulation Methods of Cultivating Households: An Investigation of a Village in Bihar**’ submitted to the University of Hyderabad in partial fulfilment of the requirements for the award of the degree of Doctor of Philosophy in Economics with the guidance and supervision of **Prof. R. Vijay**, School of Economics, University of Hyderabad. I also declare that it is a bona fide work and has not been submitted previously, in part or in full, to this or any other institution for the award of any academic degree. I hereby agree that my thesis can be deposited in Shodhganga/INFLIBNET.

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A Part of the thesis has been published in the following publication:

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Table of Contents

DECLARATION.....	i
CERTIFICATE	ii
Acknowledgement	iv
List of Tables.....	ix
List of Figures.....	xii
Abbreviations	xiv
Chapter One: Introduction to Study	1
1.0 Introduction	1
1.1 Motivation to Study Bihar.....	2
1.2 Brief Survey of Literature on Bihar's Agrarian Economy	4
1.3 Framework of the Study	11
1.4 Research Question and Research Objectives	16
1.5 Methodology and Data Sources	18
1.6 Organisation of Thesis.....	22
Chapter Two: Changes in the Agrarian Economy of Bihar	24
2.0 Introduction	24
2.1 Bihar: A Brief Historical Overview	25
2.2 Bihar: Since the Independence of India	27
2.3 Bihar's Current Demography	33
2.4 Bihar Economy: Sectoral Performance	34
2.5 Changes in Agrarian Production Organisation	36
2.6 Changes in Return from Cultivation	48
2.7 Credit Market	52
2.8 Changes in Occupational Structure and Employment.....	54
2.9 Migration	57

2.10 Conclusion.....	59
Chapter Three: Agrarian History of Champaran Region and Current Condition of West Champaran District	61
3.0 Introduction	61
3.1 Agrarian History of the Region	62
3.2 Current Conditions of West Champaran	74
3.3 Conclusion.....	80
Chapter Four: Production Condition in the Study Village.....	82
4.0 Introduction	82
4.1 A Brief of Village History	83
4.2 Locating the Village and its Current Social-Economic Structure	85
4.3 Agrarian Economy of the Village.....	90
4.4 Functioning of Land Market	98
4.5 Functioning of Credit Market.....	101
4.6 Functioning of the labour Market.....	105
4.7 Labour Migration from the Village	112
4.8 Socio-economic Classes and Household Income.....	115
4.9 Conclusion.....	116
Appendix 4.1	118
Appendix 4.2	119
Chapter Five: Livelihood Strategies of Landless Manual Labour Households	121
5.0 Introduction	121
5.1 Socio-Economic Conditions of LML Households	122
5.2 Livelihood Choices of the LML Households	126
5.3 Average Household Income in Principal livelihood strategies.....	129
5.4 Factors Influencing Household Livelihood Strategies	131
5.5 Conclusion.....	141

Chapter Six: Production Organisation of Cultivator Households	144
6.0 Introduction	144
6.1 Socio-Economic Condition of Cultivator Households.....	145
6.2 Production Organisation.....	147
6.3 Durable Investment in Agriculture	158
6.4 Yield, Output Prices and Crop Income.....	162
6.5 Exploration of the Village's Land Re-organisation Pattern.....	166
6.6 Conclusion.....	172
 Chapter Seven: Sources of Agrarian Surplus and Accumulation Strategy of Surplus	
Appropriating Households	173
7.0 Introduction	173
7.1 Genesis of Current Surplus Appropriating Households	174
7.2 Socio-Economic Hold of the Surplus-appropriating Households	177
7.3 Production Organisation: Appropriation of Agrarian Surplus.....	179
7.4 Accumulation in Agriculture	187
7.5 Non-farm Accumulation.....	192
7.6 Social Capital	195
7.7 Conclusion.....	199
 Chapter Eight: Conclusion.....	201
 References	207

List of Tables

Table 2.1 Changes in the condition of infrastructure and crime in Bihar	32
Table 2.2 Bihar and India demographic features, 2011	33
Table 2.3 Changes in rural population share in India and Bihar.....	34
Table 2.4 Occupational Structure of the Economy	37
Table 2.5 Changes in the distribution of operation holdings in Bihar and all-India	39
Table 2.6 Changes in the distribution of land ownership (among landowning households)	41
Table 2.7 Land ownership and social group, rural Bihar in 2018-19	42
Table 2.8 Changes in the extent of tenancy in Bihar and India	43
Table 2.9 Changes in input use pattern in paddy in Bihar	46
Table 2.10 IOI, Debt to asset ratio and share of informal loans in rural Bihar and rural India	53
Table 2.11 Change in occupational structure in rural Bihar.....	55
Table 2.12 Changes in Labour Force Participation rate and Unemployment Rate in rural Bihar	56
Table 3. 1: Demographic features of West Champaran district and Bihar.....	77
Table 3. 2 Occupational structure of the main workers in rural West Champaran and Bihar.	78
Table 3. 3 Cropping pattern and yield, West Champaran and Bihar.	80
Table 4.1: Caste category-wise distribution of households, ownership holding, operational holding and total asset value	88
Table 4.2 Socio-economic class structure of village and distribution of agricultural land ownership.....	89
Table 4.3 Mapping of households over Socio-economic classes and Caste categories.....	90
Table 4.4 Socio-economic classes and cropping pattern.....	92
Table 4. 5 Ownership of major machinery and bullock among different socio-economic classes	97
Table 4.6 : Extent of tenancy in the village	99
Table 4.7 Extent of mortgage and average mortgage rates in the village	100
Table 4. 8 Land ownership size class and mortgaged in land.	101
Table 4.9 Socio-economic classes and credit market indicators.	104
Table 4.10 Socio-economic class and kind of labour use.	107

Table 4.11 Labour absorption in main agricultural operations in principal crops.	108
Table 4.12 Share of different kinds of labour use in main agricultural operations.	109
Table 4.13 Average annual and per capita income in different socio-economic classes.....	115
Table 5.1 Caste category-wise share of households among LML households and in village.....	123
Table 5.2 Housing and other basic amenities among LML and non-LML households.	125
Table 5.3 Demography of workforce among LML households.	126
Table 5.4 Distribution of households in different livelihood sources.	128
Table 5.5 Mean and CV of annual household income and per capita income and sources.	130
Table 5.6 Test for differences in mean of household income for alternative livelihood strategies.	131
Table 5.7: Distribution of average working members, asset and debt value by household livelihood strategy categories.	135
Table 5.8 Description of Variables used in Variable description of Livelihood Strategy Choice Model.	136
Table 5.9 Factors influencing the choices of livelihood strategies: Results of LCS model.....	138
Table 6.1 Cultivator households by operational holding size classes and caste categories.	146
Table 6.2 Average land ownership, value of MoP and household income of cultivator households.	147
Table 6.3 Distribution of operational holding with its components among cultivator households.	149
Table 6.4: Rents in fixed rent contracts for different operational holding size classes.....	150
Table 6.5: Share of crops in total crop area by operation size class.	151
Table 6.6 Agricultural land purchased and sold among cultivator households.	159
Table 6.7 Ownership and purchase of tractor and pump set among cultivator households.....	160
Table 6.8: Ownership of tubewell/borewell among cultivator households.....	161
Table 6.9: Yield and prices of paddy and sugarcane for different operation size classes	164
Table 6.10: Crop Income per acre among Cultivator Households.	165
Table 6.11 Share of principal costs among cultivator households.	168
Table 6.12: Rate of return from cultivation and machine rental among cultivator households..	171

Table 6.13: Average price of machinery bought between 2006-2011-12 by cultivator households	172
Table 7.1: Share in total land ownership, operation Means of Production and asset value among different Socio-economic classes.....	178
Table 7.2: Mapping of area under tenancy by ownership size class of tenant and lessor.....	183
Table 7.3: GVO and labour per acre of sugarcane and paddy, and share of hired labour among different socio-economic groups.....	186
Table 7. 4: Land purchases by different socio-economic classes.	188
Table 7.5: Agricultural machinery ownership and recent purchase among different socio- economic classes.	190
Table 7.6 Number of borewells/tubewells owned and amount invested in the last five years by different socio-economic groups.....	192

List of Figures

Figure 2.1 Trend of the year-on-year growth rate of Bihar and sectoral share in GSDP.....	35
Figure 2.2: Trend of the year-on-year growth rate of Bihar's GSDP agriculture, industry and services sector. and India's GDP agriculture	35
Figure 2.3: Trends of the year-on-year growth rate of Bihar's GSDP agriculture and India's GDP agriculture	36
Figure 2.4: Fertiliser use in paddy cultivation, Bihar and Punjab	47
Figure 2.5: Hired machine use in paddy cultivation, Bihar and Punjab.	47
Figure 2.6: Paddy yield in Bihar and Punjab	48
Figure 2.7: Trends of paddy GVO per hectare in Bihar and Punjab.....	50
Figure 2.8: Paddy crop income per ha at Cost A2 and Cost C2 in Bihar and Punjab.....	51
 Figure 3. 1: Administrative map, West Champaran district, 2013	 75
 Figure 4.1: Satellite image of the Katkuian village	 85
Figure 4.2: Seed replacement rate among different socio-economic classes.....	93
Figure 4.3: Manure use per acre among different socio-economic classes.	94
Figure 4.4: Expenditure on fertiliser per acre among different socio-economic classes	95
Figure 4.5: Expenditure on plant protection per acre among different socio-economic classes. .	96
 Figure 5.1: Distribution of households based on number of occupations.....	 128
Figure 5.2: Number of households in alternative livelihood strategies.	129
Figure 5.3: Variables significantly influence households' choice of a particular livelihood strategy	139
 Figure 6.1: Distribution of households' operational holding by ownership holding	 148
Figure 6.2: Share of modern input cost in total input cost for different operational holding size classes	153
Figure 6.3: Share of Hired labour in total labour use	154

Figure 6.4: Machine use per acre among cultivator households.....	156
Figure 6.5: Share of formal credit and interest rate share in informal loan among cultivator households.....	157

Abbreviations

AIDIS	All India Debt and Investment Survey
AISHE	All-India Survey of Higher Education
APMC	Agricultural Produce Market Committee
BARC	Bhabha Atomic Research Centre
BC-1	Backward Class – 1
BC-2	Backward Class – 2
BJP	Bhartiya Janta Party
BPKS	Bihar Pradesh Kisan Sabha
BSNL	Bharat Sanchar Nigam Limited
CACP	Commission for Agricultural Cost and Price
CAGR	Compounded Annual Growth Rate
CBI	Central Bank of India
CGWB	Central Ground Water Board
CMIE	Centre for Monitoring Indian Economy
CPI	Communist Party of India
CV	Coefficient of variation
DA	Discriminant Analysis
DAR	Debt-to-Asset ratio
DES	Directorate of Economics and Statistics
EBC	Extremely Backward Class
EIC	East India Company
EPWRF	Economic and Political Weekly Research Foundation
EUS	Employment and Unemployment Survey
FAS	Foundation of Agrarian Studies
FMS	Farm Management survey
FRP	Fair Remunerative Prices
FYM	Farm Yard Manure
GCA	Gross Crop Area
GDP	Gross Domestic Product
GE	Genome-Edited
GSDP	Gross State Domestic Product
GVO	Gross Value of Output

HoH	Head of the Household
HYV	High Yield Variety
IDE	Institute of Developing Economies
IGC	International Growth Centre
IHD	Institute of Human Development
ILO	International Labour Organisation
IOI	Incidence of Indebtedness
JDU	Janta Dal (United)
KCC	Kisan Credit Card
LFPR	Labour Force Participation Rate
LLS	Land and Livestock Survey
LML	Landless Manual Labour
LPM	Linear Probability Mode
LSC	Livelihood Strategy Choice Model
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MLA	Members of the Legislative Assembly
MoP	Means of Production
MSP	Minimum Support Prices
NSSO	National Sample Survey Organisation
OBC	Other Backward Class
OLS	Ordinary Least Square
PACS	Primary Agricultural Credit Society
PARI	Project on Agrarian Relations in India
PLFS	Periodic Labour Force Survey
PNB	Punjab National Bank
RJD	Rashtriya Janta Dal
SAS	Situation Assessment Survey
SBI	State Bank of India
SC	Scheduled Castes
SRI	System of Rice Intensification
SSRN	Social Science Research Network
ST	Scheduled Tribes
TFP	Total Factor Productivity

Chapter One

Introduction to Study

1.0 Introduction

The Bihar's agrarian economy is historically characterised as a backward and stagnated. Prasad, 1979, 1987, Prasad & Rodgers, 1983 and Hauser, 2019 explains it through its production relations and prevailing socio-economic structure. Until the 1990s, the production organisation was primarily home-grown inputs (seeds and manure), home-possessed bullocks, and a family labour-based system, which gave a low return. Singh, 2014, characterised it as a 'low-cost, low-return system. A small section of the rent-seeking class siphoned off whatever agrarian surplus generated. Most of the peasant and labourer households were forced to live in impoverished conditions.

From the 1990s, one has seen a change in the production organisation in Bihar. The marketed input use (seeds and fertiliser) and machine use increase. It has almost reached the national average (CACP, 2023). However, the yield has not responded in a similar fashion, and prices remained stagnant and low. Due to that, cultivators have been making negative or near zero returns at the cost C2 for the last 25 years (CACP; EPWRF, NSSO, 2021a). In this phase, one observes a revival of tenancy and an increase in rural indebtedness. In 2018-19, the main tenant groups were landless and near-landless households. Their share in total tenant households was more than 95 per cent (NSSO, 2005; 2021a). The indebtedness is primarily informal. Furthermore, the cultivators are more indebted than non-cultivator households (NSSO, 2021b). In this phase, one also observes an increase in labour migration at an unprecedented rate. The nature of migration is short-term and seasonal (NSSO, 2010; Rodgers et al., 2013).

These changes show a shift in production organisation in Bihar. The production organisation is dependent on purchased inputs, hired machines, rented land, and indebted monetary capital, making a near zero or negative crop income. It shows that the agrarian economy continues to be in distress, but it differs greatly from its older characterisation. This thesis called the phase of new/current agrarian distress in Bihar.

The recent literature on Bihar's agrarian economy highlights this distress. However, they analyse it in a class-neutral manner. One can classify recent literature into two groups. One set of literature, like Sharma, 2005, Sharma et al., 2012, Rodgers et al., 2013, and Kumar & Bhagat, 2017, 2021 argue that improved market interaction and labour migration are an outcome and as well an indicator of the breaking of old production structures. However, they do not engage in the question of what are evolved forms of production structure and production relations. The second set of literature like World Bank, 2006, Chanda, 2011, Mathew & Moore, 2011, Fuzita, 2012, explain distress through governance, human capital, poor infrastructure, etc. They do not engage in the questions of production structure and its impact on the economy. Nonetheless, both sets of literature try to explore whether production structure has a role in the cause of the new/current agrarian distress in Bihar. Or are the new/current distress impacts uniform across the socio-classes or have differentiated impacts? The thesis places itself in this literature gap and attempts to analyse the socio-economic class dynamism of Bihar's new/current agrarian distress.

1.1 Motivation to Study Bihar

Bihar has one of the most fertile lands, abundant irrigation sources, and human labour power. Until two decades back, it was also one of India's biggest coal and other minerals sources (before the state's bifurcation) (Mukherji & Mukherji, 2012; Rasul & Sharma, 2014; Hooda et al., 2021; CGWB, 2023). However, it is India's worst-performing economy in almost all indicators. Its agriculture is characterised as backward and stagnant (Sahay, 1998, 2020; Sharma, 2005; Rodgers et al., 2013; Harriss, 2022). It has very low levels of industrialisation and urbanisation. It lacks basic physical infrastructure. Academic institutions, from school to university, have almost collapsed. It lacks a public transport system in any sense. Whatever minimal industry base state had, jute, sugar mill and paper, almost all of them collapsed (Das, 1992; Sharma, 2005; Rodgers et al., 2013). Why is a region with so much resources, stifling with economic backwardness and dehumanisation and on a standstill since independence?

Apart from the dichotomy of resource abundance and backward economic performance, another peculiarity of Bihar is that despite its agriculture being backward and stagnant, it is an Indian state with the highest rural population share among major states of India (Census of India, 2011). In the

Census of India 1951, around 93 per cent of Bihar's population resided in rural regions, which remained almost similar over the 60 years. In the Census of India 2011, around 89 per cent of Bihar's population remained rural. Another peculiar feature of Bihar's demography is that despite being almost rural, it is the most densely populated Indian state—except for the fully urbanised states like Goa and Delhi (Census of India, 2011). In 2011, the population density was 1106 person

Furthermore, in such a densely populated region, more than 50 per cent of rural households were landless; among landed households, around 85 per cent were marginal landowners (0 to 1 ha). On the other hand, around 3 per cent of households owned more than 20 per cent of the land. Notwithstanding the stagnation of the agrarian economy and such a skewed land distribution, 77.8 per cent of Bihar's rural households were engaged in agriculture (cultivators or labourers) (NSSO, 2021a). In this context, Isabel Guerrero states, "...Bihar represents one of the most densely populated agglomerations of poor people anywhere in the world" (Guerrero, 2009, p. 2).

Population-wise, Bihar is the third biggest and most populated state. In that way, Bihar will be essential to the development of India. Let us try to understand this puzzle through the development economics model—the Lewis model and the Resource curse theory.

According to the classic Lewis model, when the agrarian economy is backward, one expects a mass-scale labour force shift towards the industrial sector (Lewis, 1954). Rural Bihar did witness labour migration historically. However, the migration pattern has been largely short-term and circular in nature (De Haan, 2002; Datta, 2016; 2023). Further, one also observes that Bihar's rural population share has remained high and stable.

On the other hand, let us look at Bihar's development trajectory through the 'resource curse' theory. This theory tries to explain the dichotomy between resource abundance and poor development outcomes through empirical studies. It states that after the discovery of natural resources like crude oil, rare minerals, etc., regions often end up being in conflict and authoritarian rule. Their resource advantage, instead of giving them a better development path, ends up being their curse (Di John, 2010; NRGI, 2015). However, Bihar's resource advantage is explored millenniums back. In fact, it has played an important role in its prosperous and glorified ancient past. Bihar region was one

of the prosperous regions of the Indian sub-continent till two centuries back (Das, 1992; Sharma, 2005; Mukherji & Mukherji, 2012). To emphasise the significance of the Bihar region in the ancient history of the Indian sub-continent, Thapar, 1966 cited in (Mukherji & Mukherji, 2012) states that the History of ancient India is the history of ancient Bihar. Even now, other Indian states utilise mineral resources and surplus labour from Bihar to improve their growth trajectory (Firth & Liu, 2018).

The Development Economics models, like the Lewis and resource curse theories, fail to explain Bihar's peculiar development trajectory. The Lewis model could not explain its stagnation, and the resource curse theory could not explain its backwardness. It makes Bihar's agrarian economy an interesting case to study in Development Economics. The next section briefly reviews the literature on the Bihar's agrarian economy.

1.2 Brief Survey of Literature on Bihar's Agrarian Economy

The section briefly reviews different sets of literature on Bihar's agrarian economy. It divides studies on Bihar broadly into two groups: Studies of Bihar's agrarian economy till the 1990s And Studies from 2000. The reason for this particular divide is that the literature on the agrarian economy of Bihar until the 1990s primarily explains backward and stagnant economic structure through history, production structure, governance, and institutions. The prevalence of socioeconomic classes and their respective role in production relations was an important analysis variable. From the 1990s, one can observe changes in the agrarian production organisation in Bihar and the rural economy. Though distress continued, however, in changed form. In the 2000s, a new set of literature emerged; it explains distress through macro variables. In this phase, rarely any research work engaged with production structure as a possible factor of the distress. Literature on the possible differentiated impacts of distress on different sections of the agrarian society also remained absent.

The Section has four sub-sections; the first sub-section briefly reviews the literature on Bihar's agrarian economy until the 1990s. The second sub-section presents changes in agrarian production

organisation and rural economy from the 1990s. The third sub-section discusses the literature on Bihar since 2000. The fourth sub-section presents the literature gap and the puzzle of the thesis.

1.2.1 A Brief Survey of Literature on the Bihar Agrarian Economy till the 1990s

Literature on Bihar's agrarian economy until the 1990s focuses primarily on explaining its backward agrarian structure. The backward structure is largely explained through history, current governance and agrarian structure. One set of literature (also the most discussed) explains Bihar's downfall from a prosperous region to a backward agrarian system and economic stagnation through colonial history, colonial institutions, and its current socio-economic structure (Jannuzi, 1974; Prasad, 1976; 1979; 1987; Das, 1982; 1983; 1992; 1996; Prasad & Rodgers, 1983; Varma & Sharma, 1984; Sahay, 1998; Chakravorty, 2001). These works approached agrarian structure through a class perspective. It emphasises the role of colonial rule, specifically, the permanent settlement land tenurial arrangement (Zamindaari system), in the creation of a class structure, which is exploitative and growth retarding. It explains that the zamindaari system created a hierarchy of rent seekers in the agrarian production structure. They siphoned off most of the agrarian surplus from the producers, which led to a lack of investment and development. This process has continued for over two centuries, transforming a prosperous economy into an impoverished society. These scholarly works also emphasise that post-independence, the state governments failed to implement radical land reforms to alter this growth retarding class structure. Due to that, the rent seekers continued to dominate the economy. The zamindaari system was abolished, but the zamindari structures continued with slight structural adjustments (Jannuzi, 1974; Sharma, 2005; Mukherji & Mukherji, 2012).¹

Post-independence, Bihar's agrarian structure was in a form where a small group of rent-seeking households possessed most of the productive resources. They utilise their near-monopoly on productive resources, particularly agricultural land and social dominance (caste) to control the economic structure and exploit other socio-economic classes. They can take away most of the agrarian surplus without any productive investment. Prasad, 1979 and 1987 defined this production structure as 'semi-feudal'. It had broadly four features: Extensive unregistered and illegal share

¹ The permanent settlement and its consequences will be discussed in detail in Chapter Two and Three.

cropping practice, perpetual indebtedness of small peasantry, landowner acting as a moneylender, and small peasantry having limited access to the market. In this system, generational attached labour emerged as an important labour control measure for the landed classes. Other scholars have also highlighted similar socio-economic conditions in their respective studies (Mitra & Vijayendra, 1983; Prasad & Rodgers, 1983; Sahay, 1998; Chakravarty, 2001). Till the 1990s, this production structure was the most popular characterisation of Bihar's rural economy.

From these literatures, one can understand that Bihar's agrarian economy was backward in that the socio-economic class structure had an important role. In that system, one class appropriate surplus but had no incentive to invest in the improvement of productive capacities of the economy. On the other hand, the actual cultivators were left with hardly any surplus for investment. Due to that, the economy remained stagnant, and the majority of households were forced to live in impoverished conditions. One observes a sign of improvement in the agrarian production organisation in Bihar from the 1990s. The next sub-section discusses it.

1.2.2 Bihar's Agrarian Economy from the 1990s

The official statistics on Bihar's agrarian economy show that since the 1990s, Bihar's agrarian economy has gone through tremendous changes. Till the 1980s, Bihar's agrarian production organisation was characterised as a 'low-cost, low-return' system (Singh, 2014). However, from the 1990s, the marketed inputs, such as purchased seeds and fertiliser use, have increased. Now, it is similar to national averages. Tractors and other machine uses have considerably improved (CACP). In this phase, one also sees the revival of tenancy (it declined between 1970-71 and 1991-92) (NSSO, 1982; 2005; 2021a). Rural indebtedness also increased, which is primarily informal. The rural indebtedness among cultivators was greater than that of other households (NSSO, 1998; 2006; 2021b). The yield has improved but in much less proportion than the increase in marketed input uses. Additionally, due to low and stagnated prices, cultivators have made near zero or negative returns from cultivation at cost C2 (EPWRF; CACP; NSSO, 2021a). Rural Bihar also witnessed an unprecedented increase in rural labour outmigration, which is mostly short-term and seasonal (NSSO, 2010; Rodgers et al., 2013).

From the economic trends discussed above. One understands that Bihar's agrarian economy has changed from its characterisation in the 1970s and the 1980s. However, negative crop income, labour outmigration and the rise of informal loans indicate continued agrarian distress. One presents the manifestation of the current agrarian distress through four statistical indicators: First, between 1996-97 and 2021-22, Bihar cultivators have consistently made negative or near zero income per ha from cultivation at cost C2 (CACP). Second, there is a consistent decline in the significance of crop production in Gross State Domestic Product (GSDP). In 2021, it was just around 10 per cent (EPWRF). Third, there is a secular decline in the share of cultivators in the total rural households. Between 1991 and 2019, the share of cultivator households declines from 69.75 per cent to 48 per cent (AIDIS, 1998; 2021). Fourth, for more than 98 per cent of Bihar's agricultural households, the share of labour earnings was higher than crop production income in the total monthly household income (NSSO, 2021a).

In the 1970s and the 1980s, Bihar's agrarian economy was characterised by prolonged distress or crisis. In that, farm productivity was low, and levels of earning were low. The majority of people were impoverished. The reason behind this low-cost, low-return production organisation was its production structure. Since the 1990s, Bihar's agrarian economy has witnessed changes in its production organisation: the market interaction has increased, and the economy has monetised. However, it has resulted in negative income. Moreover, the cost of cultivation has increased rent and interest burdens (increased tenancy and rural indebtedness of cultivators). A production organisation depends on purchased inputs, hired machines, rented land and indebted monetary capital, making a near zero or negative crop income. This means the system has moved from one form of distress to a new one. The thesis defines it as the new/current agrarian distress in Bihar.

The next sub-section discusses the literature on Bihar's agrarian economy in the phase of new/current agrarian distress

1.2.3 A Brief Survey of Literature in the Phase of New/Current Agrarian Distress in Bihar

From the early 2000s, literature on Bihar's agrarian economy has seen a departure from earlier studies. These new studies emphasised the continuity of economic backwardness and the

impoverishment of people. However, they departed from the causal factors. In this phase, two sets of literature have emerged: one set of literature, Sharma et al., 2012 Rodgers et al., 2013 Bhagat & Kumar, 2017; 021 and Sahay, 2020 brings out the breaking of semi-feudal structure (particularly attached labour institution), improvement in the mechanisation of agriculture, and the emergence of migration as a prominent livelihood avenue for rural labour. They argue that improved market interaction and labour migration are outcomes and as well an indicator of the breaking of old production structures. Bhagat & Kumar, 2021, have even claimed that due to migration, land has lost its importance as a source of socioeconomic power. However, these literature do not engage in the question of what are evolved forms of production structure and production relations. The second set of literature, World Bank, 2006, Guerrero, 2009, Chanda, 2011, Fujita, 2012, Mukherji & Mukherji, 2012, Rasul & Sharma, 2014 do not engage with the question of socio-economic classes and production structure. These studies explain economic stagnation through a lack of human capital, poor infrastructure, governance and financial integration, and lack of locally suited technological innovations. Nonetheless, neither set of literature explores whether production structure has a role in the cause of the new/current agrarian distress in Bihar. Or are the new/current distress impacts uniform across the socio-economic classes or have differentiated impacts? Here, one briefly discusses a few of these studies.

Institute of Human Development (IHD) has conducted a longitudinal study of 36 villages from 6 districts of Bihar for over three decades. The first survey was conducted in 1982-83 by A.N. Sinha Institute, Patna and the International Labour Organisation (ILO). IHD re-surveyed in 1998-99 and 2009-10. Based on this study, Sharma et al., 2012 and Rodgers et al., 2013 show that the attached labour institutions have almost disappeared from the Bihar villages. Physical infrastructure has improved, but there are regional disparities. Currently, the un-viability of agriculture and employment is the most important issue in Bihar. The land is highly fragmented into small parcels. Due to high population pressure, Bihar has a very low land-to-labour ratio. Along with this, Bihar has a low industrial base. These features of Bihar's economy have created a situation where Bihar's labourers are witnessing mass-scale out-migration. In 2009-10, around 60 per cent of rural households had at least one male migrant from the working age group. It states that Bihar is on the verge of becoming a remittance economy.

The World Bank prepared a report, World Bank, 2006, which is based on various secondary databases and studies. It highlights that high land fragmentation, poor condition of physical infrastructure (road and electricity), poor governance (bad law and order conditions), poor fiscal base and high pressure of pension, salaries and interest on that, poor human capital and natural calamities particularly regular floods as the main constraints to Bihar development. It recommends that Bihar should improve the investment climate and social sector delivery mechanism for its development. Both of these essentially need strong fiscal resources. Bihar's fiscal condition is already stressed due to the low tax base. For that, the report suggested bringing efficiency to the governance, cutting on revenue expenditure (salary, interest, and transfers), and using it for productive expenditures.

International Growth Centre (IGC) published a working paper, Chanda, 2011, which highlights that Bihar faces extremely low agricultural productivity and divergence growth trends from other Indian states due to its low Total Factor Productivity (TFP). It explains low TFP through dualism in the economy. In Bihar, a high-performing service sector is concentrated in urban centres, which derives most of Bihar's total GSDP and growth. It also has a major inflow of capital. Conversely, rural regions, which employ most people, face low productivity mainly due to low levels of technological innovation, human capital and poor integration of financial institutions. Here, a question emerges: if this dualism prevailed due to differences in productivity, then why does labour not move from one sector to the other? What holding back the labour? This aspect is explained by the low levels of human capital in rural regions. Here, human capital is mainly explained in terms of levels of schooling. However, the study provides no causal relationship between levels of education with agricultural productivity or labour migration.

In its working paper on Bihar, Mathew & Moore, 2011, the Institute of Development Studies explains poor economic conditions and the growth divergence from the rest of India in the 1990s onwards through the ruling regime. It argues that the ruling regime of Lalu Yadav has consciously and tenaciously created a governance failure. It highlights three features of the Lalu Yadav regime: the social coalition's support Lalu Yadav was enjoying was so impoverished and suppressed that he could not keep that intact merely with the promise of 'development'. Second, due to first, he preferred to create a social conflict among historically oppressed and oppressor groups rather than

try to resolve it through the state apparatus. Third, in order to break oppressor caste hegemony on state governance, he preferred to make governance fail by purposefully keeping vacancies rather than appointing qualified people, who often come from oppressive caste backgrounds. The paper acknowledges the historical backwardness and social and economic oppression in Bihar. However, it did not try to contextualise the Lalu Yadav's ruling. Instead, it prefers to explain Lalu Yadav's tenure in isolation and the primary cause of current economic conditions. It considers Nitish Kumar's ruling since 2005 a 'Development Miracle'.

Institute of Developing Economies (IDE), in its discussion paper, Fujita, 2012, explains Bihar's sluggish growth rate primarily through low yield of paddy and wheat. It presents that 9/10 of Bihar's population resides in rural regions. They are primarily dependent on agriculture. Paddy and wheat cover almost 70 per cent of the Gross Crop Area (GCA). A low and non-growing yield of these two crops primarily caused poor performance in the agriculture sector. It highlights the lack of agricultural research, particularly in rice varieties suitable for the local conditions from a long time, and 'backwardness' in tubewell irrigation technology is deriving poor agricultural performances. It eventually pushed back Bihar's economy.

1.2.4 Research Gap and The Puzzle

In the 1970s and 1980s, socio-economic differences and production structure caused due to it was presented as the primary cause of Bihar's prolonged agrarian distress. However, hardly any studies in the phase of new/current agrarian distress have explored the social-economic structure as a possible analysis variable. They have used different variables to explain the crisis, such as poor governance, high land fragmentation, poor physical infrastructure and human capital conditions, poor financial integration, lack of locally suited technological enhancement, etc. IHD studies have discussed changes in caste, class and land holding. However, their analysis is also class-neutral. It brings region as a parameter of backwardness. It analyses the impact of migration without separating migrants from different socio-economic categories.

It raises a question: Is the impact of the new/current agrarian crisis universal? Is everyone in the agrarian economy impacted similarly? If yes, socio-economic classes may no longer be an

important feature of the production structure. If differences exist in the impact of the crisis on different strata of society, it means that socio-economic classes in the production structure are significant. This thesis primarily enquires this question.

However, a question arises: How do we define the socio-economic classes? The next section reviews methods to classify households in the countryside into different socio-economic classes from various studies and places thesis's framework.

1.3 Framework of the Study

Observing the prevalence of unequal resource position in the Indian countryside, almost all scholars, except the neo-classical, approached the Indian countryside by categorising society into socio-economic groups.² However, the Marxian framework emerged as the most discussed one. The Marxian approach sees society and social churning through the lens of two antagonistic classes: the surplus-creator and the surplus-appropriator. The classes in the Marxian framework depend not only on the current total possession of wealth and assets but also on the degree of labour exploitation and socio-cultural historical conditions (Marx, 1985; Ramachandran, 1990;2011; Athreya et al.,1990; Vakulabharanam, 2010). In the Marxian framework, the classification of rural/agrarian society is based on three principal criteria:

1. Possession of Means of Production (MoP)
2. Size and sources of surplus
3. Labour exploitation

To analyse the socio-economic condition in the countryside, Lenin made the first attempt to classify rural society, utilising the above-mentioned criteria. He classified the rural Russian countryside of the late 19th century into six classes.³ (Lenin, 1956). After Lenin, Mao Zedong

² The neo-classical [marginalist] school approaches any economic question through demand and supply and deals with the 'value of marginal product'. It sidelines the persistence of classes and class conflicts in the approach to Indian agriculture. It considers representative peasants that end the scope of persistence of 'differentiated peasantry'. The assumption of peasantry as a homogenous group side the most striking feature of Indian agrarian society: extremely unequal distribution of land and other means of production.

³ Lenin classified the Russian countryside into the following six classes:

classified rural China in the 1930s. He also utilised similar principal criteria. However, rural China's socioeconomic conditions differed from those of rural Russia. He classified the Chinese countryside into five classes, in that the addition of the class of Landlord was a striking difference from Lenin's classification of rural Russia. (Mao, 1933).⁴

The first attempt to classify the Indian countryside with empirical data in the Marxian framework was made by P. Sundarayya. He classified a village named Ananthavaram in Andhra Pradesh into 12 socio-economic classes based on periodical surveys. He pointed out differentiated features of the Indian peasantry by using his village study data. (Sundarayya, 1976). V.K. Ramachandran has extended Sundarayya's conception of class analysis in his study of the Gokilapuram village of Tamil Nadu. In his work, Ramachandran classified the villages into ten classes. In this

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1. Big landowners: They do not engage in manual labour and exploit wage labour and tenant cultivators through different institutions.
 2. Big peasants: They are capitalist farmers; they cultivate through hired labour and small peasants. They have a very low level of cultural connection to the peasantry, and they perform manual labour only on their own farm.
 3. Middle peasant: They are small landowner, however in capitalist farming that is not just sufficient for their survival but also generates surplus. However, this surplus varies with year to year, in good year, it be converted into capital.
 4. Small Peasant: They are small scale cultivators of owned or leased in land. That is sufficient for household subsistence. They do not hire in labour and organise family labour for farming.
 5. Semi-proletarians: They till tiny plot of land. Their livelihood based on partly on wage labour in agriculture and industrial enterprises and partly by working on their tinny owned or rented land.
 6. Agricultural proletariat: Their livelihood depends solely on wage labour in agricultural enterprises.

⁴ Mao classified the Chinese countryside in the following five classes:

1. Landlord: They own land, do not engage in manual works. They live mainly on extraction of rent from peasants. They also engage in money lending, hire labour for some cultivation, and engage in industry and enterprises. However, rent extractions are their principal form of exploitation.
2. Rich Peasant: On principle, they own land. However, some rich peasants partly own and partly rent in their operational holding. Some own no land and rent in entirely. They have better production instruments and liquid capital. Their main form of exploitation is hiring labour. However, they may also rent out a small part of their land.
3. Middle Peasant: Some of them own land and also rent in, other do not own land rent in entirely. They have a fair amount of agricultural equipment. On principle, they do not exploit labour and get exploited in the form of rent. However, some well-to-do middle peasants engage in labour exploitation, but that is not their main source of income.
4. Poor peasant: Some own little land have very few odd farm equipment. Others do not own any land but some farm equipment. They also hire themselves to repay loans and rent.
5. Worker: They, by rule, do not own land or farm implements. Some own some land and very little farm equipment. They earn their livelihood mainly by selling their labour power.

The main difference pointed out by Mao between the middle peasant and the poor peasant is that the middle peasant does not necessarily need to sell his labour power. While poor peasants need to. Mao also pointed out that separating the poor peasant from the worker is difficult in a few cases.

classification, the classes of landlords are defined by households that own the most and best land in the village, do not engage in manual agricultural operations, and lease out a portion of their land mainly to their farm servants. They often draw various forms of bonded or semi-free labour. The class of peasantry is differentiated mainly by the labour ratio criteria. (Ramachandran, 1990). Later, the Foundation of Agrarian Studies (FAS), established in 2003-04, started the Project on Agrarian Relations in India (PARI) to study socio-economic relations in the Indian countryside. Till now, it has surveyed 28 villages from 12 states from different agro-climatic zones. It has classified households into different socio-economic classes, taking into consideration local socio-political conditions. It has followed the framework of Sundarayya and Ramachandran with more statistical rigour. FAS surveys bring out that agricultural and non-agricultural labour classes no longer exist as two distinct groups in rural India. FAS merge and names the manual labour class (Ramachandran et al., 2010; Swaminathan & Baksi, 2017).⁵

Atherya et al., 1990, a study of Tamil Nadu villages, moved from the study of rural households to agricultural households. Following the broader Marxian framework, agricultural households were classified into five agrarian classes. It slightly differed from the classical Marxian criteria; it uses only surplus appropriation and labour exploitation criteria for the household classifications.

Patnaik, 1987, made another attempt at the classification of the agrarian economy from the Marxian framework. it uses only the labour exploitation criterion. it presents two kinds of labour exploitation: direct labour exploitation, bonded or free wage labour, and indirect labour exploitation, in the form of rent through renting out land. This criterion was used broadly to classify households in different socio-economic classes. It divides households into six classes based on holistic modelling and empiricism.⁶

⁵ FAS uses the following criteria for the household classifications:

1. Ownership over the means of production and other assets
2. The labour ratio
3. Rent exploitation, rent received or paid by the household
4. Net agricultural income
5. The sources of income of the household

⁶ Patnaik classified households into six classes: landlord, the rich peasant, the middle peasant, the small peasant, the poor peasant and the landless labourer. In that, the class of the landlord and rich peasant exploit the labour of others, the class of middle peasant and small peasants are primarily self-employed, and the class of poor peasants and landless labourers are exploited classes.

Pradhan H Prasad first attempted to classify rural Bihar society into socio-economic classes using the Marxian framework. He broadly used land and labour criteria (Prasad 1979; 1987). After that, A. N. Das produced an anthropological work, 'The Republic of Bihar,' in which he theorise Bihar and artfully brings aspects from history into the analysis. However, he discusses the presence of various classes without defining them through any concrete criteria (Das, 1992; 1996). Anand Chakraborty, in his periodical study of the village of Bihar, to analyse the nature of agrarian change, defined classes keeping caste of households as the core of the class formation. He defined it as "...agrarian class relations in Bihar are embedded in caste *because a person controls land or not is conditioned by the person's caste status*". His classification is more qualitative in nature. He classified the village into five classes.⁷ Here, cultural perception about the class is also considered, along with caste and qualitative features (Chakravorty, 2001).

The Marxian framework has dominated the study of classes in the countryside. However, scholars like Daniel Thorner, Andre Beteille, Krishna Bharadwaj, and V. M. Dandekar have hesitancy over its applicability in Indian conditions. The criticism has come primarily on two grounds: First, India is a complex society with the coexistence of capitalist and pre-capitalist features. So, applying a two-class system to a mixed economy is not appropriate. Second, caste is the most dominant social institution and defining feature of the socio-political-economic life. Also, it is a specific feature of the Indian subcontinent. A class analysis for such a society has limited applicability. Scholars have given alternative frameworks to address the first issue, which will be discussed in the coming paras. However, the second concern nullifies the applicability of the class approach to the Indian countryside.

Influenced by the enriched work of A.V. Chayanov on Russian Peasantry, The Theory of Peasant Economy, Daniel Thorner, Basile Kerblay, and R.E.F Smith developed a neo-populist school (Patnaik, 1981; Thorner et al., 1987). Through this framework, Thorner analysed the Indian agrarian economy and conceptualised it as a 'built-in depressor' (Thorner, 1956). Thorner & Thorner, 1962, further explains the aspects of the Indian rural economy in this framework. Krishna

⁷ Chakravorty classifies the village into the following five classes: Malik, Grihst, Tenant, petty producer and landless labourer or majdur.

Bharadwaj termed the Indian economy a 'Multiple and overlapping mode of production'. In that, various modes of production co-exist and interact (Bharadwaj, 1974).⁸ In Bharadwaj & Das, 1975 study of Odisha villages, Bharadwaj uses tenurial status as a class and divides households based on position in tenancy relation. Beteille, 1965, also defined land-owner and tenant as two classes. Mukherjee, 1971 used the census occupational categories as classes.

These works have drawn serious criticism from Marxian scholars, primarily for confusing the concept of class and mode of production. Patnaik, 1987 states that "...Concepts such as production relations, forces of production and mode of production is an analytical concept, abstracted from historical reality; they are not meant to be descriptive. They are methodological tools to be applied to the study of historical reality." (Patnaik, 1987, p 2). Thorner, Mukherjee, Beteille and Bharadwaj's works recognise the differentiated nature of the peasantry. However, it confuses class and category and reduces historical formations to mere empiricist categories. (Patnaik, 1987). Using categories like 'tenant' and 'owner' ignores the aspects of the scale of farming, nature and scope of surplus appropriation. A tenant can be a rich capitalist farmer, and an owner can be a poor peasant or even an agricultural labourer. Owner and tenant can be useful categories but do not satisfy any features of the class (Patnaik, 1987; Ramachandran, 1990). Scholars often use acreage classes for convenience in empirical studies, particularly from secondary databases available in India. These features emphasise the confusion between 'class' and 'category'. They analyse rural poverty and inequality. However, they reduce the scope of analysis and miss out on the root of impoverishment: the class nature of the social formations (Patnaik, 1987; Athreya et al., 1990). The theoretical narrowness of neo-populism school exposed in the 'farm size' productivity debate, when based on the Farm Management survey (FMS) database, Sen concluded small farms are more productive based on simple empirical analysis (Sen, 1962; 1964). In his analysis, he completely ignored the aspects of farm organisation and the different natures of farms (Rao, 1967).

The question of the caste, which is a pre-capitalist feature of Indian society, has co-opted and continues to survive and adapt different manifestations in modern production relations. D D

⁸ This framework looks similar to of D D Kosambi, quoted in Haragopal, 2017, "...[the] mode of production in India changed through adjustments and not displacement, giving rise to a multi-mode political economy." (Haragopal, 2017, p 2).

Kosambi and Irfan Habib, in their work on the history of caste in the Indian subcontinent, point out that the Aryan's transition from pastoralism to a food-producing economy and conquering of non-Aryan tribes give rise to two groups, Aryans and the Dasa. In the late Vedic era, it evolved from tribes to varna. The rise of empires, growing productive forces, and division of labour produced endless jatis (sub-castes), which kept generating more and more (Kosambi, 1965; Habib, 1995). The caste has a class base from its origin to its current complex form. The Marxian framework, currently in practice to understand the Indian sub-continent, considers that class and caste are intertwined. The exploitative class or surplus-appropriating class has historically evolved from the dominant caste. Land, the most essential means of production, is historically distributed disproportionately over the caste. Non-affluent sections of the upper and middle caste form the peasantry classes. The class of manual labour are overly represented by marginalised communities (Ramachandran, 2011; Namboodiripad, 2020).

The discussion in this section shows that the Marxian classification method is theoretically vigorous and statistically more robust than the other classification methods. Due to that, the thesis opted for the Marxian framework for the socio-economic classification and analysis.

The Marxian class schema broadly divides rural households into three classes: First, the class of surplus appropriators, which includes landlords and capitalist farmers. Second, the peasantry, which is further subdivided into differentiated sub-classes. Third, rural proletariats, they are the resourceless section of the agrarian society. They may engage in cultivation and other occupations, but their livelihood primarily depends on their manual labour.

1.4 Research Question and Research Objectives

Research Question: This study explores the internal socio-economic class dynamism of the new/current agrarian distress in rural Bihar. It has two interconnected sub-questions: First, is the impact of the current agrarian distress universal or has differentiated impacts on different socio-economic classes? Second, do differences in the socio-economic positions of the households play any role in the cause or impact of Bihar's current agrarian distress?

Objectives of the Study:

The study divides agrarian society into three groups: The Landless Manual Labour (LML), the Cultivators, and the Surplus-appropriating households. LML households are a set of groups that do not possess any MoP; their household labour is only endowment for survival. The cultivator households are primary cultivating households. The surplus-appropriating households are those who possess the most share of productive resources but do not contribute to production through any physical labour.⁹

This study explores its primary research question by working on the following three research objectives:

1. Analysing livelihood strategies of LML households.
2. Analysing production organisation of cultivator households.
3. Analysing sources of surplus and accumulation strategies of Surplus-appropriating households

The LML households are resourceless groups; they survive through their household labour endowment. Their primary concern is employment. Hence, the study analyses their livelihood avenues and livelihood strategies. It gives an idea about the conditions of the labouring class and employment conditions in general. The cultivator households are the ones who primarily organise agrarian production. Hence, the study analyses the production organisation of the cultivator households. It also explores differences in the production organisation of different strata of cultivator households. It gives an idea about the prevailing nature of cultivation and functioning of primary markets: Land, Labour and Credit. Exploring these features of the economy gives an idea about the direction in which the agrarian economy may go. Finally, the study analyses sources of surplus and accumulation strategies of surplus-appropriating households. This group owns most of the productive resources but does not put their labour into production. Instead, it utilises its

⁹ Criteria of this particular classification will be discussed in the next section.

resource ownership to appropriate surplus. It is a rent-seeking class in the system. How do they appropriate surplus, how much, and where do they invest it? Their significance and actions should impact the levels of investible capital with the cultivator groups and livelihood conditions of the labouring class.

1.5 Methodology and Data Sources

The thesis is primarily an empirical exercise to understand internal class dynamism in the current production structure and the nature of agrarian distress. This section discusses methodology and databases used in the thesis.

1.5.1 Methodology of the Study

The thesis primarily analyses the agrarian economy of a village named Katkuian from the West Champaran district of Bihar. It analyses the livelihood of LML households, the production organisation of the cultivator households, and the surplus-appropriation and accumulation strategy of the surplus-appropriating households. However, a question emerges: Why is a primary survey-based study when macro-level databases exist on Indian agriculture?

The macro databases are very important for broadly understanding the changes in macro features of an economy. However, it has limited use in analysing socio-economic relations at the production units. These databases provide broad statistics based on standardised macro surveys. However, primary surveys allow for exploring processes and relations in a localised context. For instance, from secondary data, one can understand the prevalence of disproportionate resource ownership among different economic or caste groups. However, primary surveys enable researchers to understand how these disproportionate resource ownership impacts production organisations and access to different social-political institutions. Here, another question comes up, in the primary survey: Why does a village study?

Village studies in India to understand socio-economic life has a centuries-long tradition. Many British scholars like Munro, Metcalfe, Maine, and Baden-Powell conducted village studies during

colonial rule (Srinivas & Shah, 1960). In the 20th century, villages emerged in social science academia as an established socio-economic and political unit. It begins the phase of in-depth studies of villages. To name a few, Darlings, M. N. Srinivas, and D. N. Majumadars brought prolific village studies. Village as a close community has a lot of economic, cultural and political interdependence. However, villages were never fully self-contained and self-sufficient units. They depended on haat for certain daily needs like salt or iron (Srinivas & Shah, 1960; Das, 1996). However, in the 21st century, market penetration has reached even the remotest of villages. Migration is emerging as a growing phenomenon across the Indian countryside, and labourers are as dependent on outside the village as the village (Dhar et al., 2022; Singh & Kumar, 2023). A question emerges: Can a village still be a relevant socio-economic unit? Indeed, villages were no longer as close a system as Metcalfe define "...a self-sustaining mini-republic" (Metcalfe cited in (Srinivas & Shah, 1960, p. 1)) till the 19th century and a close socio-economic unit in the 20th century (Srinivas, 1957; Srinivas & Shah, 1960). However, it still continues to be a socio-economic unit for the agrarian society in India (Ramachandran et al., 2010; Dhar et al., 2022). Unlike urban residential localities, Indian villages present a habitat of people with closely connected production relations.

Hence, the thesis analyses a village to understand the impacts of the new/current agrarian distress on different socio-economic classes. The findings of the village study complement and deepen the understanding of empirical evidence from the secondary data. It comprehends the processes in practice. However, the findings from the village study do not claim or are presented as the story of Bihar or the West Champaran district.

When one approaches the classification of the Katkuian village households from the Marxian framework. It was observed that the labour ratio, which has been focal to the Marxian class analysis and differentiation of peasantry for decades, poses difficulties in analysing the differentiation of peasantry. There are two possible reasons for this: mechanisation and migration. One observes a significant machine use among cultivator irrespective of their operation size. Furthermore, almost all cultivators have done major agricultural operations like harvesting and sowing under the piece-rated contract. Due to these new features, even small cultivators hired a labour share of around 50 per cent. Second, migration: around 60 per cent of the households had witnessed labour migration.

These were mainly labouring households. Due to the high incidence of labour migration, the labour ratio in the village does not provide an accurate understanding of the rural socio-economic class. Moreover, it is difficult to get the number of work days migrant labourers work at the destination, as they engage in different places under different occupations under different contracts. It is an incredible task for the respondent in the village to give even a broad estimate. A possible method can be considering the entire duration, such as a person being out on work migration as a work day. Nevertheless, that also will not be free of question.

Considering these complexities, the thesis broadly applies land, labour and occupation criteria to classify households into four classes. A strict labour ratio criterion is not utilised for the differentiation of peasantry. Based on the occupation, it first separates non-farm households and makes them a single group. Then, it takes all households who have engaged in agriculture as cultivators or labourers as agricultural households and divides them into three groups. First, it takes households with only labour to survive in the village economy. Households that are landless and survive through manual labour are classified as LML households. Then, those households who owned land and put physical labour into cultivation. These households are named owner-cultivator households. One observes in the village that households operating land above 10 acres did not put physical labour into production. So, households that cultivate above 10 acres and have zero labour ratio are classified as surplus-appropriating households. The thesis uses operational holding size classes to analyse the differentiated nature of cultivator households.

1.5.2 Databases Used in the Study

The thesis has used various secondary databases to understand and explore changes in Bihar's economy, Bihar's agrarian economy and West Champaran district's basic demography and agrarian economy. Moreover, village survey data is utilised for the socio-economic class based analysis.

The thesis uses the Economic and Political Weekly Research Foundation (EPWRF) India Time Series database for information on Bihar's demography, changes in GSDP and its sectoral shares, cropping patterns, and yield. It uses various round reports and the database of the National Sample Survey Organisation (NSSO) Land and Livestock Survey (LLS) to explore changes in the

distribution of agricultural land holding, land operated and tenancy in rural Bihar. It uses the Commission for Agricultural Cost and Price (CACP) cost of cultivation of principal crops archives to explore changes in input use, machine use, Gross Value of Output (GVO), and crop income. The CACP archive has information only from 1996; the thesis also uses the Social Science Research Network (SSRN) report on Agricultural Development in Bihar for input and machine use patterns in 1981-82. Moreover, the thesis utilises various reports from the All India Debt and Investment Survey (AIDIS) of NSSO to understand changes in credit and debt conditions in Bihar. It uses the Employment and Unemployment Survey (EUS) and Labour Force Participation Survey (LFPS) of NSSO to understand changes in occupational structure in rural Bihar. The NSSO-Migration in India survey, 2007-08, is also utilised to understand the extent of migration from rural Bihar. Furthermore, the thesis utilises the Centre for Monitoring Indian Economy (CMIE) States of India database to explore changes in infrastructure conditions and crime in Bihar.

The thesis briefly traverses demography, occupational structure, and the specificity of the West Champaran districts' agrarian economy, which includes cropping patterns and irrigation. For the district's demography, it uses the CMIE States of India database. It uses the Census of India data for the district's occupational structure. It uses the Directorate of Economics and Statistics (DES), Government of Bihar report, to understand the district's cropping pattern. Furthermore, it uses the Ground Water Information Booklet of the Central Ground Water Board (CGWB), Government of India, to understand and assess irrigation conditions in the district.

The study primarily analyses a village named Katkuian. The FAS surveyed the village in 2012 as part of PARI. The survey reference year was July 2011 to June 2012. I was not part of the survey. However, I worked in PARI on the Bihar survey project in 2017-18. During that period, I visited Katkuian village twice. First, in December 2017, for some case studies. The second time was in June 2018, for a small resurvey. These visits have familiarized me with the village and its structure. However, the thesis and its analysis are entirely based on the 2012 survey data. All inferences are drawn for the reference year July 2011 to June 2012, based on 2012 survey data.

1.6 Organisation of Thesis

The thesis has eight chapters, including the current Introduction Chapter. Chapter Two analyses changes in the Bihar economy, particularly agrarian, over the last five decades. It explores changes in land ownership and operation structure, the extent of tenancy, the credit market condition, agricultural input use patterns, and yield and crop income trends. It also explores changes in occupational structure, employment conditions and trends in migration.

Chapter Three explores the agrarian history of the Champaran region (where the study village is located). The chapter traverses the region's history from over three centuries, from the pre-British period to the present. The chapter observes changes in land and rental arrangements, cropping patterns, and the functioning of labour, credit and output markets. It also explores the responses of people in different socio-political and economic conditions. Moreover, the role of people's responses in enacting a new socio-economic and political formation. Finally, it describes the current conditions of the West Champaran district, where the study village is located. Chapter Four presents the production conditions in the study village. It analyses the prevailing socio-economic conditions, how production is organised among different economic classes, and the functioning of primary markets: land, labour, and credit. It also explores if any socio-economic differences exist in accessing different markets.

Chapter Five analyses the livelihood strategies of LML households. It explores three related questions. What choices are available to LML households? Do different livelihood strategies result in varying levels of household economic well-being? If so, the third question is, what factors enable some households to choose better livelihood strategies while limiting others? Chapter Six analyses the production organisation of the cultivator households. It explores differences in land organisation, access to credit, input use patterns, investment behaviour, and returns from cultivation among different strata of cultivators. Chapter Seven explores methods of agrarian surplus-appropriation and accumulation strategies of the surplus-appropriating households. It analyses the specificity of the production organisation of the surplus-appropriating households through which they could make an agrarian surplus. It also explores avenues in which they invest

their surplus in the farm and non-sector sectors. Finally, Chapter Eight presents the thesis's conclusion.

Chapter 2

Changes in the Agrarian Economy of Bihar

2.0 Introduction

In the 1970s and 1980s, Bihar's agrarian economy was characterised as a 'low-cost, low-return economy' (Singh, 2014). The production organisation of a typical cultivator looks like this: a) production takes place on owned or shared tenancy, using family labour; b) cultivators use homegrown seeds and manure with minimal use of fertiliser; c) cultivation is primarily done through home-possessed bullock power; d) primary agrarian markets are under formation and often being interlocked (Prasad & Rodgers, 1983; Sahay, 1998; Chakravarty, 2001). One observes signs of change from the 1990s: improved use of modern/marketed inputs, tractorisation of the economy, attached labour relations started breaking, and land and labour markets became independent (Sharma, 2005; Sharma et al., 2012; Rodgers et al., 2013; Singh, 2014; Kumar & Bhagat, 2017; 2021; Sahay, 2020).

In this context, this chapter explores changes in the Bihar economy, particularly agrarian, over the last five decades (depending on data availability). It explores trends in land ownership and operation structure, the extent of tenancy, the credit market condition, agricultural input use patterns, and yield and crop income trends. It also explores changes in occupational structure, employment conditions and trends in migration. The chapter uses databases like EPWRF, CMIE, cost of cultivation-CACP, AIDIS-NSSO, and Migration Survey-NSSO. Each section and sub-section will discuss details of the database and statistics used in it.

The chapter has 10 sections, excluding the Introduction section. Section One discusses a brief historical overview of Bihar. It highlights major historical causes of current backwardness. Section Two discusses major public policies since independence and their impact on Bihar's economy. It also discusses major political regime shifts in the last seventy years. Section Three discusses Bihar's demographic features and changes in its demographic structure. Section Four presents the Bihar Economy and its sectoral performances by analysing GSDP trends, sectoral share and year-on-year growth rate. Section Five analyses changes in Bihar's rural/agrarian economy. It explores

changes in rural land distribution and tenancy, cropping patterns, and input use. It also presents a comparative analysis of trends in modern/marketed input use patterns between Bihar and Punjab (a state with the most successful experiment with the green revolution). Section Six presents changes in return from cultivation. It analyses trends of yield, GVO and crop income. It also includes a comparative analysis of Bihar and Punjab. Section Seven analyses trends in the extent and nature of rural credit. Section Eight presents changes in occupational structure and employment conditions in rural Bihar. Section Nine discusses labour migration from rural Bihar. Eventually, Section Ten is the conclusion.

2.1 Bihar: A Brief Historical Overview

After the Indus Valley cities, the Bihar region provides the first urban centres, the initial notion of a republic in the form of Vaishali and Licchvi, and empires in the form of Maurya and Guptas. It experienced the first phase of enlightenment through the philosophies and social interventions of Budha, Mahavira, Lokayata, and later sufi and bhakti poets. Throughout Indian history, it had strong economic foundations and rich social and cultural movements, which have immensely contributed towards the making of the glorious cultural and economic history of the Indian subcontinent (Das, 1992; Sharma et al., 2012; Rodgers et al., 2013). To emphasise the significance of the Bihar region in the ancient history of the Indian sub-continent, Thapar, 1966 cited in (Mukharji & Mukharji, 2012) states that the History of ancient India is the history of ancient Bihar.

Das, 1992 and Mukherji and Mukherji, 2012, explains Bihar's ancient prosperity primarily by its geographical conditions Bihar region falls in the Gangetic plains, which have ample water bodies, good weather conditions, and rainfall. The soil is considered one of India's best fertile lands. These factors played a crucial role in the evolution of many prosperous societies, cultures, and empires. Historically, these factors have also attracted people from other regions. All these are important aspects of why Bihar has the highest population density among major states of India, despite it being almost rural. (Das, 1992; Mukherji and Mukherji, 2012).

Bihar's plight comes from the rule of the British Empire. In the 18th century, the Bihar region was part of the Bengal Presidency. The East India Company (EIC) imposed the permanent settlement

land tenurial system in 1793. In popular parlance, it is known as the *Zamindaari* system. It created a highly exploitative hierarchy of intermediary rent seekers. It not only caused extreme suffering for the peasantry but also caused stagnation in the overall economy (Jannuzi, 1974; Mishra, 1878; Das, 1982; 1983; Mitra, 1985; De Haan, 2002; Sharma, 2005; Rodgers et al., 2013). Rental earnings became more lucrative, and this impacted productive investment and growth. Bihar had a flourishing cash crop agrarian economy and weaving and cloth manufacturing industry. In an estimate, in the early 19th century, a single district of Bihar, Saran, had around 60 thousand people engaged in the weaving industry (De Haan, 2002). The Zamindaari system and British Empire trade policies destroyed the cash crop economy and the cloth weaving industry. When zamindaari met the caste-ridden Bihar social structure, it had a multifacet impact on Bihar's socioeconomic politico and cultural life (Sengutpa, 1982).¹⁰

In 1912, Bihar separated from Bengal and became a new province, including current Odisha and Jharkhand. In this phase, an important political development in Bihar polity happened in the form of the emergence of the idea of 'social justice'. It originates from three independent sources. One, the dominant section of cultivating middle castes, primarily Yadav, Koeri and Kurmi, who managed to acquire occupancy status in some regions, challenged Brahmanic cultural hegemony; in popular parlance, it was called the *Janeu* movement. It took an organised form as *Triveni Sangh* (Das, 1982; 1983; Ankit, 2018). Second, the Congress Socialist Party, the socialist faction of the Congress Party, began campaigns against zamindaari repressions to improve its outreach among rural masses (Das, 1982; 1983; Ankit, 2018). Third, the radical revolt against the British planters and zamindaari, which was brewing for more than 50 years, took an organised form as Bihar Pradesh Kisan Sabha (BPKS), the first peasant mass organisation of the Indian sub-continent, with slogans of the abolishment of zamindaari, and implementation of land reform (Sengupta, 1982; Das, 1982; 1983; Ankit, 2018; Hauser, 2019). These movements played a crucial role in deepening the Independence movement and bringing up the question of the plight of tenant peasants and rural labourers in state politics, establishing the abolition of zamindaari as the political question of the rural masses (Jannuzi, 1974).

¹⁰ Impact of zamindaari system will be discussed in details in the chapter 3 with a specific focus on the Champaran region.

2.2 Bihar: Since the Independence of India

In 1947, India got national liberation. Afterwards, Bihar became the first state to pass legislation abolishing zamindaari, the Bihar Land Reform Act, 1950. Thereafter, many more legislation also came. However, in a lack of political will and mass-scale reform movements, remnants of zamindaari continued, popularly called semi-feudalism in academia (Prasad, 1979). It evolved as an interlocking of various economic relations like land, labour, credit and output, which created an exploitative structure based on usurious rent and debt, causing generational bondage labour. It created a structure in which rent continued to be more lucrative than investment and more output, which impedes agrarian transformation (Jannuzi, 1974, Prasad, 1979; 1987).

The Government of India implemented the Freight Equalisation Policy in 1952, meant to facilitate industrialisation in the country. However, it severely impacted the country's mineral-rich eastern states.¹¹ Bihar's industry sector was already in bad shape, and due to the freight equalisation policy, it lost its competitive advantage (Sharma, 2005; Firth & Liu, 2018; Datta, 2023). Bihar was reduced to a mere supplier of raw materials to Western and Southern Indian states. In the coming decades, this had a destructive impact on the size and shape of the industrial workforce and the urbanisation process (Sharma, 2005; Firth & Liu, 2018; Datta, 2023). Additionally, regular natural calamities, particularly floods, have constantly kept Bihar's economy and society unstable. Bihar is India's most flood-prone state, with 73.6 per cent of the state's geographical area being considered vulnerable to floods (Das et al., 2021). However, no state government has taken any substantial steps to find a long-term solution to it or even to form an efficient task force to deal with it or ensure proper rehabilitation. Because of this, the state's agrarian economy is always unstable.

¹¹ To attain a balanced industrial development, the Government of India implemented the Freight Equalisation Policy in 1952. It was in effect till 1993. According to this policy, the Government of India fixed uniform prices for the transportation of iron and steel. The Govt of India provided subsidies to long-distance shipping. This means a user can access iron and steel at the same price anywhere in the country. The principle behind the policy was that industries should not be concentrated in any particular region. The industrialists should set up their production units across the country without worrying about the costs of core minerals, which will promote regional balance in industrial development. Political commentators and leaders from the mineral-rich eastern Indian states like Bihar (including Jharkhand) and West Bengal claim that it has severely affected their industries and industrialisation prospects as they have lost their competitive advantage. This can be understood from the fact that in 1950, West Bengal and Bihar accounted for 92 per cent of all iron and steel production in India and 48 per cent of all manufacturing output in engineering-related industries (Firth & Liu, 2018). In the subsequent phase, industrial units shifted from the eastern Indian states to the western and southern Indian states. Currently, Eastern Indian states are the least industrialised region of India, except for the hilly states.

Some regions of the state are so severely affected by floods that households in the *Diara*¹² regions are always forced to keep to alternative habitat arrangements.

This historical evolution of the current Bihar, A. N. Das defined it as:

Bihar represents the extreme case of what has happened to a region subjected to societal stagnation, economic exploitation, and cultural degeneration under long conditions of stifling feudalism, external and internal colonialism and most brutalising experiences of late capitalism, which has acquired bathos of senility without ever having witnessed the optimism of its youth. (Das, 1992, p 8).

In 1991, the Indian state liberalised its economy. Like the rest of the country, Bihar's economy has also witnessed significant changes. In this phase, the growth rate in GSDP showed signs of improvement. However, these changes have been unstable. In a rural/agrarian economy, one can witness a decline in public investment in agriculture and commercialisation of agricultural input use, particularly fertiliser and seeds (Ramachandran and Rawal, 2009; Singh, 2014). In this phase, one also observes improvement in machinery use, particularly tractors (CACP). In production relations, one sees the loosening of old bonded labour relations (Sharma, 2005; Sharma et al., 2012; Rodgers et al., 2013; Kumar & Bhagat, 2017; 2021; Sahay, 2020). However, after two decades of decline, tenancy shown a sign of revival from the 2002-03 round of NSSO-LLS survey (Bansal et al., 2018). From early 2000 one also witness a constant increase in rural indebtedness, which is primarily non-institutional (NSSO, 1998; 2005; NSSO, 2021b).

2.2.1 Political Changes in Bihar since independence

After independence, the Congress emerged as the dominant political force in Bihar polity with a minuscule presence of the Communist Party of India (CPI) as opposition. The Bihar government brought several land reform acts and measures but failed to alter the production conditions radically. However, it gave rise to several political formations. Landlords responded to land reform acts by forming their own political party, the Janata Party, which served the interests of upper

¹² Regions form through regular deposition of river sand or due to a river's direction change. These areas are very fertile. However, these are the most flood-prone and flood-affected.

castes and landlords.¹³ The middle castes and peasantry were also getting disillusioned with the Congress, and they consolidated behind various socialist parties, initially with the Praja Socialist Party and later with the Samyukta Socialist Party (Jannuzi, 1974; Kumar et al., 2008).

Whatever minimal effects the land reform policies had, upper Other Backward Class (OBC) got it, namely, Yadav, Koeiri and Kurmi. It had an impact on their subsequent improvement of economic and political conditions, too (Kumar et al., 2008). The improvement in economic conditions had also given rise to political aspiration, which almost all political forces had to acknowledge. This is reflected in the rise in the share of upper OBC Members of the Legislative Assembly (MLAs). In the 1950s, Bihar assembly members on general seats were dominated by the upper caste, and by 1977, almost 35 per cent of MLAs were from upper OBCs (Kumar et al., 2008).

In the 1970s in Bihar, political space sees the revival of all three social justice streams. In the leadership of Karpoori Thakur and Ram Sundar Das, the lower OBCs had mobilised for their adequate representation and self-respect. They rallied under the banner of different political parties and alliances (Das, 1982; 1983). When they formed government, they brought several policy changes central to rural discourse. Within a year, more than 10 land reform-related acts came (Jannuzi, 1974). They are credited with introducing electricity for agriculture in Bihar in the early 1970s.¹⁴ They also brought reservations for the lower-OBC castes in Bihar's state government jobs and higher educational institutions. In this phase, rural Bihar also sees a new upsurge of the communist movement. Agricultural labourers and sharecroppers primarily rallied behind them on the questions of land reform, wage hikes and against labour bondage and caste abuse. The movement had taken different directions and methods. However, the rallying point remained the same (Jannuzi, 1974; Sengupta, 1982). In this phase, on the slogan of Indira Gandhi, of Garibi Hatao, Bihar Congress had started reaching out to rural masses with Indira's 20-point agenda. However, later, congress moved back to support and safeguard the interests of upper castes and landed classes (Kumar et. al., 2008; Ankit, 2018). These political developments significantly

¹³ This party was formed in 1950. Its full name was Chota Nagpur Santhal Parganas Janata Party. However, in popular parlance, it is known as Janata Party. In the 1957 Bihar assembly election, it managed to win 23 seats (including by-elections). However, in subsequent periods, it lost its popularity and base. Later, it disappeared. This party is nowhere linked to the national formation of the Janata Party post-1975 emergency.

¹⁴ It stalled within few years. Even now, Bihar does not have electricity for agriculture.

shaped Bihar's political economy in the next few decades (Kumar et. al., 2008; Ankit, 2018). These forces dominated Bihar's politics for the next three decades. In the 1990 state assembly election, Lalu Yadav emerged as Chief Minister; his party ruled Bihar uninterrupted for 15 years. This phase of Bihar is also considered the helm of the social justice phase of Bihar's politics. Some called it '*jangalraaj*' of Bihar as well (Kumar et al., 2008; Mathew & Moore, 2011; Kumar, 2017).

In the 2005 assembly election, the alliance of Janta Dal (United) and Bhartiya Janta Party (BJP) defeated Rashtriya Janta Dal (RJD). It marked a significant shift in the political history of Bihar, as the regime of 'social justice', which was the most dominating aspect of the Bihar polity for around four decades, had been replaced by the idea of 'good governance'. Under the leadership of Chief Minister Nitish Kumar, Bihar achieved a consistent double-digit growth figure. This phase is called Bihar's 'growth miracle' in popular parlance. Between the 2006-07 and 2012-13 phases, the Compounded Annual Growth Rate (CAGR) of the GSDP was around 12 per cent. Scholars like Amartya Sen, Nicholas Stern and N K Singh have characterised it as the 'New Bihar'. Das Gupta, 2010 points out that the 'growth miracle' was caused only by the contribution of three sectors: construction, communication and trade/hotel/restaurant. The growth rate of construction was 26.5 per cent, communication 23 per cent and trade/hotel/restaurant 13.7 per cent. Other sectors of the economy continued to remain stagnant. Agriculture, which hosts the largest share of the workforce, continued to grow at only around 3.5 per cent. Moreover, the share of agriculture in the GSDP has consistently declined. In 1980-81, it was 58 per cent, which reduced to just 20 per cent by 2022-23.

The 'Good Governance' model of Nitish Kumar broadly emphasised three aspects of governance: identifying the most disadvantageous section and making targeted policies, infrastructural development, and controlling crime. In the first, the Nitish government sub-categorized the Scheduled Castes (SC) population into Dalit and Mahadalit. In 2007, the state government formed the State Mahadalit Commission. Later, the Bihar government implemented several government schemes targeted specifically at mahadalits (Imam, 2024). The government also launched targeted populist policies for women. The free bicycle scheme for female students became the most popular scheme. It also increased women's reservations in local bodies (Kumar, 2013).

In infrastructure development, main emphasis was on roads and electricity. In crime, the emphasis was to delink crime and politics nexus.

Did roads and electricity improve in this era, and did crime decline? One takes the CMIE States of India database and compares road density, electricity generation, per capita consumption and power deficit. Finally, how crime rates and conviction rates changed in this period. One compares the situation in the last phase of the RJD government and the first decade of Nitish Kumar's NDA government on these variables (Table 2.1).

Between 2001-02 to 2016-17, the road density has improved around threefold in Bihar. When one looks into electricity, it gives an interesting trend. Between 2001-02 and 2011-12, the electricity production in the state improved three times. However, in this phase, the power deficit has risen from -4 per cent to -21.9 per cent. Notably, the per capita energy consumption shows an increase of only around 35 per cent. So, where was this additional generated electricity consumed? To understand that, one looks into a number of operational factories. In this phase, the operational factories doubled in the state. It means that between 2001-02 and 2011-12, the rise in electricity consumption might have primarily come from industrial electricity demand. When one looks into the subsequent phase, 2011-12 to 2016-17, the electricity generation has doubled. Notably, the power deficit has declined from -21.9 per cent to -2.3 per cent. Interestingly, in this phase, the per capita electricity consumption has improved three times. Furthermore, one sees stagnation in the operational factories over the five years. This means that in this phase, the demand for industrial electricity may have stagnated. The additional electricity produced would be utilised for household electricity consumption (Table 2.1).

Moving from infrastructure to crime, between 2001-02 to 2016-17, the state's crime rate has actually risen. The increase was around 40 per cent. Here, one could not explore whether the rise in crime rate was due to more reporting or due to an actual increase in crime in the state. Moreover, in this phase, the conviction rate in the state has shown a secular decline. In 2001-02, it was 23.1 per cent. By 2016-17, it declined to 13.9 per cent. Almost a fall of around 10 per cent (Table 2.1).

Table 2.1 Changes in the condition of infrastructure and crime in Bihar

Year	Road density	Electricity generation	Power deficit	Per capita energy consumption	Factories in operation	Crime rate	Conviction rate (IPC)
	Kms/100 Sq. Km	Million kWh	Per cent	Kwh/'000 person	Numbers	Numbers /million	Per cent
2001-02	80.8	5248	-4	41464.6*	1319	1164.5	23.1
2006-07	130.4	6683.9	-8.1	41108.3	1410	1202.5	16
2011-12	147.1	13812.3	-21.9	66516.9*	2870	1422.2	15.5
2016-17	222.5	24514.9	-2.3	163136.3	2908	1894.6*	13.9

Source: States of India, CMIE. *Due to the unavailability of data points, the number is taken from the previous year.

One observes that in the first decade of Nitish kumar rule in Bihar, roads and electricity did improve. However, it is also the phase in which roads and electricity see a considerable improvement across India. Between 2001-02 to 2016-17, per capita domestic electricity consumption has improved 2.5 times in India (EPWRF). Moreover, in this phase, the total length of state and national highways in Bihar remained constant as a proportion of India; it just improved from 2.4 per cent to 2.78 per cent (EPWRF). It shows that the story of infrastructural improvement was not a standalone story of Bihar but of the whole of India. However, what the Nitish kumar government achieved was keeping Bihar integrated with India's infrastructural development trajectory, which Bihar had previously lacked.

When one follows shifts in political regimes post-independence, one observes from 1980, the agrarian economy: questions of technological enhancement, bringing institutional changes, and improving the public institutions to strengthen production organisation progressively, has found itself out of the political priorities. One cites a few examples. The first is electricity for agriculture; the project began in the early 1970s and was one of the first to introduce electricity for agriculture; however, it stopped by the end of the 1970s. Rural Bihar, even now, does not have electricity for agriculture. Second, the sidelining of land reform is a central political question for Bihar's agrarian society. Third, the Agricultural Product Marketing Committee Act was abolished in 2006 without much uproar.

2.3 Bihar's Current Demography

This section presents Bihar's basic demography in comparison with India. It also discusses changes in rural population share in Bihar and India. It uses the EPWRF India Time Series database.

Bihar, which is around 3 per cent of the geographical area of India, has around 8.5 per cent of the population share. It is the third most populous Indian state. Despite its almost 89 per cent rural population, it has the highest population density among major states of India, except the fully urbanised states like Delhi and Goa. In 2011, the population density was 1,102 persons per square km, almost three times India's national average. Bihar's literacy rate was just 63.82 per cent, which is the lowest in India. The female workforce participation was remarkably low (Table 2.2).

Table 2.2 Bihar and India demographic features, 2011

Demographic features	Bihar	India
Population (in crores)	10.3	121.01
Population Density (person per sq km)	1,102	382
Decadal growth rate of population (%)	25.10	17.60
Urban Population Share (%)	11.29	31.14
Sex Ratio (female per 1000 male)	916	940
Literacy rate (%)	63.82	74.04
Workforce (Male) (%)	46.47	53.26
Workforce (Female) (%)	19.07	25.52

Source: EPWRF

With economic expansion, one expects an economy to urbanise. However, Bihar presents a peculiar case. In 1951, India's rural population share was 82.71 per cent. By 2011, it was reduced to 68.85 per cent. However, when one sees Bihar, it shows a peculiar feature. Its rural population share has been almost constant since independence. In 1951, Bihar's rural population share was 93.58 per cent. In the next 60 years, it reduced by not even five per cent. In 2011, it was 88.7 per cent (Table 2.3).

Table 2.3 Changes in rural population share in India and Bihar

Year	Bihar (%)	India (%)
1951	93.58	82.71
1961	92.59	82.03
1971	92.03	80.09
1981	90.16	76.66
1991	89.6	74.3
2001	89.54	72.19
2011	88.7	68.85

Source: EPWRF

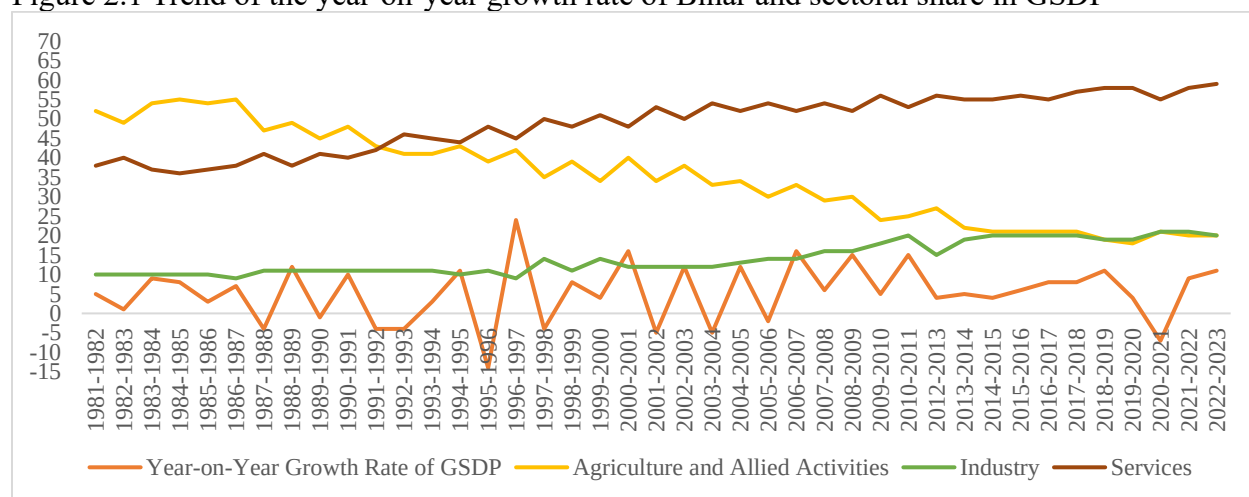
From the demography of Bihar, let us move Bihar's Economy.

2.4 Bihar Economy: Sectoral Performance

This section explores changes in Bihar's GSDP year-on-year growth rate and different economic sectors. It also assesses changes in the share of different economic sectors in the GSDP. This section also uses the EPWRF India Time Series database.

The Bihar economy is characterised as unstable due to regular floods and other natural calamities. Its GSDP growth rate reflects this. A negative rate of growth of GSDP preceded by a double-digit growth rate is a common occurrence. Here, one presents the year-on-year growth rate of Bihar's GSDP and the sectoral share of agriculture and allied activities, industry, and services. It shows that the Bihar economy observes a high level of instability with a regular experience of a negative growth rate. In the economy's sectoral composition, agriculture shows a secular decline, and the services sector shows a secular increase. Moreover, the share of industries remained constant (Figure 2.1).

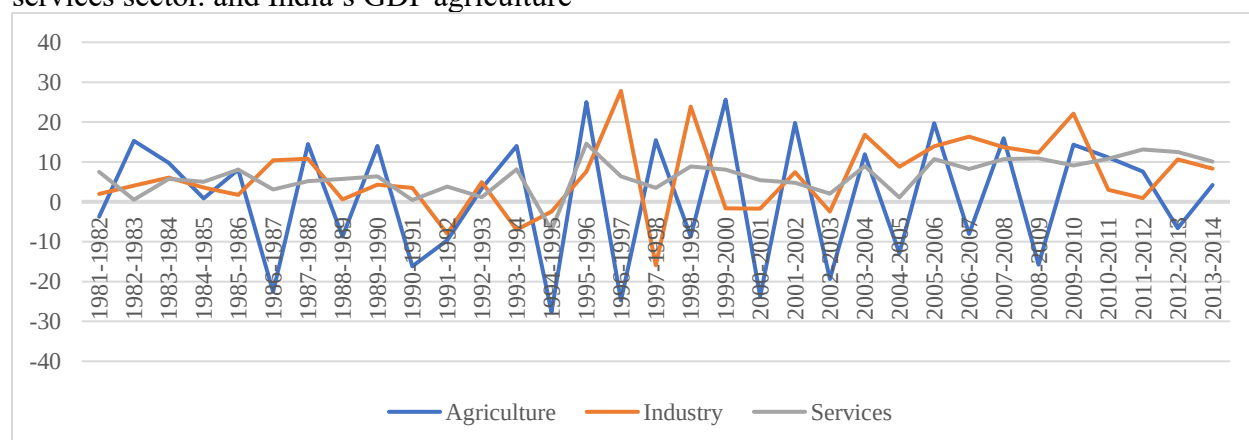
Figure 2.1 Trend of the year-on-year growth rate of Bihar and sectoral share in GSDP



Source: EPWRF

To understand the sources of Bihar's unstable growth rate in GSDP, one checks the year-on-year growth rate of three economic sectors: agriculture and allied activities, industries and services. It shows that the agriculture sector witnessed shocking instability. It faces an even rate of growth in the range of around 50 between two years. The industry sector also fluctuated but hardly went negative, and changes were much lower than in agriculture. The service sector remained stable and showed a secular growing trend. This means the agriculture sector was the one that caused high instability in Bihar's year-on-year growth rate of GSDP (Figure 2.1 and Figure 2.2).

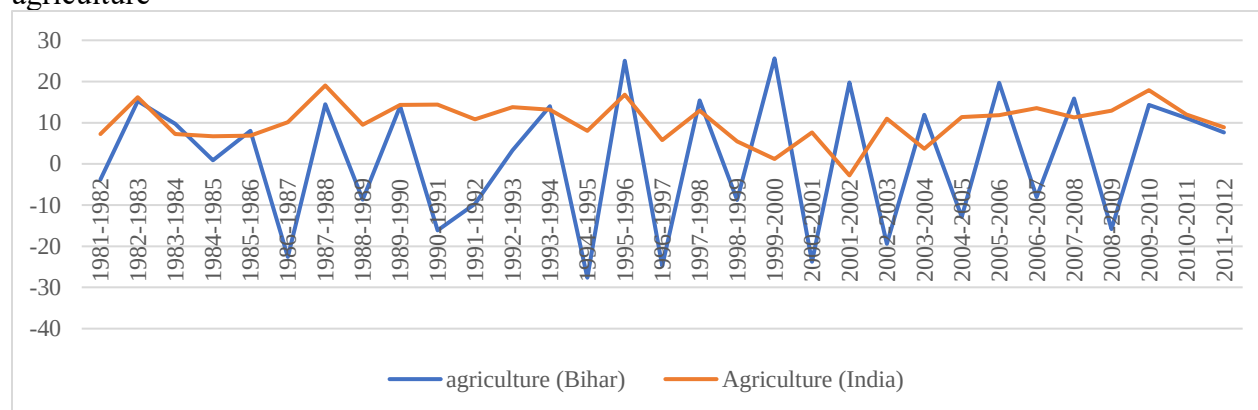
Figure 2.2: Trend of the year-on-year growth rate of Bihar's GSDP agriculture, industry and services sector. and India's GDP agriculture



Source: EPWRF

Was the nature of agriculture unstable, a Bihar-specific feature, or is it unstable nationally? One checks the year-on-year growth rate of India's Gross Domestic Product (GDP) agriculture to assess it. Furthermore, one compares the year-on-year growth rate of Bihar's GSDP agriculture with India's GDP agriculture. It shows that the year-on-year growth rate of India's GDP agriculture remained much more stable than Bihar's GSDP agriculture. Though it did have fluctuations, however, it never touched a negative growth rate (Figure 2.3).

Figure 2.3: Trends of the year-on-year growth rate of Bihar's GSDP agriculture and India's GDP agriculture



Source: EPWRF

In the sectoral growth trend, Bihar's agriculture is highly unstable. Furthermore, it looks much more unstable compared to India's GDP agriculture year-on-year growth rate. This means such a high level of instability in agriculture is a Bihar's specific feature. To understand the peculiarity of Bihar's agrarian economy, In the next two sections, one explores different aspects of Bihar's rural/agrarian economy, land distribution and land relations, cropping pattern, input use pattern, and return from agriculture.

2.5 Changes in Agrarian Production Organisation

This section analyses changes in Bihar's agrarian production organisation. It begins with analysing the change in the structure of rural Bihar. For that, it uses reports of various rounds of the AIDIS of NSSO. Then, it moves on to analyse changes in the pattern of distribution of operation holding, ownership holding and extent of the tenancy. For that, it utilises various reports of various rounds of the Landholding and Livestock Survey (LLS) of NSSO. Thereafter, it assesses the cropping

patterns in Bihar, and for that, it uses the EPWRF India Time Series database. Finally, it analyses changes in input use patterns. For that, it uses various year reports of the CACP.

To understand the change in the structure of rural Bihar, one separates households into two groups: cultivator and non-cultivator households. The study uses the NSSO definition of cultivator households, which states that a household that cultivates a land parcel of 0.002 hectares or more is considered a cultivator household. The occupational structure of the rural economy of Bihar and India followed a similar trend in the last 30 years. The share of cultivator households in the total rural households shows a secular decline, and the share of non-cultivator households a secular increase. The share of cultivator households in Bihar in 1991 was 69.75 per cent. By 2019, it had declined to 48 per cent (Table 2.4). It shows that though Bihar's rural population share remained stagnant, the share of cultivating households had significantly declined (Table 2.3 and Table 2.4).

Table 2.4 Occupational Structure of the Economy

Year	Bihar		India	
	Cultivator	Non cultivator	Cultivator	Non cultivator
1991	69.75	30.25	66.1	33.1
2002	60.5	39.5	59.7	40.3
2019	48	52	43	57

Source: NSSO AIDIS survey various reports.

From here, one moves to analyse changes in the production organisation. First, let us look at the changes in rural land distribution.

2.5.1 Changes in rural Land distribution

The land is the essential agricultural input and the source of wealth and power in the rural economy (Ramachandran et al., 2010; Ramachandran, 2011). Here, one begins the exploration of changes in production organisation in agriculture by understanding the changes in the distribution of operational holding, ownership holding, and the extent of tenancy in rural Bihar. The sub-section utilises data from the various rounds of the LLS of NSSO. The first LLS survey was conducted in 1955. From 1971-72 onwards, LLS conducted regularly as a decennial survey. The last LLS survey

was conducted in 2018-19. Hence, this section presents the trends from 1971-72 to 2018-19. It also presents a comparative picture of changes in rural land distribution between Bihar and India.

2.5.1.1 Trends in the distribution of operational holding

The nature of cultivation, whether it is market-oriented or subsistence-based, depends on the scale of cultivation, cropping intensity and cropping pattern (Patnaik, 1987). To understand the scale of cultivation, one looks into the distribution of operational holdings among different operational holding size classes and the trends of its change over the period.

The trend of distribution of operational holding shows that in 1971-72, around 59 per cent of the cultivator households were marginal (0 to 1 ha), and 23.4 per cent of cultivators were small (1 to 2 ha). The share of medium (4 to 10 ha) and large (10 ha and above) cultivators was 5 per cent. By 2018-19, the share of marginal cultivators increased to 88 per cent. The share of medium and large cultivators was just 0.3 per cent. The All-India figures also show a similar trend with a lower magnitude (Table 2.5).

When one sees the trend of distribution of operational areas, it shows that, in 1971-72, marginal cultivators operated 18.1 per cent of operational holding. Small cultivators operated 26.2 per cent of the operational holdings. Medium and large cultivators combined operated around 27 per cent of the operational holding. By 2018-19, the area cultivated by marginal cultivators increased to 60.16 per cent of the total operational holding. The share of small cultivators remained almost the same. However, the combined share of medium and large cultivators was reduced to around 3 per cent. When one looks at the All-India level, even in 2018-19, the medium and large cultivators remained significant. In 2018-19, the combined share of land operated by marginal and small cultivators at the All-India level was 57 per cent. The combined share of operational holdings operated by medium and large cultivators was around 22 per cent (Table 2.5).

Table 2.5 Changes in the distribution of operation holdings in Bihar and all-India

Distribution of Operation holding ((Proportion of household), 1971-2018							
State	Year	Marginal	Small	Semi-Medium	Medium	Large	Total
Bihar	1971-72	58.9	23.4	12.9	4.5	0.5	100
	1991-92	76.8	13.7	6.9	2.5	0.2	100
	2012-13	86.49	9.82	2.99	0.68	0.02	100
	2018-19	88	9.2	2.5	0.2	0.1	100
All India	1971-72	45.8	22.4	17.7	11.1	3.1	100
	1991-92	62.8	17.8	12	6.1	1.3	100
	2012-13	73.17	15.3	8.1	3.04	0.37	100
	2018-19	73.2	16.1	7.8	2.6	.3	100
Distribution of Operation holding (Proportion of Area owned), 1971-2018							
State	Year	Marginal	Small	Semi-Medium	Medium	Large	Total
Bihar	1971-72	18.1	26.2	28.9	21	5.7	100
	1991-92	29	25.1	23.7	18.2	3.9	100
	2012-13	50.51	25.11	15.38	8.35	0.65	100
	2018-19	60.16	23.59	12	1.6	2.65	100
All India	1971-72	9.2	14.8	22.5	30.5	23	100
	1991-92	15.6	18.7	24.1	26.4	15.2	100
	2012-13	27.71	23.44	23.5	19.33	6.02	100
	2018-19	32.4	24.45	21.7	16.23	5.22	100

Source: Various NSSO reports.

The distribution of operational holdings in Bihar, in terms of share of cultivators and distribution of area, shows that Bihar's cultivation has become invariably a marginal and small cultivator economy. It poses intriguing questions: Is Bihar a marginal and small cultivator economy due to its inherent land holding distribution or due to prevailing farm organisation institutions? In the upcoming two sub-sections, one will try to understand this question by exploring the trends of agricultural land ownership holding distribution and trends of tenancy in rural Bihar.

2.5.1.2 Agricultural Land Ownership Distribution

The stark land inequality and large-scale landlessness have been the most discussed aspects of Bihar's agrarian structure, even in the recent literature (Sahay, 1998; 2020; Chakravorty, 2001; Sharma et al., 2012; Rodgers et al., 2013; Dhar et al., 2022). Post-liberalisation, rural Bihar witnessed a considerable rise in the share of landless rural households. In 1992-93, the share of landless households was 28.3 per cent, which increased to 50.9 per cent by 2018-19 (NSSO, 2006; 2021a).

When one looks into landowning households, one observes that the marginal landowners' share in total landowner households has constantly increased in the last 50 years. In 1971-72, it was 71.71 per cent; by 2018-19, it increased to 95 per cent. In 1971-72, medium and large landowners had a combined share of around 4 per cent; by 2018-19, it reduced to almost zero. In 2018-19, the combined share of marginal and small landowners was 98.8 per cent. The all-India figures also show a similar trend with a lower magnitude. The share of the marginal and small landowners in 1971-72, at the all-India level, was around 78 per cent, which increased to 93 per cent by 2018-19 (Table 2.6).

When one sees the total area owned by the different land size classes, it also shows a similar trend. The total area owned by the marginal landowner in 1971-72 was just 18.2 per cent, which increased to 62.7 per cent by 2018-19. The share of land owned by the medium and large landowners combined was around 30 per cent, which was reduced to 5 per cent by 2018-19. In 2018-19, the marginal and small landowners owned 84 per cent of the land (Table 2.6).

Table 2.6 Changes in the distribution of land ownership (among landowning households)

Distribution of Land ownership (Proportion of household), 1971-2018-19							
State	Year	Marginal	Small	Semi-Medium	Medium	Large	Total
Bihar	1971-72	71.71	15.11	9.15	3.66	0.37	100
	1991-92	80.56	11.1	6	2.14	0.2	100
	2012-13	94	4.1	1.6	0.3	0.01	100
	2018-19	95	3.8	1.1	0	0	100
All India	1971-72	62.62	15.49	11.94	7.83	2.12	100
	1991-92	71.88	13.42	9.28	4.54	0.88	100
	2012-13	81.56	10.7	5.4	2.09	0.26	100
	2018-19	83.4	10.1	4.8	1.5	0.1	100
Distribution of Land ownership (Proportion of Area owned), 1971-2018-19							
State	Year	Marginal	Small	Semi-Medium	Medium	Large	Total
Bihar	1971-72	18.2	23.43	28.07	23.63	6.67	100
	1991-92	28.58	23.84	24.45	18.68	4.4	100
	2012-13	55.06	21.28	15.24	7.92	0.48	100
	2018-19	62.7	21.3	11.4	1.8	2.9	100
All India	1971-72	9.76	14.68	21.92	30.73	22.91	100
	1991-92	16.93	18.59	24.58	26.07	13.83	100
	2012-13	29.75	23.54	22.07	18.83	5.81	100
	2018-19	34.5	24.9	22	14.7	3.9	100

Source: Various NSSO reports

2.5.1.3 Social group and land distribution

In rural Bihar, land distribution is highly associated with caste (Sahay, 1998; 2020; Chakravorty, 2001; Rodgers et al., 2013; Kumar & Pandey, 2021; Kumar, 2022). When one presents the caste group and land size classes for the latest survey of the NSSO survey (2018-19), it shows that almost 70 per cent of the households from the SC and Scheduled Tribes (ST) communities were landless. Among SC and ST households, most of those who owned land had marginal land holdings. Among the caste group, Other, only around 28 per cent of households were landless. Furthermore, a sizeable portion of households had semi-medium and medium land holdings (Table 2.7).

Table 2.7 Land ownership and social group, rural Bihar in 2018-19

Social Group/Land ownership size class	Landless	Marginal	Small	Semi-Medium	Medium	Lage	Total	Share in total estimated households
ST	70.66	16.86	4.38	6.81	1.29	0	100	2.18
SC	69.04	26.93	2.88	1.04	0.11	0	100	26.99
OBC	46.59	37.12	9.91	5.14	1.2	0.03	100	58.28
Others	28.24	38.18	14.47	13.2	5.42	0.49	100	12.54
Total	50.88	34.06	8.47	5.08	1.44	0.08	100	100

Source: Authors' calculation from NSSO 2018-19

2.5.1.4 Agricultural Land Tenancy

Historically, Bihar had a high level of landowner and operator separation due to the Zamindari land tenurial arrangement. During the colonial period, Tenancy was the primary means of farm organisation (Mishra, 1978; Sengupta, 1982; Mitra, 1985). It created a vicious structure of surplus extraction from the actual cultivators through usurious rent exaction. Apart from this, the zamindars and their rent collectors, known as '*Amlas*', extracted agricultural surplus in various other forms, such as *abwabs*, and created a blatantly exploitative *begaar* system. Legal provisions notwithstanding, the zamindar had the first claim on the tenants' labour, which was exacted ruthlessly (Mishra, 1978; Hauser, 2019).

Post-independence, various policies were made to regulate tenancy in Bihar. To ensure redistributing ceiling surplus land and ensuring tenant cultivators' rights. In the subsequent period, the tenancy officially started falling. However, it continued to function informally (Pradhan, 1979; 1987; Pradhan & Rodgers, 1983; Varma & Sharma, 1984).

The extent of tenancy can be measured through four indicators: leased-in area to total operated area, share of tenant households to total cultivator households, leased-out area to total land holding, and share of leasing-out households to total land-owning households. The information on land leased out is generally underreported in secondary data sources (Rawal, 2008; Bhattacharya, 2019). Due to that, one presents two indicators: leased in to total operated area and share of tenant households to total cultivating households.

In 1971-72, almost 40 per cent of cultivators in Bihar were tenants, and 14.5 per cent of the total operational holdings were under tenancy. By 1991-92, the share of tenant households reduced to 5.6 per cent. Moreover, the area under tenancy had reduced to 3.9 per cent. However, since the 2002-03 round, the tenancy in Bihar has shown a secular increasing trend. In 2002-03, 12.7 per cent of cultivators were tenants, and 8.9 per cent of total operational holding was tenant holding. By the 2018-19 round, the share of tenants in the total cultivator increased to 28.2 per cent, and 20 per cent of the total operational holding was under tenant holding (Table 2.8). When one looks at the composition of tenants, in 2018-19, 95.4 per cent of tenants were landless or marginal landholders (NSSO, 2021a).

Table 2.8 Changes in the extent of tenancy in Bihar and India

Year	Bihar		India	
	Tenants/cultivator	Leased in/Operational	Tenants/cultivator	Leased in/Operational
1971-72	39.78	14.5	25.7	10.6
1991-92	5.6	3.9	11	8.3
2002-03	12.7	8.9	9.9	6.5
2012-13	21.6	18.2	13.7	10.2
2018-19	28.2	25	17.8	13

Source: NSSO reports and Sarvekshana

After discussing the changes in land operation, land holding and tenancy, one gets a broad picture of changes in land organisation for cultivation in rural Bihar that it has emerged to a marginal and small cultivators economy with tenancy as an important role in land organisation. From here, one moves to analyse changes in other aspects of production: cropping patterns and input use patterns.

2.5.2 Cropping Pattern

Bihar has four agro-climatic zones. It has three soil types: Gangetic alluvial, terai and piedmont swamp soil. It encourages a great level of crop diversity. Bihar has a diverse cropping pattern. However, cereals are the major crop. It covers around 70 per cent of the GCA. The major cereals grown are paddy, wheat and maize. Along with it, cultivators also grow jowar, bajra, and ragi. Here, one briefly presents changes in Bihar's cropping pattern based on the EPWRF India Time Series database.

In the 1950s, pulses covered around 25 per cent of the GCA. In the subsequent period, the share of pulses in GCA constantly declined. By 2021, it reduced to just around 6 per cent. Currently, the main pulses cultivated are gram and tur. Cultivators also grow chickling vetch, moth, beans, urad, moong, and kulthi. Oilseeds cover a small portion of GCA. In 2021, mustard/rapeseed covers more than 70 per cent of the GCA under oilseeds. Apart from mustard/rapeseed, other edible oil seeds cultivated are ground nuts, sesamum, sunflower, safflower, and soybean. The main non-edible oil seeds are linseed, cottonseed and castor seeds. Jute is a major fibre crop in Bihar. Jute used to cover a sizable extent of GCA. Now, its production has considerably reduced. Other fibre crops grown are cotton, mesta, and sunn hemp. Among species, the main crops are chilli, turmeric, coriander, cumin, ginger, and garlic. Major cash crops are tea and sugarcane. Nevertheless, abundant water bodies enriched Bihar's cropping pattern with crops like makhana and lotus seeds.

The alluvial land and abundant water throughout the year from rivers, ponds, rainfall, and groundwater make Bihar ideal for horticulture cropping. In 2021, horticulture crops cover around 15 per cent of Bihar GCA. Mango, litchi, banana, and citrus are the main fruits that are grown. Apart from that, cultivators also grow countless other fruits and vegetables.

In Bihar's cropping pattern cereals cover almost 70 per cent of the GCA, and wheat and paddy cover around 60 per cent. However, in the rest, the GCA witnessed tremendous crop diversification. One should explore whether cultivators in Bihar utilise the natural conditions and try to grow a major chunk of household food consumption needs. Or, in the lack of established marketing networks, are they diversifying to the maximum possible to mitigate marketing risks? However, these questions are beyond the scope of the current study.

From cropping patterns, let us move to the input use pattern. Every crop has its own specific input use pattern. As discussed earlier, Bihar has immense crop diversification. Analysing the input use pattern of all crops will be a tremendous task. Hence, one looks for the principal crop. Paddy covers more than 40 per cent of the GCA of Bihar; it is also the region's staple food. Considering it, one considers paddy as the principal crop (Salam et. all, 2013). The next subsection analyses the changes in paddy's input use pattern.

2.5.3 Trend of Input Use

This sub-section explores how, over time, the input use pattern in paddy cultivation has changed in Bihar's agriculture. It uses the CACP data on input use. The data is taken from the CACP archive. It is available only from 1996-97 onwards. However, Singh, 2014, provides the input use pattern of paddy in Bihar for 1981-82. So, the next subsections analyse changes in input use from 1981-82 to 2021-22.

Till the 1980s, Bihar's agriculture was a subsistence-based economy with minimal use of purchased inputs. The production of the majority of the peasantry was organised primarily using homegrown seeds, manure, owned bullocks and family labour (Singh, 2014). The 'green revolution' of the 1970s had a negligible impact on Bihar's agriculture. However, post-1990s, one sees a change in input use patterns. Here, one presents the trend of use of major agricultural inputs: seeds, fertiliser, manure, human labour, animal labour, and machine labour from 1981-82 to 2021-22.

In 1981-82, the average seed use in paddy cultivation was 48.8 kg per ha; by 1996-97, it increased to 63.13 kg per ha. In the subsequent period, the seed use shows a secular declining trend. In 2021-22, it reached 37.21 kg per ha (Table 2.9). Here, one explanation for the declining seed use is an increasing trend in the seed replacement rate¹⁵. In 2001, the seed replacement rate of paddy in Bihar was 8 per cent. by 2011-12, it increased to 38 per cent (Singh, 2014).

In this period, the use of fertiliser, which is a marketed or purchased input, has increased phenomenally. The fertiliser use in 1981-82 was 5.5 kg per ha. By 2021-22, it increased to 121.70 kg per ha. Manure use has considerably declined in this phase. In 1981-82, manure use was 4.3 qt per ha. By 2021-22, it declined to 1.71 qt per ha. Here, one needs to note that manures are usually homegrown input. A similar pattern is observed over animal labour use and hired machine labour use. The animal labour use in 1981-82 was 227 pair hrs per ha, which declined to almost zero in 2021-22. Meanwhile, the hired machine labour cost was Rs 3 per ha in 1981-82. Which

¹⁵ The seed replacement rate is defined as the ratio of the total purchased seed to the total seed used.

phenomenally increased to Rs 5,495 per ha in 2021-22.¹⁶ Nevertheless, human labour use remained invariably constant (Table 2.9).

Input	1981-82	1996-97	2003-04	2012-13	2021-22
seed (kg)	48.8	63.13	61.68	47.47	37.21
Fertiliser (kg)	5.5	72.37	75.68	97.36	121.70
manure (in qt)	4.3	5.81	0.56	0.09	1.71
human labour (in hrs)	778	885.08	840.23	807.96	560.44
Animal labour (pair hrs)	227	107.23	55.82	28.21	0
Hired machine (Rs)	3	235.1	673.75	2441.96	5494.6

Source: CACP, 1981-82 numbers are taken from Singh, 2014, page 13.

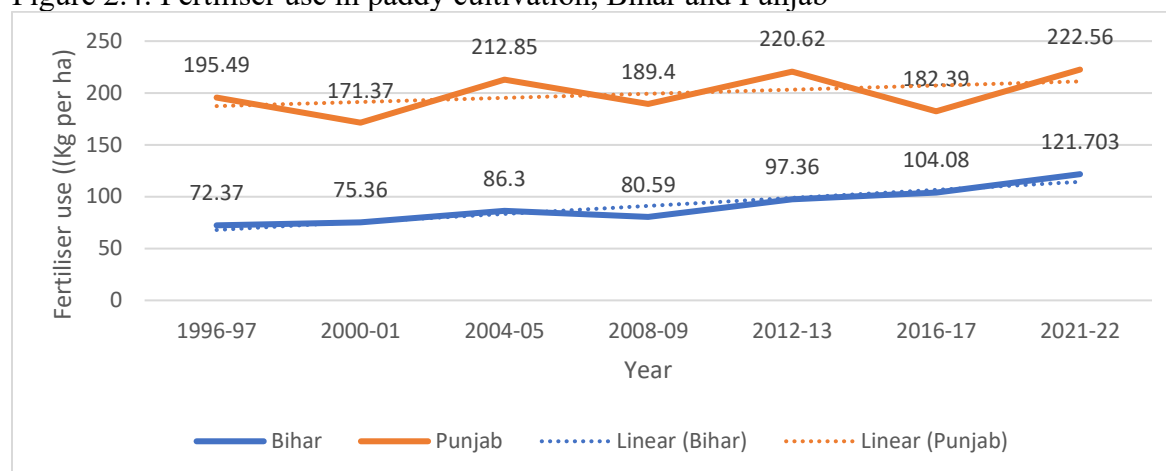
The trend of input use pattern in paddy cultivation in Bihar clearly highlights a shift from cultivation through primarily utilising homegrown inputs and household animal labour endowment to one that is highly dependent on marketed inputs. This indicates the growing cost of cultivation in Bihar. Is marketed input use looking to grow phenomenally in Bihar because of the low base it starts with, or is it merely catching up with the rest of the country? To explore it, one compares changes in paddy's marketed input use pattern in Bihar to Punjab.¹⁷ Here, one compares two marketed inputs: fertiliser use and hired machine use.

When one sees the fertiliser use trend for Punjab, it shows year-on-year variation. It increases in one period and declines in another. However, it has a flat trend line. This means fertiliser use may have varied year-on-year; however, over the period, the fertiliser use looks to have stagnated at around 200 kg per ha. When one sees the fertiliser use in Bihar, it starts at very low levels. In 1981-82, the fertiliser use was just 5 kg per ha (Table 2.9). By 1996-97, it increased to 72.37 kg per ha. In 2021-22, it steadily increased to 121.71 kg per ha. The fertiliser use in Bihar looks to bridge the gap with Punjab. In 1996-97, the fertiliser use in Bihar was around 37 per cent of Punjab. In 2021-22, it increased to around 55 per cent (Figure 2.4).

¹⁶ These figures are in current prices. Not adjusted for price level.

¹⁷ Punjab is considered as a state that implemented the green revolution the most successfully. Currently, it is considered the most advanced agricultural state, particularly for the cultivation of cereals.

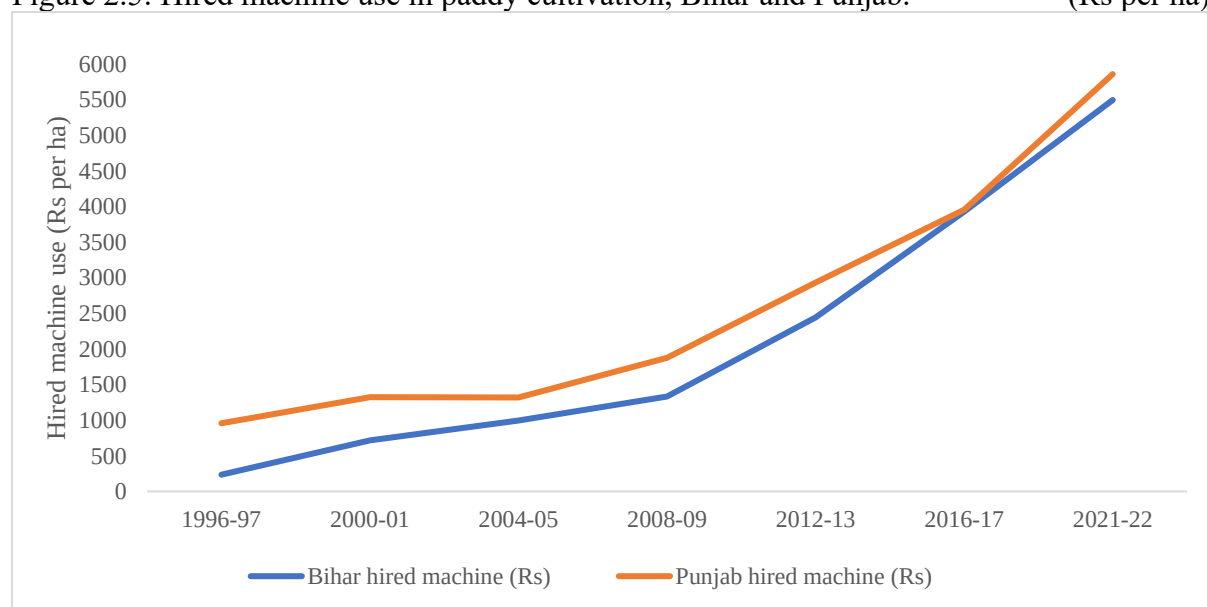
Figure 2.4: Fertiliser use in paddy cultivation, Bihar and Punjab



Source: CACP

Let us move from input use pattern to machine use. When one compares the hired machine use in paddy cultivation in Punjab and Bihar, one sees that in 1996-97, in Bihar, the average expenditure on hired machines in paddy cultivation was Rs 235 per ha, which was around 25 per cent of expenditures on hired machines used in paddy cultivation in Punjab. By 2021-22, it increased many times and reached Rs 5495 per ha, almost similar to Punjab (Figure 2.5).

Figure 2.5: Hired machine use in paddy cultivation, Bihar and Punjab. (Rs per ha)



Source: CACP various reports.

Do changes in input use patterns lead to similar changes in yield and, eventually, crop income? The next section explores this question.

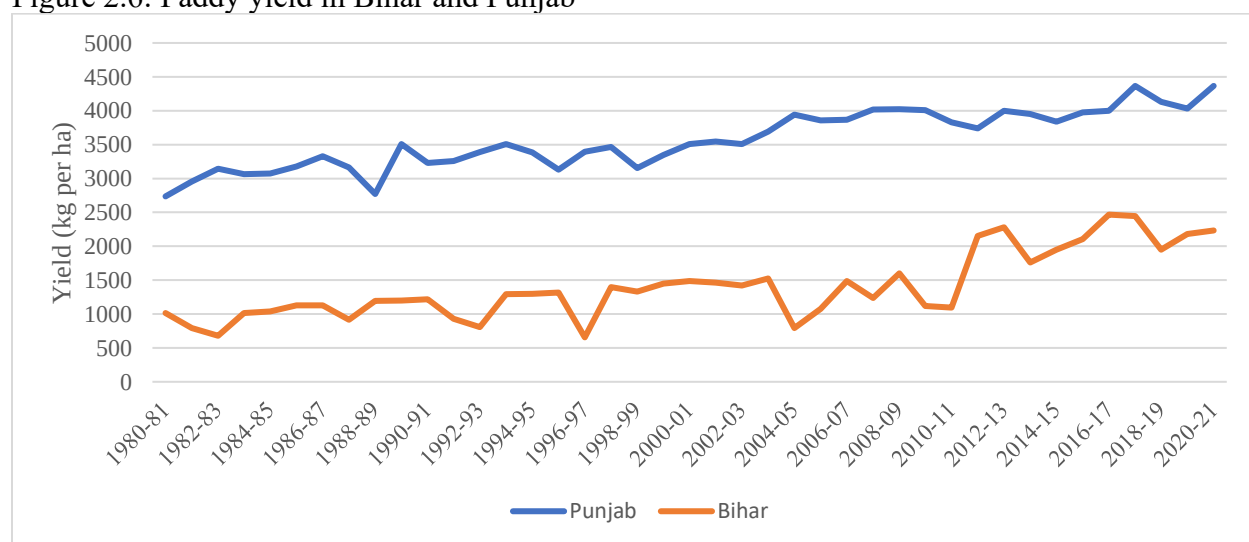
2.6 Changes in Return from Cultivation

Sub-section 2.5.3 presents a comparative picture of changes in the marketed input use patterns in paddy cultivation in Bihar and Punjab. To check how the changes in input use pattern have impacted the output. This section compares yield, GVO per hectare, and Crop income per hectare at costs A2 and C2. For yield, it uses the EPWRF India time series database. Various CACP reports are used to assess GVO per hectare and crop income.

2.6.1 Trends of Paddy Yield in Bihar and Punjab

When one compares the paddy yield of Bihar and Punjab over the period, it shows that in 1981-82, Punjab's yield was around 2,950 kg per ha, and Bihar's yield was around 1,000 kg per ha. Over the period, the yield of both states increased. Bihar is slowly closing the gap. However, even in 2021-22, Bihar's yield was around half of Punjab's. Bihar's paddy yield was 2,233 kg per ha. Meanwhile, Punjab's paddy yield was 4,366 kg per ha (Figure 2.6).

Figure 2.6: Paddy yield in Bihar and Punjab



Source: EPWRF

Sub-section 2.5.3 shows that Bihar has almost caught up with Punjab in marketed input use. However, it has not yet translated into a magical improvement in yield (Figure 2.4, Figure 2.5 and Figure 2.6). The paddy yield in Bihar has increased by around 40 per cent over the last 20 years. As seen in sub-section 2.5.3, the fertiliser used has almost doubled in this phase, and the expenditure on hired machines used has increased multifold. Moreover, in this period, the seed replacement rate also improved phenomenally. It shows that the growth rate of yield remained low compared to the growth rate of marketed input use (Figure 2.4, Figure 2.5 and Table 2.9).

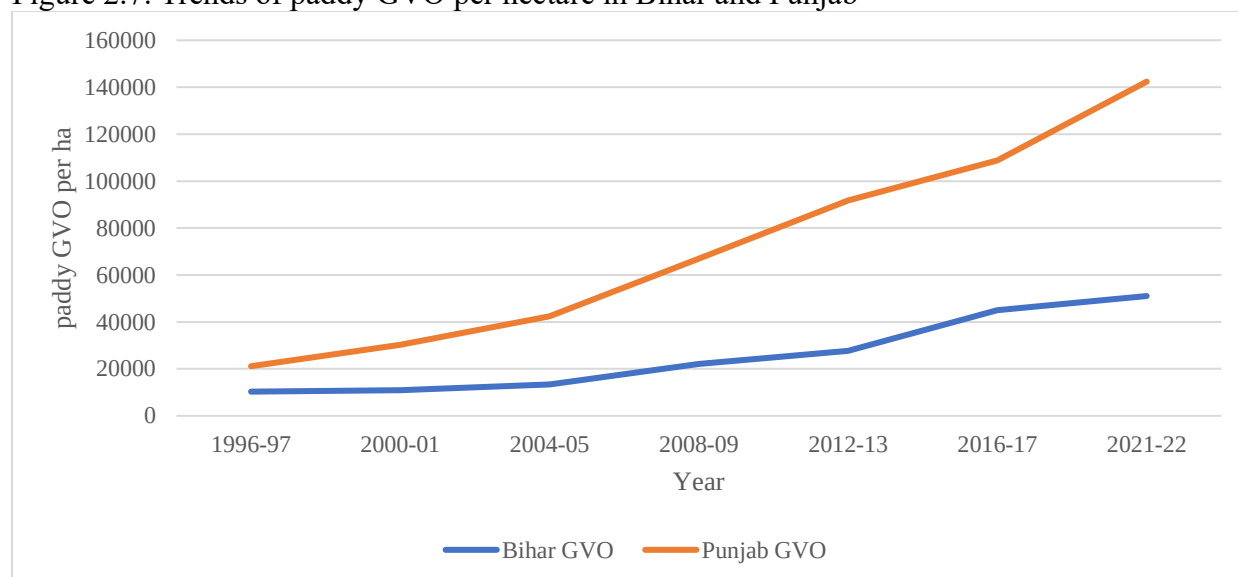
Apart from yield, output prices that cultivators receive determine the return on the investment. However, output price data is difficult for paddy in Bihar to access. To encourage private parties in agricultural marketing, the Government of Bihar repealed the APMC Act in 2006, which dismantled the mandi system (Kumar, 2020; 2021; Pandey, 2021). Thereafter, the Primary Agricultural Credit Society (PACS) started engaging in grain procurement (Kumar, 2020; 2021). PACS is a fundamental village-level credit cooperative institution. In Bihar, they also have a mandate to buy grains for its members. From there, state and central agencies procure (Kumar, 2021). However, PACS's function as a procurement agency is dismal. Due to that, Bihar cultivators heavily depended on private traders to sell their output, where prices were generally lower than the Minimum Support Prices (MSP) (Kumar, 2020; Pandey, 2021). In 2018-19, less than 1.9 per cent of cultivators reported the sale of paddy to governments or cooperatives. Moreover, most of the cultivators reported sales to local markets (NSSO, 2021a). Since one cannot access reliable price data for merchants or local markets for sales, one looks into the trends of the GVO per acre of paddy for Bihar and Punjab, as reported by CACP.

2.6.2 Changes in GVO per acre

When one looks into the trend of paddy GVO per ha of Bihar and Punjab, it shows that in 1996-97, Punjab had a higher paddy GVO per ha than Bihar. In the subsequent period, the gap has diverged. In 1996-67, Punjab's paddy GVO per ha was around double that of the Bihar's. However, in 2021-22, it became almost three times (Figure 2.7). This is a contrasting trend of yield. In this period, the trend of paddy yield in Bihar converses with the paddy yield in Punjab (Figure 2.6).

However, the GVO paddy per ha between Bihar and Punjab has a divergent trend (Figure 2.7). It shows that the paddy output prices are considerably lower in Bihar than in Punjab.¹⁸

Figure 2.7: Trends of paddy GVO per hectare in Bihar and Punjab



Source: CACP

Moving from the input use, yield and GVO. One looks into the trend of crop income per ha. Which tells the actual return a cultivator gets from its total investment and labour. In the next sub-section, one explores changes in crop income per ha of paddy between Bihar and Punjab.

2.6.3 Changes in Crop Income per ha

The crop income gives information on the actual return of a cultivator. Here, one calculates paddy crop income per ha.

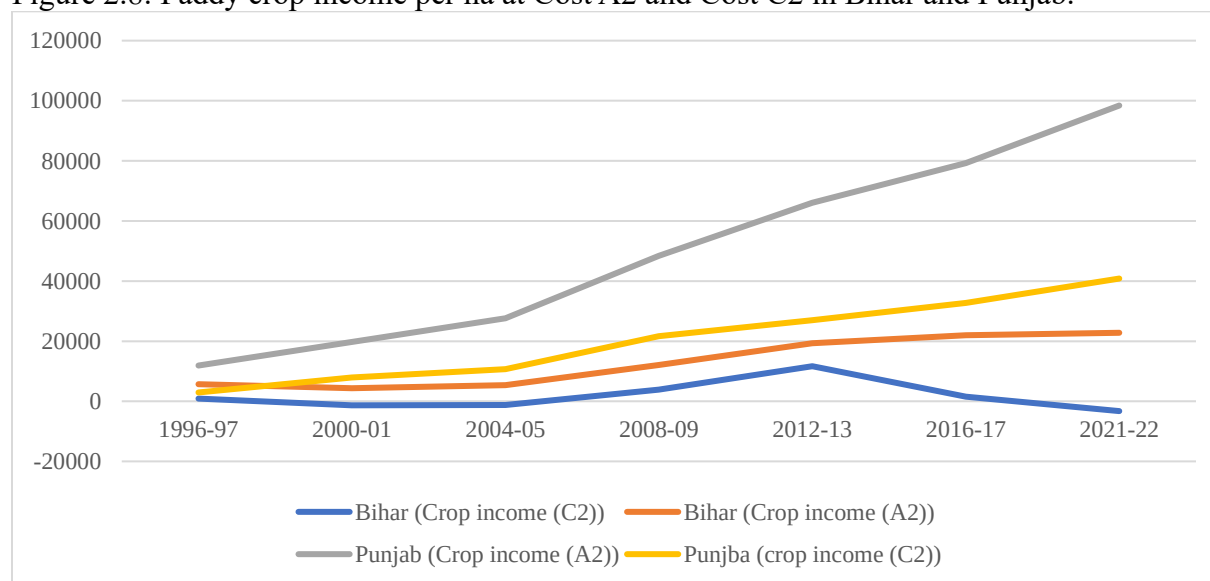
Crop income per ha = GVO per ha - cost of cultivation per ha

¹⁸ The paddy output has two components: the main product (grain) and by-products (paddy straw and husk). The by-product also has marketable value. It is used for animal feed. Notably, in Punjab, the paddy by-product market has become minuscule, and the share of the value of by-products has become negligible in the GVO. In contrast, in Bihar, the value of by-product per ha is growing faster than that of the main product. It further highlights stagnated output (grain) prices in Bihar (observation based on CACP various reports).

CACP calculates the cost of cultivation, utilising various cost calculation methods: Cost A1, A2, B1, B2, C1, and C2. Cost A2 presents a cost method that includes all kinds of paid-out costs. It includes payment made for inputs, hired labour, hired machinery, hired bullock, paid out rent, interest on working capital, and machinery depreciation. The cost C2 presents the most holistic cost method. It includes all kinds of paid-out and implicit costs. Cost C2, apart from cost A2, also covers the imputed value of family labour, interest on owned assets (excluding land) and imputed rent of owned and self-cultivated land.

One presents the paddy crop income per ha of Bihar and Punjab. It shows that Punjab has a much higher paddy crop income per ha in terms of both cost A2 and cost C2. Moreover, the trends of both paddy crop incomes are divergent. It has two striking observations: First, Bihar's crop income per ha, even at cost A2, is lower than Punjab's crop income per ha at cost C2. Second, at cost C2, paddy crop income per ha in Bihar remained around zero (on the x-axis). In fact, it has gone negative from 2016-17 (Figure 2.8).

Figure 2.8: Paddy crop income per ha at Cost A2 and Cost C2 in Bihar and Punjab.



Source: CACP various reports.

The sub-Sections 2.5.1 and 2.5.3 brought out two aspects of Bihar's cultivation economy. First, almost all cultivators are marginal and small cultivators. Second, the marketed input use per ha is rising in Bihar. In this phase, no policy regime shift in favour of high input subsidisation happened either at the state or at the national level. It means that this rising marketed input use should

translate into a higher cost of cultivation. An intriguing question arises: How do these marginal and small cultivators finance this rising cost of cultivation? This question becomes more intriguing when one observes that Bihar's cultivators are, on average, consistently making near zero, even negative profit. To explore this puzzle, one looks into the changes in the rural credit market in Bihar.

2.7 Credit Market

This section explores changes in credit market conditions in rural Bihar. It utilises reports of various rounds of AIDIS-NSSO surveys. To explore indebtedness trends, one looks into three aspects of the credit market. The first is the incidence of Indebtedness (IOI), which tells the share of indebted households. Second is the Debt-to-Asset ratio (DAR). It gives information on the severity of households' debt burden. Finally, the third is the share of institutional credit in the total credit—it indicates the reach of formal financial institutions.

In 1969, the Govt of India nationalised 14 major commercial banks, and later, in 1980, nationalised six more. Commercial banks were guided by branch licencing and priority sector lending policies in that phase (Chavan & Sivamurgan, 2017). When one looks into the credit market situation in this phase, it shows that in 1971, the IOI of rural Bihar was 42 per cent; by 1981, it considerably fell to 13 per cent. The DAR in 1971 was 2.35 per cent. By 1981, it also reduced to 0.65 per cent. The share of institutional credit in the total loans in 1971 was just 11 per cent, which considerably increased to 47 per cent. In the subsequent period, 1991, the IOI increased to 16 per cent. However, DAR remained constant. Furthermore, the share of institutional credit increased to 73 per cent (Table 2.10).

In the post-liberalisation phase, profitability and commercial viability of banking institutions became central questions over the financial inclusion and extension of support for the vulnerable sections of society, which led to banking rationalisation, reduction in rural branches of commercial banks, and scrapping of priority sector lending institutions (Chavan & Sivamurgan, 2017). In this phase, one observes that the IOI increased from 16 per cent in 1991 to 21.8 per cent in 2002 and 29.6 per cent in 2019. Meanwhile, the DAR, which was 0.65 per cent in 1991, increased to 1.45

per cent in 2002. And it further increased to 1.8 per cent in 2019. The share of institutional credit in total outstanding loans, which considerably improved after 1971, reached 73 per cent in 1991. It fell to 37 per cent in 2002. In 2019, it slightly improved to 47.4 per cent. The all-India trend is also similar. However, with a varied magnitude (Table 2.10).

Table 2.10 IOI, Debt to asset ratio and share of informal loans in rural Bihar and rural India

Year	IOI		Debt to asset ratio		Share of institutional loans	
	Bihar	India	Bihar	India	Bihar	India
1971	42	43	2.35	4.43	11	29
1981	13	20	0.65	1.83	47	61
1991	16	23	0.65	1.78	73	64
2002	21.8	26.5	1.45	2.84	37	57
2019	29.6	35	1.8	3.8	47.4	66.1

Source: AIDIS multiple round reports.

As one can see, in the phase of economic liberalisation, the IOI and DAR in rural Bihar increased remarkably. Furthermore, informal credit has emerged as the primary source of credit in rural Bihar in general and for marginal and small cultivators in particular (Pandey, 2016; Vinod et al., 2016). In the village economy, large landowners, moneylenders, input providers and merchants (output buyers) are major agents of informal credit (Chavan & Sivamurgan, 2017). It is well established in the literature that the rate of interest in informal loans in the rural economy is exorbitantly high. Village-level studies have brought out the practice of charging interest rates of around 60 per cent per annum in Bihar (Dhar et al., 2022). Furthermore, large landowners and merchants interlock the land, labour, output and credit market contract terms to extract usurious returns (Chakravarty, 2001; Kumar, 2022; Dhar et al., 2022).

If one looks at cultivator households, in 1991, 17 per cent of cultivator households were indebted. By 2019, it increased to 33.4 per cent. In 2019, 51 per cent of loans were from informal sources among cultivator households (NSSO, 1998; NSSO, 2021b). It indicates a growing practice of credit-dependent cultivation in Bihar, which primarily involves informal loans.

The condition of the cultivation economy highlights a growing distress in the system. How are people responding to it? Is rural Bihar witnessing any changes in its occupational structure? One explores this question in the next section.

2.8 Changes in Occupational Structure and Employment

As one can see in Section 2.6, cultivators in Bihar struggle to get any return from cultivation. This could be a reason why the state is witnessing a trend of decline in cultivator households (Table 2.4). It poses an intriguing question: For households who are moving from cultivator to non-cultivator, what occupation are they opting for? To explore this question, one looks into changes in the occupational structure of rural Bihar. One also explores changes in employment situation. In this section, the EPWRF India Times series database, is used for the occupational structure and employment, which is a compilation of the NSSO-EUS and NSSO-PLFS surveys.

2.8.1 Occupational Structure

The occupational structure in rural Bihar witnessed two changes between 1987-88 to 2011-12. First, the self-employed in agriculture (cultivators) households reduced from 39.8 per cent to 32.8 per cent, around a 7 per cent decline. Meanwhile, the self-employed in non-agriculture households increased from 12.9 per cent to 19.3 per cent, around a 6.4 per cent increase. Second, the casual labour in agriculture households declined from 32 per cent to 26.8 per cent, which is around a 5 per cent decline. Meanwhile, casual labour in non-agriculture households increased from 6.1 per cent to 9.4 per cent, around a 3.3 per cent increase. Both these trends show that the workforce dependent on the non-agriculture sector has increased over the period in rural Bihar. In 1987-88, 71.8 per cent of households were dependent on agriculture. By 2011-12, it reduced by 59.6 per cent. However, the striking feature that came out was that households with regular wage/ salaried were just 4.6 per cent in 2011-12. This means that households who leave agriculture are primarily going to the non-agriculture sector in self-employment occupation and non-agriculture labour (Table 2.11).

Table 2.11 Change in occupational structure in rural Bihar.

Occupational categories	1987-88	1993-94	1999-00	2004-05	2011-12
Self-employed: Agriculture	39.8	41.1	35.4	37.7	32.8
Self-employed: Non-agriculture	12.9	11.5	13.4	19.6	19.3
Regular Wage/Salaried					4.6
Casual Labour: Agriculture	32	35.2	34.6	30.2	26.8
Casual Labour: Non-agriculture	6.1	3.3	4.2	3.1	9.4
Others	9.1	8.9	12.2	9.4	7.1

Source: EPWRF

From occupational structure, it becomes clearer that the majority of households in rural Bihar continued to be in the agricultural sector: self-employed (cultivators) and labour. Those who are in non-agriculture are also primarily self-employed or labourers. In these backdrops, exploring the changes in employment patterns becomes intriguing.

2.8.2 Changes in Rural Employment

To understand the changes in the employment situation in rural Bihar, one presents the Labour Force Participation Rate (LFPR) for the population in the age group of 15 and above. Rural Bihar's LFPR shows three intriguing trends: a secular decline of LFPR. In 1987-88, male LFPR was 86.2 per cent, while female LFPR was 20.2 per cent. By 2021-22, it declined to 55.9 and 5.4 per cent, respectively, for male and female. Moreover, there was an enormous gender gap; in 1987-88, the male LFPR was more than four times that of female LFPR. Thereafter, LFPR of both males and females shows a secular declining trend. However, the decline rate of female LFPR is much faster than that of males. By 2021-22, the female LFPR reached to just 5.4 per cent, which was around 1/10th of male LFPR (Table 2.12).

When one looks into the changes in the unemployment rate, it shows that it is, in general, low in rural Bihar. In 1987-88, the unemployment rate of males was 2.6 per cent, whereas, for females, it was just 0.8 per cent. The male unemployment rate in every round remained less than 3 per cent. The female unemployment rate, till 2004-05, remained at less than 1 per cent. However, in 2009-10, it increased to 2 per cent. In the next round, the 2011-12 survey, it reached to a whopping 12.7 per cent. This is also the phase in which the female LFPR had fallen to less than 10 per cent. In the

2021-22, the male unemployment rate was 6.1 per cent, and the female unemployment rate was 2.2 per cent. The statistics of 2021-122 are based on PLFS survey.

Table 2.12 Changes in Labour Force Participation rate and Unemployment Rate in rural Bihar

Year	LFPR		Unemployment rate	
	Male	Female	Male	Female
1987-88	86.2	20.4	2.6	0.8
1993-94	85.8	20.4	2.3	0.8
1999-00	86.3	21.9	2.4	0.6
2004-05	86.7	14.7	1.9	0.3
2009-10	81.8	7.2	2.2	2
2011-12	77.7	5.4	2.9	12.7
2021-22*	55.9	5.4	6.1	2.2

Source: EPWRF, *based on PLFS survey.

There is a considerable fall in the LFP rate in rural Bihar, with a limited change in the unemployment rate, which shows a possibility of a growing employment crisis or withdrawal of people in the working age group from the labour force. There can be two possibilities: a sweeping improvement in higher education enrolment and the withdrawal of people from the labour force. Second, workers may have stopped seeking employment in Bihar and migrating out for work, but their permanent residence may not change (a rise in seasonal and short-term migration). They continued to be counted as residents, but they do not report to be in the labour force.

To check Bihar's regular higher education enrolment rate, one looks into the All-India Survey of Higher Education (AISHE) of the Ministry of Education. It started from 2010-11. The survey gives number of students enrolled in higher education. One takes the number of people from the Census of India, 2011, to get the share of people enrolled. The share of the population enrolled in regular higher education in 2010-11 among males was 1.47 per cent. Among females, it was 1.14 per cent. By 2019-20, a year before the COVID lockdowns, it was 2 per cent among males and 1.76 per cent among females. It clearly reflects that Bihar has not witnessed any dramatic rise in regular higher education enrolments.

Higher education enrolment is not a cause of the fast decline in LFPR in Bihar. What could be another reason? Are workers of Bihar seeking work outside Bihar, but their permanent residence

remains to be in Bihar? This means that the extent of short-term seasonal migration is so high that it significantly influences the state's LFPR. The next section will explore the extent and nature of migration from rural Bihar.

2.9 Migration

Bihar has historically high labour migration (De Haan, 2002; Datta, 2023). Currently, Bihar has the highest out-migration rate in the country (NSSO, 2010). In general, the nature of migration is that working-age male members migrate, and the rest of the household members stay back at their place of origin. The migrant maintains a close link with the place of origin, and if he manages to get some savings, he invests in the place of origin rather than the place of destination. Migration is usually short-term, seasonal, circular and highly mobile (De Haan, 2002; Dhar et al., 2022). In the post-liberalisation phase, there was a considerable rise in migration from Bihar (Kumar, 2009; Kumar & Bhagat, 2012; Rodgers et al., 2013). The migration has reached to the extent that Rodgers et al., 2013, termed Bihar, is becoming a remittance economy. Does this rise in Bihar's labour migration indicate something deep? Let us look at Bihar's labour migration history to explore this question.

Economic theories see migration as an indication of imbalance or disequilibrium. According to Larson and Mundlak (1997), migration will cease when income differences between sectors reach a certain threshold. Economic theories propose that if free labour mobility exists, people will migrate until the income differentials become extinct, leading to convergence. However, Bihar has been a notable exception. High seasonal and circular migration is a characteristic feature of Bihar's economic history. Yang, 1979, shows that high instances of migration were prevalent even during the Mughal Empire era. Habib (1963) and Yang (1989) (cited in De Haan, 2002) bring out that the population became more settled with the adaptation of the permanent settlement land tenurial system in 1793 when land became the fundamental source of power, wealth, and status. Migration became a far less lucrative alternative to the peasantry.

One sees the reemergence of migration from rural Bihar in the 1850s. In this phase, a large number of rural poor were forcefully taken as indentured labour- *girmitia* - to other British colonies like

Fiji, Mauritius, Guyana and Trinidad and Tobago (Rodgers et al., 2013; Datta, 2016; 2023). In the 1891 census, 15 per cent of the population was reported to have out-migrated from the Saran district of Bihar. As Yang (1989) mentioned in De Haan (2002), the rate of out-migration from the Hathwa estate was so high that it faced complete desertion. The nature of migration was predominantly male population, and migration was primarily for work (De Haan, 2002). In the 20th century, forced indentured migration to the outside country was reduced. In this phase, tea gardens of Assam and Bengal and urban migration to Bengal, particularly Kolkata, emerged as new migration streams for Bihar's labourers (Das Gupta, 1981; Rodgers et al., 2013). In the 1930s, the stagnation of Bengal's industrial economy and declined labour demand in the tea estates in the east slowed down the migration from Bihar (Datta, 2023).

Post-independence Zamindaari system abolished. However, remnants of zamindaari remained and caused landlessness, low wages, and social oppression to continue. The coming of the green revolution in the north-western region of India drove immense seasonal and circular migration from rural Bihar, mainly seasonal agricultural labour migration to villages of Punjab and Haryana. Significantly high wage differentials primarily drove it (Oberai & Singh, 1980; Gill, 1984; Rodgers et al., 2013; Datta, 2023).

After the liberalisation of the Indian economy, the rural labour migration from Bihar increased further (Kumar, 2009; Rodgers et al., 2013; Datta, 2023). In 2007, NSSO conducted a migration survey, revealing that in Bihar, 28.3 per cent of rural households and around 7 per cent of individuals had engaged in cyclical or short-term migration, the highest among Indian states. These statistics for India were 16.9 per cent and 4.74 per cent, respectively. The share of males among the migrants in Bihar was 68 per cent (NSSO, 2010). IHD had conducted a time series study of 36 villages across six districts in Bihar. The first survey was conducted in 1983-84, a resurvey was conducted in 1998-99, and the latest survey was conducted in 2009-10. The 2009-10 survey data reveals that 60 per cent of households had at least one migrant member. Around 25 per cent of individuals of working age were engaged in migration. Furthermore, 84.4 per cent of migrants were males (Rodgers et al., 2013). When one looks into a change in the magnitude of migration, this panel study shows that in 1998-99, 36 per cent of households had at least one migrant member,

and 16 per cent of individuals of working age were migrants. This means there has been a considerable rise in migration between 1998-99 and 2009-10 (Rodgers et al., 2013).

A brief look at the Bihar migration history indicates that work migration is not a transitory feature of Bihar's labour force in the current development phase. It has been a historic feature and has continued over the centuries. It has phases of high and low levels depending on the prevailing economic conditions. It also depends on the condition of Bihar's economy compared to the possible migration destinations.

2.10 Conclusion

The analysis of change in Bihar's rural/agrarian economy gives six intriguing features. First, there is a continuation of large-scale landlessness and skewed land distribution, which causes a continuity of marginal and small cultivator-dominated cultivation economy. Second, the revival of tenancy. The tenancy was historically high in Bihar. It declined from the 1970s to the 1990s. However, from the 2002-03 round, one observes a trend of revival. Notably, in the revival phase, landless and marginal landowners are more than 95 per cent of the tenant cultivators. Third, the revival of rural indebtedness, the trend of rural indebtedness, also follows a similar trend as tenancy. IOI was considerably high in the 1970s, with the predominance of informal loans. In the subsequent period, IOI declined, and pointedly, the share of informal loans declined sharply. From 2002-03, round one observes an increase in both IOI and share of informal loans. Fourth, improvement in modern/purchased input use; Bihar agriculture in the 1970s and 1980s was characterised as a low-cost, low-return system. However, since the 1990s, one observes a trend of considerable improvement in modern/purchased input uses. Fertiliser looks to replace manure use rapidly. The seed replacement rate is showing a fast-growing trend. Tractors are replacing bullocks in the field. Fifth, there is a slow rate of yield growth and near zero and negative crop income per ha at cost C2. Sixth, there is an immense increase in migration. Historically, Bihar has a high rate of labour migration. However, in the 1990s, one sees an enormous increase in short-term and seasonal labour out-migration.

The near zero and negative crop income at cost C2 for cultivators poses a question on the sustainability of the cultivation economy in Bihar in its current form. A few decades back, Bihar

cultivation was in a low-cost, low-production economy, with a large number of cultivators having minimal market interactions. In the current form, the cost of cultivation is on the rise, and informal loans are emerging as a major source of financing. Which, in general, have high interest rates and non-marketed consequences. Furthermore, the return from cultivation does not respond in a similar fashion. The yield has shown a sign of improvement. However, high levels of input use have yet to translate into a dramatic rise in yield. Along with this, cultivators are over-dependent on private merchants. Due to that, output prices are low and stagnated. Rising input costs, slow rate of growth of yield, and low and stagnated prices lead to a situation in which, over the decades, cultivators have been incurring near zero and often negative crop income per ha at cost C2. This can be seen as a factor behind the fast withdrawal of cultivators from Bihar's rural economy despite the stagnancy of the rural population share.

Bihar's rural economy poses another complex question on the transformation process; one observes a workforce shift from agriculture to the non-agricultural sector in rural Bihar. However, the share of households in regular wages/salaried jobs is still minuscule. The shift is actually happening to non-agriculture labour and self-employment. Additionally, the LFPR is declining sharply, with an immense increase in short-term and seasonal labour migration. In upcoming chapters, one explores this complex dynamism, utilising an analysis of a village.

Chapter 3

Agrarian History of Champaran Region and Current Condition of West Champaran District

3.0 Introduction

Banerjee & Iyer, 2005, explains the differences in current development disparities between the northwestern and eastern Indian states through differences in their history of land arrangements in the colonial period. Lofgren, 2003 emphasises that even though history may not repeat itself, it has a cultural imprint on the current economic agents. In the specific case of Bihar, Das, 1992, spells out the colonial history as a cause of its downfall from its ancient and medieval period glory. It also argues that a lack of radical land reforms post-independence was a major cause behind Bihar's current backward economy. Mukherji & Mukherji, 2012 consider the implementation of the permanent settlement as a watershed moment for Bihar's agrarian economy. It argues that Bihar's agrarian economy still suffers from the deep-rooted zamindaari institutions.

Does a space's social, economic, and political formation depend so much on its history? Are current socio-economic institutions of a society essentially an evolved outcome of its historical conditions? Do the causes of backward conditions of the Champaran region lie in its history? To explore these questions, this chapter looks into the agrarian history of the Champaran region. The chapter traverses the region's history from over three centuries, from the pre-British period to the present. The chapter observes changes in land and rental arrangements, cropping patterns, and the functioning of labour, credit and output markets. It also explores the responses of people in different socio-political and economic conditions. Moreover, the role of people's responses in the enactment of a new socio-economic and political formation. Finally, it describes the current conditions of the West Champaran district, where the study village is located.

The chapter has two sections. The first section is the Agrarian History of the Champaran Region. The section is divided into five sub-sections based on the time period. The first subsection explores the production conditions and organisation in the pre-British period. The second sub-section focuses on the period of 1793 to 1850. It primarily focuses on radical changes that the permanent

settlement brought to the region. It analyses the impacts of the settlement on land, labour and credit relations. The third sub-section focuses on the period of 1850 to 1900. It primarily focuses on the impact of the entry of railways, British planters in the Champaran region and the takeover of EIC by the British crown on the region's agrarian economy. It was the phase when the region saw regular and horrific famines and massive labour out-migration. One explores the reasons behind it by analysing changes in cropping patterns, land, labour and credit relations and their impact on people's livelihood conditions. The fourth sub-section explores the period from 1900 to 1947; it was the phase by which the region's agrarian economy was unevenly integrated with the world economy. This sub-section explores how the global economic events started affecting the countryside of Champaran. The last sub-section discusses the changes in production relations and production conditions post-independence from British rule.

The second section discusses the current condition of the West Champaran district. It has four sub-sections. It presents current demographic features, occupational structure and irrigation conditions, cropping patterns, and yield.

3.1 Agrarian History of the Region

Champaran, which means *champak aaranya* (forest of champak), is spread on the eastern bank of the Gandak River. It is part of the Tirhut division. Till 1837, it was part of Sarkar Saran's administration. In 1837, its criminal jurisdiction shifted to Motihari. In 1867, it became a full-fledged district with two sub-divisions: Motihari and Bettiah. Later, Bettiah was divided into three sub-divisions: Bettiah, Bagaha and Sikarpur. The study village, Katkuian, is located in the Bagaha sub-division.

In 1764, in the Battle of Buxor, the East India Company (EIC) army defeated a joint force of Mughal emperor Sham Alam II, Bengal's and Awadh's Nawab. They got revenue rights for the entire Bengal presidency region, including the current Champaran region. EIC administration experimented with several land revenue arrangements. However, the need for a revenue system that should give fixed and assured revenue got traction, particularly after the 1769-70 Bengal famine (Mitra, 1985). Eventually, in 1793, Lord Cornwallis implemented a new land revenue

scheme in the Bengal presidency, which is known as the permanent settlement or *Zamindaari* system in popular parlance. This has become a watershed event in the region's agrarian history.

On principle, the permanent settlement was an attempt to bring capitalistic agriculture with laissez-faire principles (Jannuzi, 1974; Mishra, 1978; Das, 1982;1983; Mitra, 1985; Mukherji & Mukherji, 2012). Under it, the land revenue was fixed with zamindars on large estates on long-term contracts. The idea was to ensure fixed and assured revenue for the EIC with minimum investment. Furthermore, on principle, it gave incentives to zamindars to expand their production (area, yield or other land utilisation) without any additional taxes. EIC expected it would make Zamindars their loyal support base (Mishra, 1978; Sengupta, 1982). All settlements were made with existing zamindars, who were essentially from the Caste Hindu social background. The Champaran region, which is around 22.63 lakh acres, was allocated among six zamindars. In that, Bettiah Raj got over 75 per cent of the total land. He belonged to the Bhumihar caste (Mishra, 1978; Mitra, 1985).

In the agrarian history of the East Indian region, all ruling regimes had taken a share of output from the peasantry in some form or another (Habib, 1982). The idea of having a fixed rental arrangement with Zamindar as a rent collector was introduced by Akbar's minister, Todar Mall, as well (Habib, 1982). Moreover, there existed a class society with considerable inequality (Habib, 1982). Furthermore, the EIC had made most of its settlement with existing and influential zamindars. And has not attempted to alter social order in any sense. So, what was so different about the Zamindaari land settlement policy that even after three hundred years, agrarian production conditions in the East Indian region could not overcome its impacts (Banerjee & Iyer, 2005; Mukherji & Mukherji, 2012). Upcoming subsections will explore these questions.

3.1.1 Pre-1793 Phase

At the time of permanent settlement, a large extent of barren and forest land and the prevalence of a large section of poor peasantry were a unique feature of the region (Mishra, 1978). The agrarian society had three broad classes: Zamindars, hierarchy of peasantry and landless agricultural labourers (Habib, 1982; Mitra, 1985). However, nobody had private ownership of the land. The peasantry had to give a share of its production as rent to the empire. That was a tax on the produce,

not a rent on the land. Zamindars were primarily rent (tax) and tribute collectors (Habib, 1982).¹⁹ They were of two kinds. One, who was merely a rent (tax) collector on behalf of the Mughal empire, kept a share and sent the rest to the empire coffer. Second, they received rent-free estates as special grants for some special favour to the empire or some political agenda, like giving to religious heads. A large amount of forest land used to be allotted as gifts or grants. The zamindar, who received these grants, is supposed to develop that region and make it a habitat. The land used to be tax free for a duration or infinitely. The main purpose behind these grants was to expand cropping and habitat areas over forest areas (Habib, 1982; Mitra, 1985).

There was no scarcity of land or concept of ownership holding; a peasant household's operational holding depended on the peasant household's ownership of draught animals, agricultural equipment, seed storage and other home-grown inputs and money (Habib, 1982). Additional rent demand was the main deterrent in expanding the operation size (if a peasant expanded his operation size, he first had to make barren and forest land cultivable without state support and then had to pay tax over produce) (Habib, 1982). The village chiefs were rent collectors of the zamindars. Zamindars had kept village chiefs' operational land tax-free as compensation for tax collection. They had an incentive to expand their operation size. So, they cultivated a large extent of land (Habib, 1982). Landless labour was broadly of two forms: attached and casual (Habib, 1982). The social identity of the household had an important role in determining their position in the class hierarchy. Zamindars were caste Hindu or Ashraf caste Muslim. The caste identity was so ingrained that even the cropping pattern was also linked with the caste identity. For instance, Koeiri households used to cultivate only vegetables (Mishra, 1978; Mitra, 1985).

Under these agrarian conditions in 1793, the permanent settlement was implemented in the region.

3.1.2 The period of 1793 to 1850

The permanent settlement immediately brought three major changes in the agrarian setting of the region: the creation of private property on land, the creation of a land market, and the

¹⁹ Zamindar, an Arabic word, was used even in the pre-Mughal era. It means—Zamin (land) daar (a degree of control). It does not necessarily mean ownership. It is similar to Thanadar (office in charge of a police station) (Habib, 1982).

institutionalisation of a cash rent system (Mishra, 1978; Sengupta, 1982; Mitra, 1985). The permanent settlement recognised zamindars as de facto land owners, with sophisticated legal backing to evict any peasant at will.

The taxation system altered from a claim on total produce to the rent on the amount of land possessed (Habib, 1982). Moreover, in the pre-British period, the rent collection system used to function with consideration and sympathy. As rent was on total production, Zamindar or the empire had no incentives or benefits for evicting any peasants (Habib, 1982). Under the Mughal empire, in the 1750s, the rental rate on paddy was 9/16th of the total produce. However, zamindars could hardly collect more than 1/3rd (Habib, 1982).

The most immediate impact of the permanent settlement was the creation of a land market (Mitra, 1985). The sale and purchase of estates began within a few years of the implementation of settlements (Mishra, 1978). The 'sunset law' states that if a zamindar fails to pay their full rent under the stipulated time, then EIC auctions a portion or full estate of the zamindar. This eviction trickled down to the peasantry in the villages as well (Mishra, 1978; Mitra, 1985). In case of failure to pay rent, Zamindar would forcefully evict the peasants and give the land to someone else.

The third factor, cash rent, impacted the peasantry immediately. In the pre-British system, rents (tax) were paid in grains, which was a considerably stable system in the cash-crunch economy (Das, 1982). In the Mughal empire era, land rights were not defined, and the empire was only interested in produce; the rent (tax) collections were what maximum Zamindar and his village chiefs could extract from the peasantry (broadly the surplus produce). If there was crop failure, rent used to be relaxed (Habib, 1982). However, the forceful introduction of the cash rent system, with no exception in any case, started pushing the peasantry into the debt cycle (Mishra, 1978).

The plans of the EIC got a setback as zamindars were not a culturally bourgeoisie class. They did not put any effort into expanding the cultivable area or investing in agriculture to improve productivity (Sengupta, 1982). Over and above, they often failed to pay land revenues on time due to their extravagances and excessive ceremonial expenses. They considered entering commerce and businesses against their prestige (Mishra, 1978). Moreover, their policies and actions were

derived more from solidarity with caste and clan than economic gain motives. For instance, the rental rate among cultivators differed significantly from the caste identity of the peasants. Brahmin had to give much lower rent than middle castes like Koeiris and Yadavs (Mishra, 1978). In short, the interaction of a highly capitalistic rental system with a primitive social structure gave rise to contradictions and conflicts in the permanent settlement from its beginning (Mishra, 1978; Sengupta, 1982). Instead of promoting high-scale capitalistic agriculture, it created a layer of rent extractors, Zamindars at the helm below whom Thikadar (if a contract is for a limited period), Mukarraidar (if a contract is for a longer term) were the ones who managed the tenures. These intermediaries also created a hierarchy of rent collectors below them. All the intermediaries had their own unaccounted cuts, known as *awab* and *salami*. This had totally squeezed all surplus from the hands of the actual tiller of the land.

3.1.3 The period of 1850 to 1900

The 1850s brought three major changes: railways, the dominance of British planters and the shift of power from EIC to the British crown. All three influenced a shift of cropping patterns towards intensive cash or plantation cropping in the Champaran region. The railways came in the 1850s and spread rapidly after the 1857 revolt (it spread in the Champaran in the 1870s). It has enhanced the extent of trade inland or to Britain. It influenced the area under the cash crops (Mishra, 1978). In the 1840s, the British planters entered the Champaran region. Within a decade, they emerged as the dominant player by exploiting the haphazard condition of the zamindari system by providing debts to zamindars. Soon, they gained command of large extents of land (Mishra, 1978). Later, they also bought estates in Zamindari auctions. They began forced indigo cultivation on their tenants (Mishra, 1978). Through the *aasamiwar* system, in that the peasantry was compelled to grow indigo on a minimum fixed share of their total operational holding (Mishra, 1978). After the 1857 revolt, the British crown took over the EIC and started ruling the Indian sub-continent directly. The British Indian administration has intensified poppy cultivation in the Champaran region to supply to China. Its impact was that, in the 1880s, around 25 per cent of the GCA was under poppy cultivation (Mishra, 1978).

The prominence of cash crops like poppy and indigo has drastically altered the agrarian economy and agrarian production organisation in the region. First, it was the first instance in the region's agrarian history that the ruling dispensation interfered with the peasantry's cropping decision (Mitra, 1985). Second, this forced cultivation put Zamindars, planters and the British administration at loggerheads. Zamindar saw forced indigo and poppy cultivation by planters and the British administration as reducing their influence in their estate. Meanwhile, planters were irked by the British administration because the latter used to give advances to the cultivators. So, cultivators used to prefer poppy over indigo. This conflict at the top severely affected the peasantry, as all three resorted to various brutal means to uphold their dominance. For instance, zamindars had started charging four times more rent from poppy cultivators than paddy cultivators (Mishra, 1978). Meanwhile, planters started forcing tenants for a larger share of the area under indigo cultivation (Mishra, 1978). Third, both indigo and poppy were sold in a monopsony market set-up. The prices were pre-fixed for indigo by the British planters and poppy by the British administration. They were not allowed to sell to anyone else. It left the peasantry with very limited bargaining power (Mishra, 1978). Fourth, prices were fixed for the area, not for the total production, which left the peasantry with a very limited incentive to put optimal effort into better production (Mishra, 1978). Fifth, Plantation cropping has brought advancement in MoP in the Champaran region. British government and planters invested in new equipment, particularly plough. They also invested in research for seeds with better yield. These two had improved cropping intensity in the region (Mishra, 1978). Sixth, cash crop cultivation required more monetary capital, which the British administration used to provide advances; for indigo, the peasantry was more dependent on money lenders. However, both arrangements pushed the peasantry into a debt cycle. In the case of crop failure or failure to pay back the money, the peasantry faced hefty punishments, including physical abuse and eviction from their land (Mishra, 1978; Mitra, 1985). Seventh, Due to the growing significance of debt in the agrarian system, professional money lenders emerged as a new prominent class. While the Zamindars and British planters as moneylenders were more interested in control over the output and labour of the peasantry. The professional moneylender class was more interested in higher interest rates and the land of the peasantry. This was the time when land mortgages as a debt system emerged in Champaran (Mishra, 1978; Mitra, 1985).

In this phase, one sees a rise in land prices and increases in land transactions. Despite being at loggerheads, zamindars, planters, and moneylenders formed an oligarchy and created a wave of forced eviction of the peasantry, triggering a rapid proletarianisation. The plantation method sees a shift from the *asamiwar* method (tenant cultivation) to *neez* method (attached labour-based cultivation) system (Mitra, 1985). On the condition of peasants, W.W. Hunter's report, 1877 says, "...hardly any land in Champaran is held by a tenant with right of occupancy." (quoted in Mishra, 1978, p 165) The Rent Law Commission noted that in Champaran, it was ordinarily beyond the power of *raiya*s (peasants) to claim occupancy due to the lack of any documentary evidence. *Patwari* was officially mandated to manage the land documentation. However, they used to work on the whims and wishes of Zamindar (Mishra, 1978).

With the decline in the share of land under food production and the proletarianisation of the peasantry, 1860 to 1900 witnessed a series of devastating famines in the Champaran, with landless labourers being the worst hit. It ignited two major developments in the region: militant struggles of labourers and peasantry and migration. Labourers and peasants waged spontaneous militant struggles against Zamindars, planters, and money lenders (Mishra, 1978; Das, 1982; 1983; Mitra, 1985). These struggles resulted in many remarkable achievements. The peasantry of Champaran greatly influenced the formation of the Bengal Tenancy Act of 1885, which put regulations in place for the indigo plantations. And limit the compulsory indigo plantation to a maximum of 5 per cent of the total operational holding. These struggles also resulted in the Triveni Canal project (Mishra, 1878). It was built in the 1890s and is still the major source of irrigation in the region, including in the study village.

During this time, one also observes a large-scale labour migration to and from Champaran. Indentured labour migration—*Girmitia*— to other British colonies like the Caribbean and East Asian countries emerged as a new dehumanised form of labour exploitation.²⁰ (De Haan, 2002; Rodgers et al., 2013; Datta, 2023). At the same time, British planters had brought Santhal tribe labourers from the Ranchi region to Champaran for their plantation (Mishra, 1978).

²⁰ It began in Bihar in the 1830s. The British traders, who were engaged in slave trades from Africa, moved to India after the ban on slave trades through the Slave Trade Act of 1807. Some of them became Planters, and others engaged in facilitating the indentured labour migration. (Mishra, 1978).

3.1.4 The period of 1900 to 1947

The region's agrarian history between 1765 and 1900 primarily revolved around the people coming from the outside and grew to become the dominant force. They altered all institutions in their favour, whether it was EIC, the British Indian government or British Planters. While serving their interest, they connected the agrarian economy of the Champaran to a large extent with the rest of the world that by the beginning of the 20th century, any instability or alteration in another part of the world severely impacted Champaran.

In the initial years of the 20th century, two international developments brought drastic alterations in the cropping pattern of the Champaran region. First, due to the ill socio-economic effects of opium consumption in China, the Qing government of China tried to stop the illegal opium trade from British India to China throughout the 19th century, which led to a series of opium wars. Finally, in 1908, the Chinese state and the British Indian government signed an agreement to control the opium trade. In the subsequent period, opium cultivation declined in the Champaran region (Kodet, 2015). Second, with the coming of synthetic dye, demand for indigo declined. Due to that, British Planters also became less enthusiastic towards indigo plantations (Mishra, 1978). These two factors led to a shift in the cropping pattern of the Champaran region towards paddy and sugarcane. By 1950, paddy crossed more than 50 per cent of GCA (Mishra, 1978). However, this shift was not smooth. With a decline in international indigo demands, planters had stopped buying indigo from the peasantry. However, they did not let the peasantry shift from indigo to other crops freely. Instead, planters began demanding money to free the operational rights of the peasantry (Mishra, 1978). This led to the second wave of the Indigo cultivator's revolt in the Champaran region.²¹ Mr M. K. Gandhi joined it in 1917, which was the first outsider intervention in the indigo plantation struggle in the Champaran region. The entry of Gandhi gave a class-based struggle a mass character (Das, 1982; 1983).²²

²¹ Between the 1860s and 1880s, in several places, indigo cultivators revolted against British planters and moneylenders, which is considered the first wave of indigo cultivator revolt in Champaran (Mishra, 1978).

²² The entry of Gandhi in Champaran altered the characteristics of the struggle. Since the 1860s, the struggle of Champaran indigo cultivators was essentially against British planters, moneylenders and Zamindars. However, the 1917 indigo cultivator struggle led by Gandhi targeted only planters. In fact, Gandhi's movement was strongly backed by local moneylenders. Raj Kumar Shukla, Gauri Shankar Shah, Hira Lal Shahu, Debi Lal Shah, Ram Dayal Shah etc, were big professional moneylenders of Champaran. They were instrumental in passing the resolution in the

The struggle did not bring any overhaul of the condition of the peasantry, apart from some concessions from British planters to the peasantry. However, one sees a shift in cropping patterns from poppy and indigo to sugarcane and paddy (Mishra, 1978). How historical changes bring alteration in physical and social institutions can be understood through shifts in building and resources from indigo to sugarcane in this phase. The study village, Katkuian, is connected to two sugar mills: Bagaha and Harinagar. Harinagar Sugar Mill was established in 1933, and Bagaha Sugar Mill was established in 1936. Both were indigo factories and godowns till the early 1920s (Mishra, 1978).

In this phase, with improvement in an irrigation system and a shift in cropping patterns, the region did not face any major famine (Mishra, 1978). Also, the labour migration had taken a turn of seasonal circular migration to Bengal and Assam tea gardens and Bengal's urban centres (Yang, 1979; Das Gupta, 1981; Datta, 2023). These two changes brought a secular increase in the population growth in the region and a decline in average land holdings. In 1899, the share of land holding in 0 to 1 acre was 23.6 per cent. By 1951, it increased to 45.3 per cent. Meanwhile, the share of holding of over five acres declined from 24.3 per cent in 1899 to 12 per cent in 1951. In that four Caste hindu castes, Brahmin, Bhumihaar, Rajputs and Kaysth and three upper OBC castes, Yadavs, Koeiris and Kurmi, whose population share was less than 30 per cent, owned most of the land holdings (Mishra, 1978).

In the late 1920s, the world economy was hit by the greatest economic shock in the history of capitalism, the great depression. It caused a fall in the prices of agrarian commodities in Champaran. It created a cash crunch and high indebtedness among the peasantry (Mishra, 1978; Sengupta, 1982; Mitra, 1985). Due to that, the region observed a large-scale eviction of the peasantry from their operational land (Mishra, 1978). Land prices, which had been seeing a steady increase since the 1860s, observed a burst. Between 1925 and 1940, land prices fell four times (Mishra, 1978). This was the phase in which mortgaged land became a prominent credit institution

Congress's Lucknow session that resolved that Gandhi should go to Champaran. They were the ones who facilitated Gandhi's Champaran visit (Mishra, 1978).

in the region (Mishra, 1978). Land mortgage credit institutions are still widely prevalent in the region, including in the study village.

As discussed in Chapter 2, Bihar saw political formation for the rights of the peasantry in this phase. In that, BPKS²³, which Swami Sahajanand led, managed to mobilise the majority of the peasantry due to its wide appeal and acceptance of all castes (Das, 1982; 1983). BPKS waged many militant struggles with a clear slogan of a permanent solution to the permanent settlement. Which is 'land to the tiller'. The Congress Party, which was earlier hesitant to go against the interest of zamindars. However, eventually, they had to pass a party resolution to end the Zamindari system and land reforms under the pressure of BPKS (Januazi, 1974; Mitra, 1985).

3.1.5 Post-Independence from the British Rule

On the eve of Independence, the zamindari abolition remained the peasantry's utmost demand. It is reflected in the election manifestos of almost all prominent political parties (Das, 1982;1983). The Congress party received a thumping majority in Bihar and at the centre. The central government appealed to all state governments to implement agrarian reforms and eliminate intermediaries between the peasantry and the state (Jannuzi, 1974; Das, 1983).

The Bihar government formed the first land reform act in the country: The Bihar Land Reform Act, 1950. However, the proximity of zamindars and intermediaries with the Congress party leadership had stalled the implementation process at several stages (Jannuzi, 1974; Mundargi, 1990). A section of Congress legislature favoured zamindars and opposed the bill. Later, it got stuck in judicial interventions for years (Jannuzi, 1974).

Apart from the hesitancy in Congress's rank and file to implement radical land reform, there were other obstacles to the implementation of the Land Reform Act. From the time of implementation of the permanent settlement to the independence of India, the number of zamindars and intermediaries has increased enormously. In 1793, in Champaran, a settlement was made with only six zamindars. However, in 1950, there were more than 1400 zamindars. Adding more complexity

²³ In 1936 takes into the form of All India Kisan Sabha.

to it, zamindars and their intermediaries had not kept any documentation of their tenants. Moreover, no tenants had any documentary evidence of their operational rights or rent payment. All transactions and contracts were in verbal forms. Though, under the Bengal Tenancy Act of 1885, it was compulsory for zamindars to maintain rent payment documentation and give pay receipts to tenants. However, no zamindar had followed it. Furthermore, there were multiple claimants on the same land (Jannuzi, 1974; Mishra, 1978). Due to these limitations, the progress of land reforms was slow and later stalled.

The Bihar legislative assembly passed the Bihar Land Reforms Act—Amendment, 1954, to speed up the implementation process. Eventually, the state managed to take out Bihar's agriculture from big zamindars (who were like kings in themselves and controlled several villages). However, it failed to break zamindari institutions and highly skewed land distribution. Those who were earlier intermediaries to zamindars managed to get a big extent of land in the zamindari abolition (Jannuzi, 1974). They emerged as the new ruling force in the countryside. In this phase, every village saw a few large land-owning households controlling the village's socio-economic and political life or nearby villages. Prasad, 1979 and 1987, named it semi-feudalism. In this system, generational attached labour emerged as an important labour control measure for the landed classes (Prasad & Rodgers, 1983; Sahay, 1998; Chakravarty, 2001). Resistance to this 'semi-feudal' structure faced the most brutal and inhumane reactions from the landed class. However, peasant mobilisation and resistance continued (Jannuzi, 1974; Das, 1982; 1983; Prasad, 1993).

In the subsequent period, under the pressure of the peasantry, the Bihar government brought several legislations; the most prominent was the Bihar Land Reforms (Fixation of Ceiling Surplus Land) Act, 1961. The support for the zamindar class among the ruling dispensation can be understood from the fact that this bill came in 1955, and it took six years for it to be enacted, despite the Congress Party having an absolute majority (Jannuzi, 1974). Furthermore, it had various exemption provisions, such as land of educational institutions, religious places, up to 10 acres of land attached to homesteads or buildings, registered sugarcane and other plantation land. These exemptions practically made this act ineffective (Jannuzi, 1974). It gave rise to a new wave of peasant struggle in various parts of the Bihar state. In the Champaran region, the most prominent one was the Sathi land movement. In the 1930s, zamindars allotted hundreds of acres of land close

to Birla and Nemani as registered plantation land attached to sugar mills, which is known as Sathi land. These were exempted by the Bihar Land Reforms (Fixation of Ceiling Surplus Land) Act, 1961 (Das, 1983).

These agitations culminated in a political change in 1967, with the formation of a non-Congress government in Bihar. The new coalition government had brought a series of acts for land reforms like the Bihar Tenancy (Amendment) Act, 1970, Bihar Land Reforms (Amendment) Act, 1970, Bihar Public Land Encroachment (Amendment) Ordinance, 1970, Bihar Consolidation of Holdings and Prevention of Fragmentation (Amendment) Bill, 1970, Bihar Privileged Persons Homestead Tenancy (Amendment) Bill, 1970. These acts also could not make any meaningful change in the actual condition of Bihar's agrarian economy (Jannuzi, 1974; Das, 1982; 1983).

The situation worsened after a long drought and famine in the late 1960s. In this phase, one observes the working class of the Champaran, labourers and lower rung of peasantry taking two divergent paths: militant struggles and out-migration. (Das, 1982; 1983; Datta, 2023). This looks like a repeat of the decision taken by the region's working classes 100 years ago under a severe agrarian crisis (Sub-section 3.1.3). However, there exists a difference. While in the 1860s, the ruling dispensation tried to suppress the struggles with force and facilitated people's migration desperation, and made enormous profits. In the 1970s, the new ruling dispensation not only suppressed the struggles but also tried to suppress labourers' migration aspirations. However, migration continued with people's resistance. The migration was primarily agricultural labour migration. So, labour migration during peak agricultural seasons causes regional rural tensions (Das, 1982; 1983).

This is the phase in agriculture in the northwestern part of India (Punjab, Haryana and Western Uttar Pradesh) that observed the 'green revolution' with the introduction of High Yield Variety (HYV) seeds and other modern inputs; the green revolution belt intensified agriculture. And one sees a rise in labour demand and wages. It began a cycle of seasonal agricultural labour migration from northern Bihar, including from the Champaran region to Punjab (Oberai & Singh, 1980; Gill, 1984; Rodgers et al., 2013; Datta, 2023). Agriculture labour migration to Jalandhar became a

prominent location for labourers from Champaran (Gill, 1984). Notably, even in 2012, it was the primary migration destination for labourers of the study village.

The three centuries of permanent settlement had made Bihar a labour-surplus economy. However, the seasonal agriculture labour migration in the peak agricultural season and labour struggles have challenged the hegemonic position of the landed classes. Labourers started to demand higher wages and improvement in working conditions. In response to it, the landed classes came with suppressive, unimaginable levels of violence (Das, 1982; Pathak, 1993).²⁴ Labourers and their families had to face constant assault and retaliation from the landlord and other dominant households of the villages. These stories could be easily heard during the field visits. Prakash Jha's directed movie *Damul* has picturised the changing scenario in rural Champaran, capturing rural-to-rural (Champaran to rural Punjab) seasonal migration. The movie presents labourers leaving the village secretly, and if caught, they had to face all kinds of subjugation, including murder. In one scene of the movie, the landlord's household surrounds labourers who were on their way to the railway station and shoots all of them to set a lesson for the others. Despite the attached labour practices and brutal violence on migratory labour, migration continued, and it spread in routes and directions (Kumar, 2009; Sharma et al., 2012; Rodgers et al., 2013).

As one can see, the implementation of the permanent settlement in 1793 and the non-eradication of zamindari institutions post-independence had long-term impacts on the region's economic system. In this context, the next section will briefly present the current demographic, occupational and agrarian conditions of the West Champaran district—the district where the study village is located.

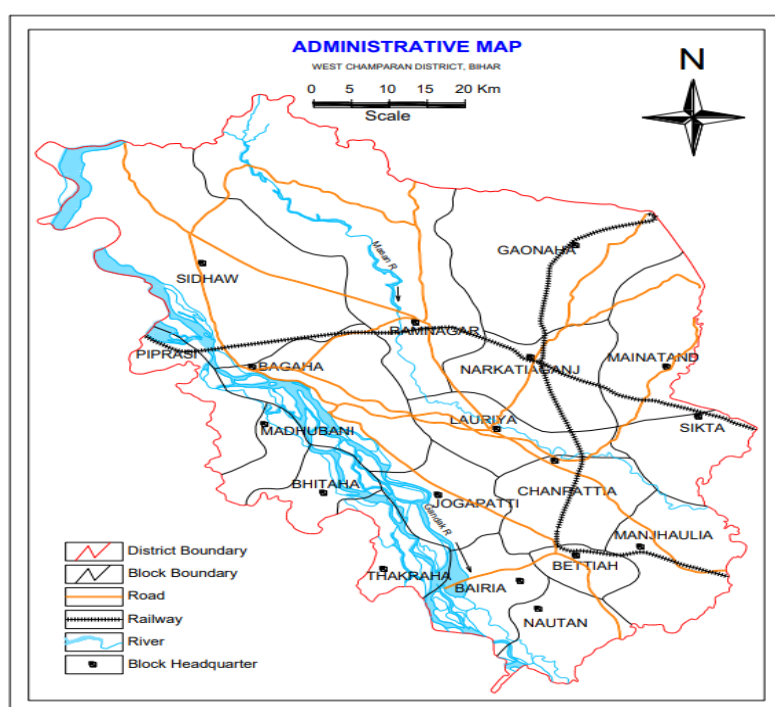
3.2 Current Conditions of West Champaran

The erstwhile Champaran district was reorganised in 1972, and the West Champaran district came into existence with district headquarters at Bettiah. It shares boundaries with Nepal, Uttar Pradesh, Gopalganj and East Champaran districts of Bihar. The district has a geographical area of 4853.51 sq km. In terms of geographical area, it is the biggest district of Bihar. Around 20 per cent of the

²⁴ Suppression at the level of mass rapes, burning the whole hamlet, mass killing (Das, 1982; Prasad, 1993)

district's geographical area is forest land. The forest land is primarily located in the northern part, on the Nepal border, which is also Himalayan terai hilly terrain. Around 35 per cent of the district geography is cropping area. The district's agro-climatic zone is Gangetic alluvium. The district has 18 blocks, and the study villages fall in the Bagaha II block. Figure 1 is an administrative map of the district. As one can see, on the western side of the district is the Gandak river. The Katkuian village is in the Bagaha block, which comes under the command area of the river. It also has railways and road connectivity (Figure 3.1).

Figure 3.1: Administrative map, West Champaran district, 2013



Source: CGWB, Govt of India

From the general features of the district, let us move to the demographic features of the district.

3.2.1 Demography of West Champaran

In this subsection, one looks into three demographic features of the West Champaran district in comparison with aggregate Bihar. These are Urban population share, population density and literacy rate. It uses the CMIE States of India database. The data is available from 1980-81 to 2010-11. The database is based on the Census of India. However, it considers numbers reported in the

Census for the preceding year. For instance, the Census of India, 2011 numbers, it reports for the 2010-11.

In 1980-81, only around 7 per cent of the district was urbanised. At that time, Bihar was around 10 per cent urbanised. Though both are very low, the district's urbanisation was around 3 per cent less relative to Bihar. In the subsequent period, the district catches up with Bihar. In 2010-11, the gap between the district and Bihar was only around 1.3 per cent. (Table 3.1).

In 1980-81, the district's population density was 377 persons per sq km, around 73 per cent of the population density of Bihar. In the subsequent phase, the district and Bihar's population density increases. However, Bihar's population density grew slightly faster than the district's. In 2010-11, the district's population density was 752 persons per sq km (99 per cent rise), and Bihar's was 1,105 persons per sq km (103 per cent rise) (Table 3.1).

The district's literacy in 1980-81 was 18.79 per cent, and Bihar's was 25.58 per cent. In the subsequent period, the literacy rate of the district and Bihar improved. In 2010-11, the district's literacy was 55.7 per cent, and Bihar's literacy rate stood at 61.8 per cent. The district's literacy rate has closed the gap with Bihar, and it looks to catch up. (Table 3.1).

One interesting observation of the district's demography is that despite being the biggest district in terms of geographical area, it had just 3.7 per cent of the population of Bihar. It makes its population density one of the lowest in Bihar. One finds two possible factors for it. First, hilly terrain and forest areas are present in the eastern region. However, it is not the only region in Bihar with hilly terrains. Second and more importantly, there was regular famine and massive out-migration during the colonial rule (Mishra, 1978).²⁵

²⁵ In one of the famines that came in the 1860s, the region's population was reduced by 1/3rd (Mishra, 1978).

Table 3.1: Demographic features of West Champaran district and Bihar

Year	Urbanisation (%)		Population density (no)		Literacy rate (%)	
	West Champaran	Bihar	West Champaran	Bihar	West Champaran	Bihar
1980-81	7.33	9.82	377	511	18.79	25.58
1990-91	10.09	10.59	525	688	27.99	37.86
2000-01	10.17	10.46	582	881	38.93	47
2010-11	9.99	11.3	752	1,105	55.7	61.8

Source: CMIE States of India

From demography, let us move to the occupational structure of the district.

3.2.2 Occupational Structure of the District

In this subsection, one explores the occupational structure of the district and Bihar. Since the thesis is on the agrarian economy only the rural occupational structure is presented here. It uses data from the Census of India, 2011. The Census classifies workers into two groups: main workers and marginal workers. Here, the purpose is to broadly understand the region's occupational structure. So, one considers only the main workers.

In the district's rural economy, around 93 per cent of the workers were in the agrarian economy. Of that, around 36 per cent were cultivators and 57 per cent agricultural workers. In Bihar, around 88 per cent of the workers were in agriculture: around 48 per cent were cultivators, and 40 per cent were agricultural workers. The share of the agricultural workforce in the total rural main workers in Bihar was just around 5 per cent lower than the district. However, the factor that makes the district's occupational structure different from Bihar is its composition of agricultural workforce. The agricultural workers as a share of the total main workers in the district were 17 per cent higher than in Bihar. Meanwhile, the cultivators' share of the total number of main workers was 12 per cent less than that of Bihar (Table 3.2).

The occupational structure highlights the district's considerably higher worker share than Bihar. It becomes more interesting, given that the district has one of the lowest population density. One can understand this phenomenon through the district's history. As discussed in the previous section, the region underwent an immense proletarianisation process from the 1870s to the 1930s. The

district observed large-scale eviction of peasants from their ryot, which allowed concentration of land and skewed land distribution and landlessness (Mishra, 1978).

Table 3.2: Occupational structure of the main workers in rural West Champaran and Bihar in 2011

Worker type	West Champaran	Bihar
Cultivators	36.15	47.8
Agricultural Workers	56.82	40.2
Household industry workers	0.89	1.6
Other workers	6.14	10.4
Total	100	100.0

Source: Census of India, 2011

One moves from the rural occupational structure to the agrarian conditions. A reliable irrigation source is one of the most essential requirements for agriculture. The next sub-section explores the district's irrigation condition.

3.2.3 Irrigation Condition in West Champaran District

This sub-section presents irrigation conditions in the district. The sub-section is based on the Ground Water Information Booklet, West Champaran District, Bihar, 2013 of the CGWB, Govt of India. The booklet is based on a study part of the systematic hydrogeological survey.

A large part of the district's area comprises low-lying denudational plains intersected by numerous streams originating from Himalayan ranges. The Gandak River is the most important river in the area, rising in the central mountainous basin of Sapt-Gandaki of Nepal. The river has three canals: Tirhut, Tribeni and Done. These are important sources of irrigation in the district. The study village comes under the Tribeni Canal command area.

The district's Net sown area is 2.78 lakh ha. Around 70 per cent of that is irrigated land. The unirrigated region of the district falls mainly in the hilly northeastern regions on the Nepal border. Of the total irrigated area, around 54 per cent of the area is irrigated through canal water. Apart from canal irrigation, groundwater irrigation is another important source of irrigation. The groundwater is available at a depth of 50-70 m. The open-dug wells get water with around 5-6 m

of digging. In the district's western part, where the study village is located, open dug wells with 3-4 m of digging get water.

Around 30 per cent of the district is unirrigated. Those areas are totally rainfall-dependent. The average rainfall in the district is 1472 mm. The Himalayan Terai region in the northern parts of the district receives the heaviest rain. Interestingly, that region also covered most of the unirrigated area.

As one can observe, the district has good irrigation conditions. Even the unirrigated regions get good rainfall. So, one can expect to translate into intensive cropping practices. However, in 2021-22, the cropping intensity in the district was 1.43, which was lower than in Bihar. The Bihar's cropping intensity was 1.46 (Govt of Bihar, 2022). However, various factors can influence cropping intensity, and the most important one is cropping pattern. So, yield should be considered a better variable for assessing intensive cropping practices. So, the next subsection explores cropping patterns and yield.

3.2.4 Cropping Pattern and Yield

This subsection analyses the cropping pattern and yield of the major crops of the district and Bihar. The data source is the DES, Govt of Bihar. The data is for the year 2021-22.

One observes that in Bihar, wheat and paddy together covered more than 70 per cent of the GCA. After that, the other major crop was maize, which covered around 10 per cent of the GCA. Suppose one combines cereals and pulses; it covers most of the GCA. Cash crops persist as peripheral crops on minuscule shares of the GCA. When one looks into the cropping pattern of the district, it shows that the main crop of the district was sugarcane. It covered around 40 per cent of the GCA. On the rest of the GCA major crops grew were cereals and pulses. It shows that the dominant form of cropping pattern was a cash crop mix with a state-assured fixed price and paddy, the most common staple grain (Table 3.3).

As discussed in the previous section, in the 19th century, the British planters, the EIC, and later the British India government intervened with the cropping pattern of the Champaran region and imposed various cash crops. In the later period, the predominant cropping pattern that emerged in the region was cash crops to pay rent and paddy and pulses for household consumption. The cash crop shifted from poppy and indigo to sugarcane in the early 20th century. One observes the continuity of the same cropping pattern even in the current time—a continuity of over a century.

The yield of the district and Bihar did not show any notable distinction. However, one can observe an interesting trend. Major crops in the district yielded comparatively lower than those in Bihar. It includes crops like sugarcane and paddy. Furthermore, crops that were grown on a lower share of the GCA had yields comparatively higher than those of Bihar. This includes crops like pulses, wheat and oil seeds (Table 3.3). Is it that less popular crops were grown only by those with certain advantages, so yields were higher? It's an interesting question. However, exploring this is beyond the scope of the current study.

Table 3.3 Cropping pattern and yield, West Champaran and Bihar. (2021-22)

Crops	Cropping pattern (share in GCA)		Yield (kg per ha)	
	West Champaran	Bihar	West Champaran	Bihar
Sugarcane	38.38	2.87	66,896	68,761
Paddy	33.88	40.04	2,347	2,683
Wheat	18.03	30.53	3,032	2,950
Pulses	2.27	5.65	1,021	954
oil seeds	0.94	1.54	1,594	1,235
Maize	0.71	10.21	5,125	6,456
Other	5.79	9.16		
Total	100	100		

Source: DES, Govt of Bihar

3.3 Conclusion

The chapter explores the agrarian history of the region over three centuries. It shows how the permanent settlement created a deep-rooted hierarchy of rent seekers in the agrarian system. It has changed production conditions in such a way that even now, one can see its impact. It is a common feature of the whole of the Zamindari region (current Bengal, Odisha, Bihar and eastern UP). However, in addition to zamindari, in the Champaran region, the British planters and the British

Indian administration radically altered the cropping pattern by imposing cash crops on the peasantry in monopsonistic market settings. One can observe it in the current cropping pattern of the region as well. Despite the backward settings, the region's principal crop is sugarcane, a cash crop. Along with cash crops, cultivators grow food grains like paddy, pulses and oil seeds. An observation of the cropping pattern of the region shows it has hardly varied over the 100 years.

One can assess the region's backward economic setting with its occupational structure. Around 57 per cent of the main workers are agricultural labourers. That, too, is in a region whose principal crop is sugarcane, which is not labour-intensive. In rural West Champaran, 93 per cent of the main workers are in agriculture. However, only 36 per cent of the population is in cultivation. It indicates the deep impacts of the historical force eviction of peasants during the last century of colonial rule by the moneylenders, British Planters and Zamindaars, which skewed land distribution and caused large-scale landlessness. Another feature of the labour market is a large-scale labour migration from the village. It started in the 1860s due to enormous famines and forced—indentured migration—to other British colonies. It continued in the 20th century. Now, it is a prominent livelihood avenue for the labouring households.

These factors affected the Champaran so adversely that a region with abundant irrigation sources and one of the best fertile soil conditions lags behind as one of the backward even in Bihar. The Champaran region fell behind Bihar in all indicators discussed in this chapter, like urbanisation, literacy, the non-agricultural workforce, and the yield of major crops. The next chapter will explore how deep the region's history impacts its current agrarian production condition and socio-political life through an analysis of a village.

Chapter 4

Production Condition in the Study Village

4.0 Introduction

In chapter two, one explores changes in the agrarian/rural economy of Bihar. In chapter three, one explores the evolution of current agrarian production conditions in the study region, West Champaran. Moving from that, the next four chapters will analyse a village named Katkuian, which is located in the Bagaha II block of the West Champaran. Village analysis is primarily conducted to understand the economic conditions and production structures. It may complement the empirical evidence from the previous two chapters; however, the findings from the village study do not claim or are not presented as the story of Bihar or the West Champaran district.

The current chapter analyses the prevailing production conditions in the study village. It attempts to locate them in the region's historical process of social, economic and political formation. It borrows the concept of production conditions from Bharadwaj, 1974, which broadly understands production conditions as a technological relationship between inputs and outputs in relation to conditions of productive forces and socio-economic conditions of the labour force. The chapter tries to understand the village's prevailing socio-economic conditions, how production is organised among different economic classes, and the functioning of primary markets: land, labour, and credit. It also explores if any socio-economic differences exist in accessing different markets.

The chapter has nine sections, excluding the current introduction section. Section one discusses a brief of the village's history and brings a few interesting historical facts based on oral history. Section two presents the social and economic structure of the village and the distribution of village land and other assets among different groups. Section three explores the agrarian economy of the village with a primary focus on differences in cropping pattern, input and machine use pattern among different economic categories. Section four discusses the functioning of the land market; it primarily focuses on the extent and nature of the tenancy and mortgage market. Section five discusses the functioning of the credit market; it mainly focuses on the extent, nature and purpose of indebtedness among different economic categories. Section Six discusses the condition and

functioning of the labour market. Section seven briefly discusses the extent and nature of migration from the village. Eventually, section eight assesses the earnings levels and the extent of income inequality among different economic categories. Finally, section nine presents the chapter's conclusion.

4.1 A Brief of Village History

Katkuian, its literal meaning is a wooden well. There is an old wooden well in the village. According to villagers, the village was part of the Bettiah Maharaj army's containment area. They made this well for their use. It was the first wooden well in the region due to that village being named Katkuian. Historically, this village comes under the Bettiah Raj zamindari.

Till the 1980s, Bhumihar and Brahmin households dominated the village. They were numerically very few, but they owned most of the land. The village primarily has two zamindar families: Mr Mishra (Brahmin) and Mr Singh (Bhumihar). How zamindars utilised loopholes of the Bihar Land Reforms (Fixation of Ceiling Surplus Land) Act, 1961, to safeguard their land and dominance, one can understand through strategies and tactics these two zamindars.

Old land documents show that around 10 acres of land of Mr Mishra's family came in the ceiling surplus land. According to the villagers, Mr Mishra's family constructed an inter-college, Giridharan Mishra Inter College, Bagaha, to safeguard their land. The college has a large extent of attached cropland as well. Even now, Mr Mishra's family are trustees of the college. Interestingly, that is only inter-college in that region.

The village temple has around 100 acres of attached cropland. This land officially belongs to the temple trust. Mr Singh's family claims possession rights. According to villagers, Mr Singh's family had constructed the temple and attached a large extent of their cultivable agricultural land to the temple. Only members of Mr Singh's family can be members of the trust. They left the village more than 30-40 years ago. However, they still control the temple and its trust. The land is cultivated on leased contracts.

These Brahmin and Bhumihar landlords had large extents of land, and their cultivation used to be organised by managers. Gradually, these landlord households had moved out of the village to towns and cities like Bettiah and Patna. They get involved more in government salaried jobs and businesses. However, they continued to hold a large extent of land.

In the late 1980s and early 1990s, Yadav landlords from nearby villages came to Katkuian. They bought or occupied the land of Bhumihar and Brahmin landlords. According to villagers, this process was not as smooth as it appears. This was the phase of the peak of the ‘social justice’ movement in Bihar. Lalu Yadav has also been elected as the Chief Minister of Bihar. Katkuian village comes under *diara*²⁶ region. The Yadav landlords from nearby villages have used violent tactics and social support from the dominant households from Yadav households to occupy land or buy land of Brahmin and Bhumihar households at throwaway prices.²⁷ However, the old Bhumihar landlord, Mr Singh's family, managed much of their landholding, particularly the one attached to the temple. In the subsequent phase, Yadav and Koeiri households emerged as politically and economically dominant households in the village. The next sub-section explores the village's current social and economic structure.

With this brief historical introduction to the village, let us move to the current condition.

²⁶ Region formed by deposition of river sand over time. Due to the changing directions of rivers, land rights have always been conflicted. Additionally, these regions of Bihar are the least developed and also have the worst law and order situation. Due to that, the crime rate has been higher in the Diara region in compared to the other parts of the state.

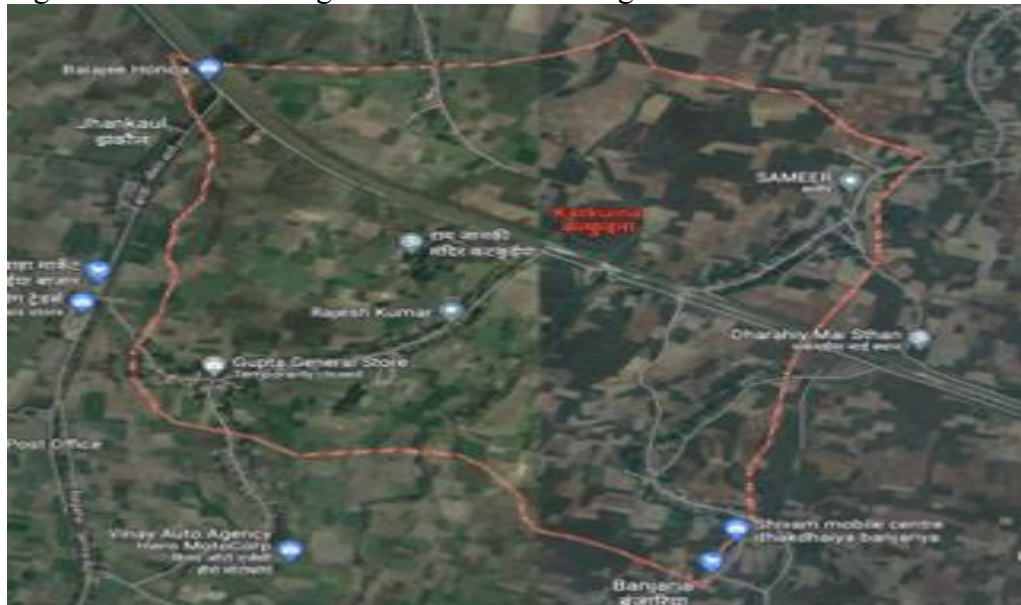
²⁷ Yadavs have always been numerically the biggest caste in the village. According to the villagers, the struggle for dominance among affluent Yadav households and landlord Bhumihar and Brahmin households dated back to the 1920s. That was the phase of the formation of Triveni Sangh. In popular parlance, that movement is also called the ‘Janeu movement’ assertion of the middle caste to wear the sacred thread, which was earlier reserved only for Caste Hindus. Whenever we discuss village history, one instance, Yadav households proudly state that in the 1930s, when the conflict between Yadav and Brahmin Bhumihar households reached its peak, A Bhumihar landlord's son humiliated a woman from a Yadav household from taking water from the wooden well. That was the village's only drinking water source at that time. The village did not have any other well. The Yadav households, in rage, gathered money and dug another well in their hamlet, which is currently called the ‘main gaon’. The Bhumihar households reacted to it by putting charges on the use of the well, as they are zamindars, and all land belongs to them, as do resources inside the land. The Yadav households agreed to pay the rent and continued using it. This well is still considered a prestige symbol for the Yadav households. Currently, the well is placed in the homestead land of the village sarpanch.

4.2 Locating the Village and its Current Social-Economic Structure

Katkuian village is located around 12 km from the Bagaha market. A concrete all-weather road connects the village; however, the only means of commuting is tempos (auto rickshaws), and the frequency is approximately 15 minutes. The nearest market and railway station is Bagaha. The local haat of the village is Semra Bazaar, which is around 2 km from the village.

The village was surveyed in 2012; then, the village had a total of 350 households. The total village population was 2,245 persons, with an average household size of 6.4 persons. The village had a pakka road. Most households in the village were settled on both sides of that road. Agricultural fields were behind the housing hamlets. The general condition of village was impoverished. 92 per cent of households were staying in non-pakka homes. Of that, 60 per cent had non-pakka roofs and walls. Figure 4.1 is a satellite image of the village.

Figure 4.1: Satellite image of the Katkuian village



Source: Google map.

One of the village hamlets, Vrindavan, was distantly settled, approximately 2.5 km through road. Many people in the village's main part considered the Vrindavan a separate village. Apart from that, other hamlets of the village were not distinctly separate. However, close observation of the village shows that the village was settled in a grouping of broader caste identities. Dalit households

were settled on two extremes of village road. They were either settled at the village entrance, the main road, or the village's end. Many of them did not have ownership of their homestead land. They were either settled on big landowners' land or *gairmazarua*²⁸ *aam* land.²⁹ Socially and economically affluent households were settled in the middle of the village. They call that 'main *gaon* (village)'. Non-influent middle-caste households were spread across the village.

The village had a 17 per cent Muslim population. A casual glance at the village looks as if it is a typical example of the *Ganga jamuni tahzeeb*³⁰ village. Muslims and Hindus in the village houses were side by side. In general, they were living harmoniously. However, the Muslim households were either landless or owned very tiny parcels of land. Their houses were mainly near the village mosque. Children of poor Muslim households depended on the Madarsa for introductory teaching; for this, young people from affluent Hindu households considered Muslim households orthodoxy/conservative.

Apart from Madarsa, the village had two Anganwadi, one in the main village and the other in Vrindavan. It also has one middle school (1st to 8th). However, children of affluent households were registered mainly in private schools in Bagaha. The nearest inter-college, Giridharan Mishra Inter College, was 10 km from the village.³¹

²⁸ Technically, it is public land. These specific kinds of land pattas originated in permanent land settlements (Zamindaari system). These patches of land were not distributed under any contracts to anyone under the *Zamindaari* arrangement. So, few kinds of literature conclude it is state-owned land. After independence, it belonged to the Government of Bihar. However, it has remained under the control of politically and economically influential people. It is informally sold also. Now, ownership of these lands remains with the Govt. of Bihar. However, informal sale and purchases also happen. Nonetheless, households cannot claim legal ownership over that land. *gair mazurua* lands are of two kind *gair mazurua aam* and *Gair mazurua khas*. *Khas* is government-owned land issued for cultivation before independence under any *Zamindaar* to a tenant. *Gair mazurua aam* are state-owned public land. *Gair mazurua* lands have been the centre of land conflict in Bihar. Redistribution of *gair mazurua* land has been one of the prominent demands in the land reform movement in Bihar post-Independence (Mishra, 1978; Das, 1992).

²⁹ Affluent households had occupied these *gair mazurua* lands; over time, parts of it were sold to landless households. The village had an active sale and purchase of *Gair Mazaurua* land, although it did not have legal backing. Currently, most of the homestead land of Dalit households was on *gair mazaurua* land. They bought from affluent households and lived there. Those who were staying on big landowners' land were attached labourers.

³⁰ It refers to a communally harmonious society. Lohiaist socialist parties in Bihar popularise this as a slogan against communal polarisation.

³¹ College is named after one of the village's old landlords; its history is discussed in the earlier section.

4.2.1 Caste structure of the village

Like other villages in India, Katuian is also socially, culturally, politically and economically organised on the axis of caste. Caste as a social structure has historically determined land ownership and access to other resources, both private and public. Control over these resources is crucial in separating Surplus-creating and surplus-appropriating households and forming socioeconomic classes (Ambedkar, 1936/2014; Srinivas, 1957; Chakravorty, 2001).

Katuian is a multi-caste village. The village had a total of 28 castes from different caste groups. The three castes belong to the Muslim religious community: Dewan, Ansari and Sheikh. Sheikhs are considered to be upper caste. The village had a total of 42 SC households and 10 ST households. In Bihar, the OBC caste group is divided into two broad caste categories: Backward Class 1 (BC-1)/Extremely Backward Classes (EBC) and Backward Class 2 (BC-2). BC-2 are those castes of the OBC caste group who attained certain social, political, and economic mobility due to historical access to land cultivation and state patronage and emerged as the dominant force among OBCs in Bihar (Kumar et al., 2008). The village has 163 households from the BC-1 group; those are spread over 15 castes. Mallah, Dhobi and Badhai are numerically the biggest among them. The BC-2 caste group had 120 households. This group had four major caste communities; among them, Yadav and Koiri are numerically the biggest groups. The village had 15 households from the caste group of 'Others'. This group is considered the upper caste in the social caste hierarchy. Seven were Brahmin, Seven were sheikhs (Muslim upper caste), and one household was Bhumihaar. For details on number of households from each caste and caste group (see Appendix 4.1).

When one looks into caste category-wise share in the village resources, it shows that BC-2 households, who were around 35 per cent of the village's total households, owned around 80 per cent of the village's agricultural land, they cultivated around 69 per cent of total operational holding. They owned around 78 per cent of the total assets. SC households comprised 12 per cent of the total households, owned just around 0.36 per cent of land holding, cultivated less than one per cent of the total operational holding, and owned just 0.86 per cent of the total assets. It shows the extent of inequality prevalent among different caste groups (Table 4.1).

Table 4.1: Caste category-wise distribution of households, ownership holding, operational holding and total asset value

Caste Category	Number of Households	Share (%)		
		Households	Ownership holding	Total asset value
SC	42	12	0.36	0.86
ST	10	2.86	0.24	0.51
BC 1	163	46.57	16.59	18.2
BC 2	120	34.29	79.87	77.79
Other	15	4.29	2.93	2.64
Total	350	100	100	100

Source: PARI survey data

From assessing the social structure of the village. One moves to the economic structure. The next section analyses the economic structure of the village.

4.2.2 Socio-economic Class Structure of the Village

The study divides village households into two groups: Farm-sector and non-farm-sector. Households who engaged in cultivation activities as cultivators or labourers are classified as farm households. Others are classified as non-farm households. 88 per cent of the households were farm sector households. The rest of the households were in the non-farm sector. One further bisects farm-sector households into four subgroups: LML households, LML (pure tenant) households, Owner-operator households and Surplus-appropriating households. The LML households owned no agricultural land in the village. Their livelihood was primarily dependent on manual labour. A section of LML households had also engaged in tenant cultivation. They are classified as LML (pure tenant) households. The owner-cultivator households owned and operated agricultural land between 0 to 10 acres and had a positive labour ratio.³² The surplus-appropriating households are defined as households that operate more than 10 acres of land and have zero labour ratio.

The purpose behind classifying farm households in this way was to separate, on one side, a set of households who possess no MoP in the agrarian production structure and depend solely on their

³² Labour ratio = $\frac{(\text{labouring out} + \text{family labour in own field})}{\text{Hired in labour}}$

manual labour for survival. On the other side, a set of households who do not put their physical labour into the production process get a return solely due to their possession of MoP and production organisation.

The non-farm households comprised 12 per cent of village households. These households had not engaged in cultivation or labour. Their livelihood depended primarily on petty businesses, salaried jobs, private or government, and artisanal and traditional caste-calling activities. It also included households without any working members dependent on support from relatives. Land ownership among non-agricultural households was low. Many of them were landless (Table 4.2).

The land and asset distribution in the village was skewed. Around 55 per cent of the village households were landless. Despite such a high rate of landlessness, 88 per cent of the households were farm households. Around 50 per cent of farm households were LML households. In that, 27 per cent of LML households were LML (pure tenant) households. 17 per cent of cultivators were landless tenants. Even among owner-cultivator households, the average land holding was around 1.5 acres, and the average land operated was 2.2 acres. On the other hand, among surplus-appropriating households, the average land holding was around 26 acres, and the average operational holding was 32.7 acres. Asset ownership also follows a pattern similar to that of land ownership (Table 4.2).

Table 4.2 Socio-economic class structure of village and distribution of agricultural land ownership

Sector		Households (no)	Share in total households (%)	Average land ownership (acre)	Average operational holding (acre)
Farm Sector	LML (non-cultivating) households	114	32.57	0.00	0.00
	LML (pure tenant) households	43	12.29	0.00	1.01
	Owner-Cultivator households	140	40	1.62	2.22
	Surplus-appropriating households	11	3.14	25.83	32.69*
Non- farm	Non-agricultural households	42	12	0.55	0.00
Total		350	100	1.53	2.04

Source: PARI FAS survey data, *one household leased in over 78 acres of land.

As one explores the caste and economic structure of the village, let us see if there exists a relationship between these two.

4.2.3 Caste and Socio-economic Structure

In rural Bihar, caste and class are embodied in each other (Chakravorty, 2001; Kumar, 2022). As discussed earlier, historically, caste has played a crucial role in forming class. When one maps socio-economic classes over caste categories, it shows that Most of the SC households were LML households. In contrast, all Surplus-appropriating households were from the dominant castes of the village. The owner-cultivator households were primarily from the BC-1 and BC-2 caste categories. In the village, the number of ST households was only 10. Of that, 6 were in the non-farm sector (Table 4.3).

Table 4.3 Mapping of households over Socio-economic classes and Caste categories.

Economic Categories	Caste Categories					Total
	ST	SC	BC 1	BC 2	Other	
LML (non-cultivating)	1	34	56	20	3	114
LML (pure tenant)	1	2	24	13	3	43
Owner-cultivator	2	5	61	67	5	140
Surplus-appropriating households				10	1	11
Non-farm	6	1	22	10	3	42
Total	10	42	163	120	15	350

Source: PARI survey data

From analysing the class and caste structure, one moves to the agrarian economy of the village, which was the principal economic sector of the village economy and also the main focus of the thesis. One begins by analysing the cropping pattern of the village and moves to assess the patterns of input and machine use. The primary focus would be on variations in modern inputs and machines among different economic categories.

4.3 Agrarian Economy of the Village

In the village, the total reported agricultural land holding was 534 acres. However, the total reported operational holding was 710 acres. It highlights a considerable presence of non-resident

landowners. The village was almost 100 per cent irrigated. The village had primarily two sources of irrigation: Tribeni canal³³ and borewell/tubewell. The canal water was available only in the kharif season, so the annual crops and rabi crops were more dependent on groundwater irrigation. One begins an exploration of the village's agrarian economy by assessing the cropping pattern.

4.3.1 Cropping Pattern

The village had a diverse cropping pattern. Households grew a variety of crops. In that, sugarcane was an annual crop. In the Kharif season, paddy was the primary crop. Wheat, lentil, and oil seeds were grown in the rabi season. Fodders and vegetables have shorter crop duration. They were grown in between the two agricultural seasons. Sugarcane and paddy were the principal crops of the village, and together, they covered around 80 per cent of the GCA (Table 4.4).

One notices a difference in the cropping pattern among LML (pure tenant) and other cultivator households. For the owner-cultivator households and surplus-appropriating households, sugarcane covered more than 50 per cent of the GCA. In the rest of the crop area, paddy was grown in the kharif season, and wheat was primarily grown in the rabi season. Among LML (pure tenant) households, the share of sugarcane in the GCA was around 36 per cent (Table 4.4). In the rest of the land, paddy was grown in the Kharif season and oilseeds and lentils in mixed cropping through *chhinta* method in the rabi season. It is a traditional and cost-effective cultivation practice. In that, seeds are spread in the paddy field approximately two weeks before paddy harvesting. Using the moisture of the paddy field, seeds germinate. It saves sowing irrigation costs. In this method, the crop does not need even a single irrigation. In this cropping, labour is needed only for harvesting operations. That is done mainly through family labour. As discussed in Chapter 3, this cultivation practice has continued for over 200 years in this region.

The differences in the cropping pattern can be due to two reasons: First, canal irrigation was not available in the rabi season. In that part of the season, rainfall is also negligible. Due to that, intensive cultivation depends totally on groundwater irrigation. Maybe due to that, households

³³ As discussed in the previous section, it was made in the 1890s in response to regular famine and militant agitations.

with substantial holdings were the ones that predominantly grew wheat. LML (pure-tenant) households opted for oilseeds and pulses through cost-effective cultivation practices. Second, for the case of LML (pure-tenant), household food consumption needs may have also played a role in determining their cropping pattern.

The cropping pattern of the village highlights the continuity of a centuries-long cropping pattern trend in the region: predominance of the cash crop and paddy. Moreover, poor cultivators grow oilseeds and pulses in mixed cropping. As discussed in the Chapter Three, since the 19th century, the cropping pattern of the Champaran region has been dominated by the cash crop, whether its indigo, opium or sugarcane. In the rest of the land, households grew paddy for sale and self-consumption. The poor cultivators grew pulses and oilseeds in mixed cropping through *chhinta* method. This cropping pattern looks to be continued even now (see Chapter Three).

Table 4.4 Socio-economic classes and cropping pattern

Classes	Gross Crop Area	Sugarcane	Paddy	Wheat	Oil seeds	Lentil	Fruits and vegetables	Fodder
LML (pure tenant)	82.80	30.53	32.78	3.75	5.48	7.05	3.23	
Owner-cultivator	606.46	301.70	158.40	35.63	40.74	41.26	26.01	2.73
Surplus-appropriating households	595.54	337.50	140.20	61.85	24.18	18.10	9.15	4.57
Total	1284.80	669.73	331.37	101.23	70.39	66.41	38.38	7.29

Source: PARI survey data.

As one observes from Chapter Two, Bihar's agrarian economy is witnessing a considerable surge in modern input uses and tractorisation. One analyses a village's agrarian input use pattern. HYV seeds, fertilisers and plant protections were primary green revolution modern inputs. The next sub-section explores the extent and pattern of modern input uses among different economic categories. Analysing input use patterns for all crops would be a tedious task. Due to that, one can only analyse the principal crops: paddy and sugarcane.

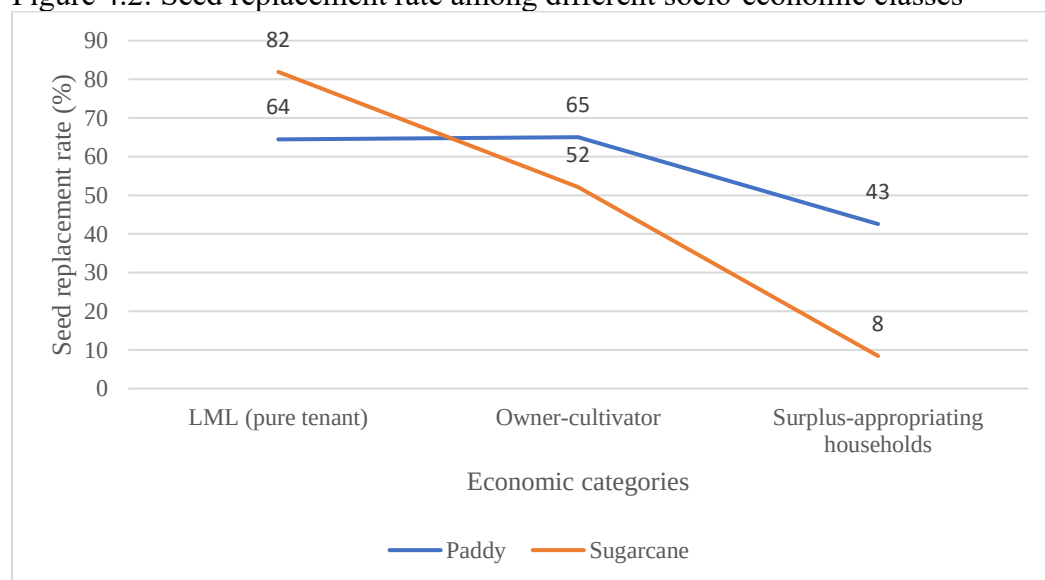
4.3.2 Input Use pattern

Seeds, manure, fertiliser and plant protection are primary inputs in cultivation. This sub-section analyses the pattern of these inputs use among different economic categories.

Chapter Two shows that Bihar's agrarian economy is witnessing a rising seed replacement rate. Here, one explores whether the seed replacement rate was uniform across different socio-economic classes or whether differentiated trends exist. The seed replacement rate of LML (pure tenant) was the highest for both crops. It was considerably low for the surplus-appropriating households. Particularly for sugarcane (Figure 4.2).

A relatively higher seed replacement rate among LML (pure tenant) households poses an interesting puzzle. It shows that households with the least resources are the ones who are using purchased seeds the most. One could not explore it due to a lack of proper reporting of seed varieties; one could not analyse the varieties and nature of purchased seeds among different economic categories. LML (pure tenant) households were the ones who used the highest share of purchased seeds. However, one needs to explore the kind of seeds they used. Was it the same, which other groups were using but home-grown? Alternatively, were LML (pure tenant) the ones who used the most modern variety seeds expecting a higher yield from the limited operational holding? Exploring this question could be an interesting exercise. However, data limitations limit this discussion here.

Figure 4.2: Seed replacement rate among different socio-economic classes

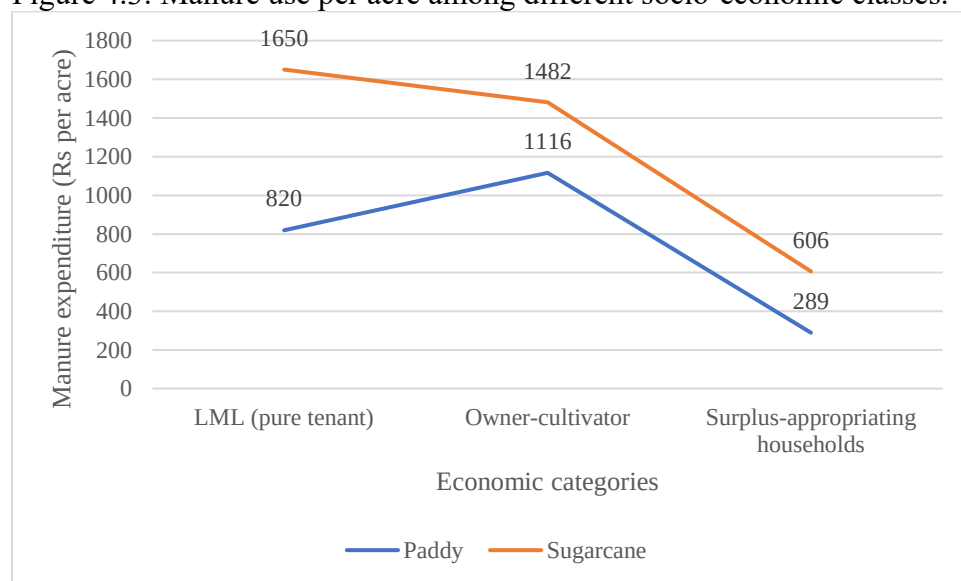


Source: PARI survey data

The manure use was reported in different units by different households. Some households reported in bullock carts, some in trolleys, and some in kg. Moreover, a standard conversion method could also be not derived. Hence, one analyses the money spent on manure per acre as a proxy of manure use. The expenditure per acre on manure was considerably high among LML (pure tenant) and owner-cultivator households for both crops. However, it was low among the surplus-appropriating households (Figure 4.3).

The decline in expenditure on manure with the increase in the class of cultivators could be caused by two sources: the use of lower quantities or access at a lower price. The manure was accessed through two sources: homegrown or purchased. Manure was purchased primarily from inside the village. There exists price variability. However, it was minuscule. This means that the considerable decline in manure expenditure among surplus-appropriating households is primarily due to a lesser quantity of manure used per acre. This means a negative association exists between the economic class of cultivators and manure use per acre.

Figure 4.3: Manure use per acre among different socio-economic classes.



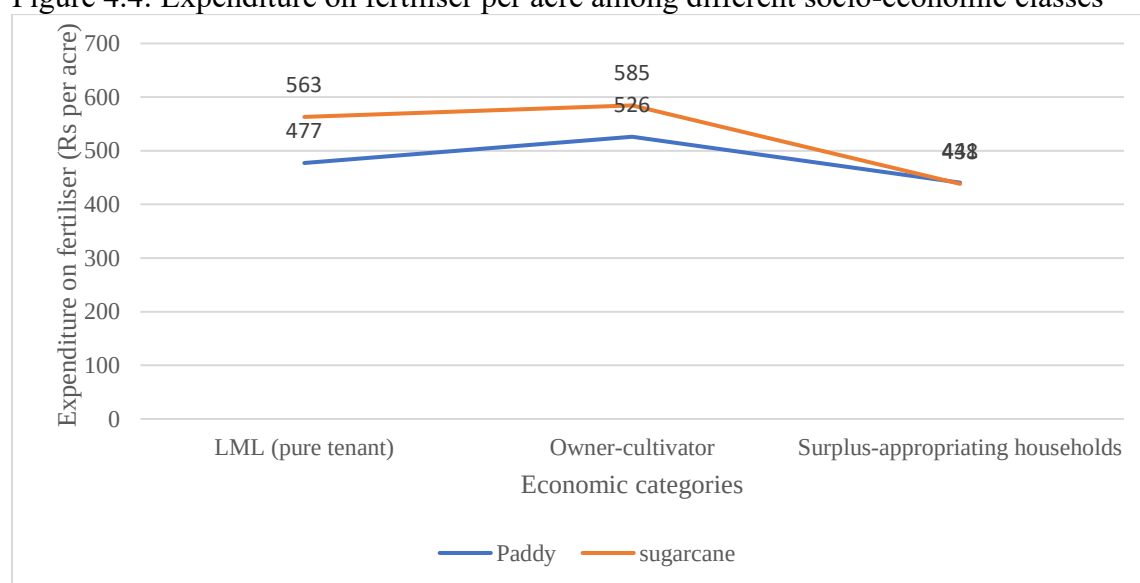
Source: PARI survey data

Households had used various inorganic fertilisers and in different proportions. Due to that, it was a difficult task to compare and assess the use of a particular fertiliser among different economic groups and over different crops. Hence, one presents expenditure on fertiliser per acre as a proxy of fertiliser use. When comparing expenditure on fertiliser per acre of different socio-economic

classes for paddy and sugarcane, one observes that the expenditure per acre on fertiliser of owner-cultivator households was the highest among all three groups for both crops. It was marginally higher than LML (pure tenant) households. Nevertheless, for the surplus-appropriating households, it was the lowest (Figure 4.4).

The difference in expenditure on fertiliser per acre was not very high among different groups. For paddy, the range was Rs 438 to Rs 526 per acre. For sugarcane, the range was Rs 441 to Rs 585 per acre (Figure 4.4). There is another caveat: the prices of fertiliser had considerable variations. Poorer households had access to fertiliser at a higher price, mainly from the black market.³⁴ So, a higher expenditure of a group does not necessarily mean higher fertiliser use. Hence, one cannot conclude a relationship between fertiliser use per acre and the classes.

Figure 4.4: Expenditure on fertiliser per acre among different socio-economic classes



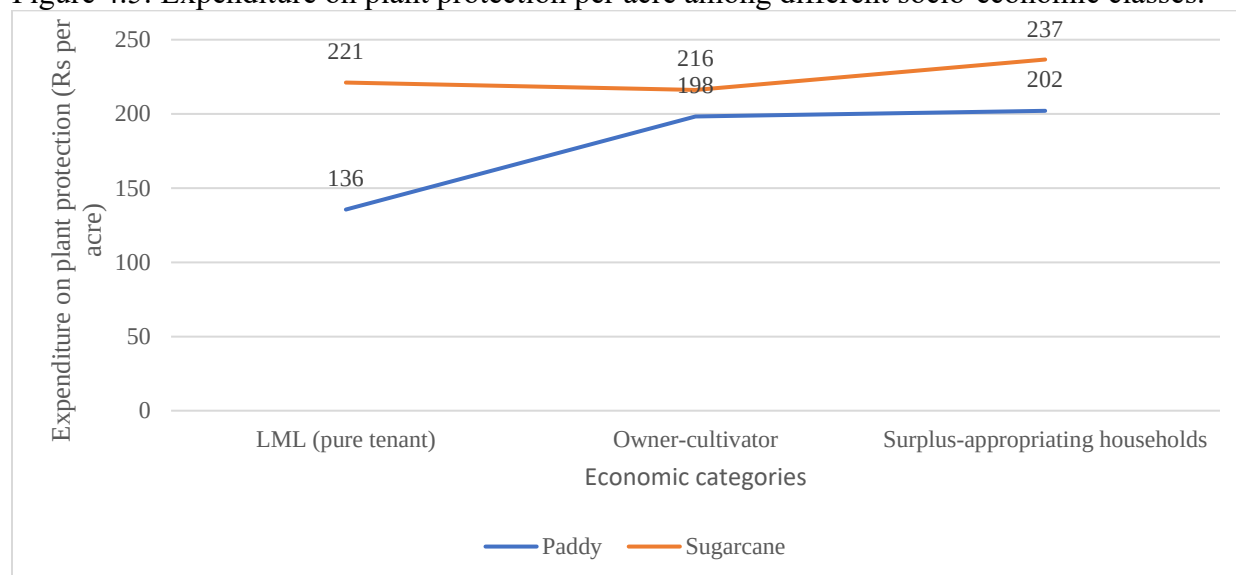
Source: PARI survey data

On plant protection, the PARI survey collects information only about crop-wise total expenditure. So, one presents expenditure on plant protection per acre by different classes for paddy and sugarcane. The expenditure on plant protection per acre for paddy and sugarcane crops shows that it was the lowest for the LML (pure tenant) households. In comparison, it was the highest for

³⁴ They could not access it from the registered input dealer shops. Hence, they could not access subsidies.

surplus-appropriating households. This means that a positive association exists between economic class and plant protection use per acre for plant protection (Figure 4.5).

Figure 4.5: Expenditure on plant protection per acre among different socio-economic classes.



Source: PARI survey

From input use patterns, one moves to the pattern of machinery use. Machine use in agriculture improves labour productivity, leading to better cropping intensity. The mechanisation of physically demanding operations such as land preparation reduces excessive human drudgery (Dhar & Patra, 2017). The next subsection explores the differences between machine and bullock possession and use in different economic categories.

4.3.3 Machine and Bullock Use

In the village, machine use was limited to land preparation, irrigation, transport, and threshing. The village also had an extensive presence of bullock use in cultivation. Bullock was used primarily for land preparation and transportation. Cultivators from all classes reported the use of both bullocks and machines. However, LML (pure tenant) and cultivators with smaller operational holdings were the ones who substantially used bullock carts. Due to their smaller operational holding size and their final output having a lower volume, the tractor might not be economically optimal for land preparation and transportation.

The village had primarily three major machinery: pump sets (diesel), threshers and tractors. When one looks into machinery ownership, it shows a positive association between household economic condition or status and machinery possession, particularly for tractors and threshers. The surplus-appropriating households owned most of the threshers and more than half of the tractors. In contrast, the LML households did not own a single major machinery (Table 4.5). When one looks into bullocks, its ownership was primarily among landless and low land-owning households. The village had a total of 121 bullocks. In that LML households owned 37 bullocks. Owner-cultivator households owned 71 bullocks. In contrast, surplus-appropriating households owned just seven (Table 4.5).

Table 4. 5 Ownership of major machinery and bullock among different socio-economic classes

Household classifications	Machine owned (number)				Bullock (owned)
	Total	Pump (Diesel)	Thresher	Tractor	
Surplus appropriating households	30	13	4	13	7
Owner-cultivator	33	22	1	10	71
LML (pure tenant)					21
LML (non-cultivating)					16
Others	1	1			6
Total	64	36	5	23	121

Source: PARI survey data

Not all households who used machines owned it. The village had an active machine rental market. Machine renting was prevalent through two institutions: renting on hourly payment and piece-rated payment. Tractor hiring for land preparation was paid on an hourly basis. The prevalent hourly rate of tractor hiring was Rs 300-400 per hour. Thresher and pump were hired on a piece-rated contract. The modal rent for hiring a thresher for paddy threshing was 1/16th of the total grain from threshing. The modal rental rate for irrigation was around Rs 1300-1400 per acre. In the case of bullocks, many households reported using them for land preparation or transportation had owned it. However, there exist instances of the use of hired bullocks. In that, some households rented bullock carts if they had bullock. This arrangement did not have a structured market. The most established practice was hiring a bullock with a bullock cart driver. In that modal, rent was around Rs 300-400 per cart. A cart usually contains 15-20 qt of sugarcane. Interestingly, the modal

rate of transportation through the bullock cart to Bagaha II mill (12 km from the village) and Semra bazaar (2.5 km from the village) was almost similar.

From a brief introduction to input and machine use patterns in the village, one moves to the primary markets in the village: Land, Credit and Labour.

4.4 Functioning of Land Market

This section explores the functioning of the land market. The land markets are of two kinds: one exchange of ownership rights over the land (sale and purchase of land) and another transfer of operational rights over the land for a specific period (tenancy and mortgage). The land sale and purchase transactions were low in the village. Moreover, it will be discussed in detail in Chapters Six and Seven. This section focuses on the tenancy and mortgaged relations.

4.4.1 Tenancy relations in the village

Land tenancy and its economic rationales and exploitative natures have been central to India's agrarian studies. Much literature has already been written on the nature of the agrarian economy and the extent, nature and prevalent forms of tenancy (Bardhan & Srinivasan, 1971; Bharadwaj & Das, 1975; Bardhan, 1979; Pant, 1980; 1983; Byres, 1983/2005; Bhaduri, 1983; Chakravorty, 2001; Bansal et al., 2018; Bansal, 2020; Bhattacharya, 2022; Kundu & Goswami, 2022). In this sub-section, one briefly presents the extent, forms and nature of tenancy prevalent in the village.

There are four possible indicators of the extent of the tenancy: 'leased in' to total operated land, tenant to total cultivator households, 'leased out' to total owned land and lessor to total land owner households. In the village, 37.29 per cent of the total land operated was under tenancy relations, 59.8 per cent of the total cultivators were tenants, 21 per cent of landowners had leased out land, and around 10 per cent of landownership was leased out (Table 4.6). As the PARI survey covers only village residents, it could not cover information regarding leasing out of the 'non-resident landowners'. That may have reduced the actual extent of leased out in the village. Nevertheless, the statistics on the extent of tenancy highlight that in the village, tenancy was widespread.

Table 4.6 : Extent of tenancy in the village

Indicators of the extent of tenancy	Per cent
Tenant as % of cultivator HHs	59.82
Leased in land as % of total operational holdings	37.29
Partial lessee HHs as % of Cultivator HH	35.2
% land leased in by lessee HH	81.0
Pure Lessee HHs as % of Cultivator HH	23.0
% land leased in by Pure lessee	19.0
% land leased out of total ownership holding	10
Lessor household to land owner households	21.1
Pure lessor as % of landowning HHs	5.52

Source: Survey data

When one looks into contract forms. Village primarily had four contract forms: Fixed rent (produce), share rent contract, fixed rent (money) and attached labour. In that, fixed rent (produce) and share rent contracts were predominant. The village had a total of 151 fixed rent (produce) contracts. It was primarily for sugarcane and paddy. The village had 147 share rent contracts. It was primarily prevalent to cultivate paddy in the Kharif season and mixed cropping of pulses in the rabi season. The fixed rent (money) had very few contracts. It was mainly in the cases first, tenancy contracts on the Panchayat land (Government land) and second, in few cases of non-resident lessors. Finally, in the attached labour relations, many surplus-appropriating households had given a parcel of land to their attached labour as enumeration.

When one looks into the nature of tenancy, the village presents two different kinds of tenancy. First, lease a large extent of land from non-resident landowners. These tenants were primarily surplus-appropriating households. In this contract form were fixed rent (money), and rents were substantially lower than modal village rental rates. In the second kind of tenancy, landless and near landless households 'leased in' tiny parcels of land.

In this sub-section, one observed that tenancy was an important institution of the land organisation in the village. Socio-economic classes and tenancy will be discussed in detail in the upcoming chapters. Now, let us move to mortgage relations in the village.

4.4.2 Mortgage relations in the village

As discussed in Chapter 3, land mortgages for debt are historically prevalent in the Champaran region. This subsection discusses the extent, forms and nature of mortgage practices in the village.

One can measure the extent of the mortgage through four possible indicators. These are the share of households mortgaged-in the land to total cultivating households, the share of mortgaged-out land to total operated land, the share of mortgaged-out households in total land-owning households, and the share of mortgaged-out land to total land owned. In the village, around 19 per cent of cultivating households reported mortgaged-in of land and around 3.2 per cent of the total operated land reported to be mortgaged-in. When one looks into mortgaged-out, around 34 per cent of the landowning households reported mortgaged-out and around 10 per cent of the ownership holding was mortgaged out (Table 4.7). Households could access Rs 72-73 thousand credit by mortgaging one acre of land.

Table 4.7 Extent of mortgage and average mortgage rates in the village

% HH mortgaged-in land to total cultivating HH	19
% Mortgaged in land to total land operated	3.2
Average Mortgaged amount per acre land mortgaged-in (Rs)	72,113
% HH mortgaged-out to total land-owning HH	33.73
% total mortgaged-out land to total land owned	10.18
average mortgaged amount per acre land mortgaged-out (Rs)	73,152

Source: Survey village

In the village, mortgaged contracts were of two forms: usufruct contracts and mortgaged out-leased in. In a usufruct contract, households who are mortgaged in the land get operational rights over the land until the amount is repaid. In this case, operational right over the land is an intrinsic interest amount. Second, mortgaged out-leased in, in this contract, the mortgagor household (who mortgaged-out land) leased the same land on a fixed or shared rent contract. In this contract, the mortgagor household pays rent on the land till the debt is not repaid. In this case, the rent paid acts as an interest component.

When one looks into the nature of a mortgage, the village gives an interesting observation. A mortgage contract is usually looked at from the perspective of poor households who own small parcels of land and mortgage their land in urgent need of money. However, in this village, landless and near-landless households were primary mortgagees (households who mortgaged-in land). In the village, a total of 51 households reported mortgaged-in land. Of that, 16 were landless. If one considers marginal land ownership (less than 1 ha (2.47 acres)) as near-landless, then around 86 per cent of total mortgagee households were landless or near-landless. Furthermore, they together mortgaged more than 76 per cent of the total mortgage-in land (Table 4.8). For a detailed discussion on the rationale of landless and near-landless households and landed households to engage in mortgaged relations (see Appendix 4.2).

Table 4. 8 Land ownership size class and mortgaged in land.

Land ownership size class (acre)	Number of mortgaged in households	Share in total mortgaged land (%)
Landless	16	27.78
0 to 1	17	24.75
1 to 2.5	11	23.74
2.5 to 5	1	1.92
5 to 10	1	1.6
10 acres and above	5	20.22
Total	51	100

Source: PARI survey data

This sub-section shows a considerable presence of mortgage relations in the village, which started in the region more than a century back. However, it has changed in its character (see Appendix 4.2). From the functioning of the land market, let us move to the functioning of the credit market in the village.

4.5 Functioning of credit market

Literature on credit separates rural credit into two parts: consumption loans and production loans. Households from all socio-economic classes do have some consumption loans; however, the debts of rural labourers are primarily consumption loans. Meanwhile, production loans are mainly available to cultivators and non-farm business households (Chavan & Patra, 2017). Due to limited access to formal credit channels, rural credit has become a complex and exploitative institution.

The moneylenders or landlords have used debt to interlock the functioning of land, labour and credit market to exploit maximum surplus (Bardhan, 1980; Pant, 1980; Bhaduri, 1983; Bharadwaj, 1985; 1989; 1994; Chakravorty, 2001; Dhar et al., 2022). These features of rural credit make it an intricate subject of inquiry. This section explores the extent, sources and purpose of indebtedness and prevailing interest rates in the village for different economic categories.

In the village, almost 80 per cent of the households were indebted. The IOI was invariably high among all economic categories. However, the DAR shows a considerable variation with economic categories. It was as high as around 25 per cent among LML (non-cultivating) households and less than one per cent among the surplus-appropriating households (Table 4.9).

Broadly, there are two sources of credit: formal and informal. Indian villages, in general, have three sources of formal credit: commercial banks, Regional Rural Banks and Credit Cooperatives (Chavan & Sivamurugan, 2017). The study village had a branch of Gramin Bank, a regional rural bank. Additionally, the Block office in Bagaha had branches of three commercial banks, namely State Bank of India (SBI), Central Bank of India (CBI), and Punjab National Bank (PNB). These were the primary sources of formal credit for the village. Formal credit transactions in this setting primarily involved land as collateral. The average interest rate on formal loans was around 7 per cent, which ranged from 4 to 13 per cent. However, accessing formal credit often required agents' involvement and bribery, including getting a Kisan Credit Card (KCC). KCC loans accounted for approximately 60 per cent of all formal credit. The interest rate on the KCC loan was 7 per cent, and there was a rebate of 3 per cent if repaid within a year. This meant that if a household repaid the loan by the next agriculture year, the interest on the KCC loan would be 4 per cent.

The share of formal loans was, in general, low. However, there was considerable variation in the share of formal loans and economic categories. Among LML (pure tenant) households, they had no formal loan. Among LML (non-cultivating) households, just one per cent of the total loans were from formal sources. On the other hand, among the surplus-appropriating households, around 16 per cent of total loans were from formal sources (Table 4.9).

In the village, primary sources of informal loans were big landowners, input dealers, merchants, migrant labourers and friends and relatives. The village did have professional money lenders. However, informal loans from professional moneylenders comprised just around 2.5 per cent of the total informal loans. Semi-formal institutions such as microfinance companies were negligible in the village. Only two households reported loans from private finance companies.

One presumes that all households had access to informal loans. However, the variable of interest becomes the rate of interest. The average interest in informal loans was high, around 40 per cent. However, there were considerable variations in the economic categories. The average annual interest rate for informal loans among the surplus-appropriating households was 14 per cent, which was not much different from the interest rates from the formal sources. For the owner-cultivator households, the average interest rate was 33 per cent. The LML households had to pay around 50 per cent interest rates on their informal loans (Table 4.9).

On the basis of the purpose of the loan, debts can be classified into two groups: consumption loans and production loans. Consumption loans include debts for purposes like medical emergencies, marriage, meeting households' daily consumption needs, etc. The production loans include debt, which is spent on income creation. It includes loans for organising businesses, cultivating them, etc. In the village, the share of production loans was generally low. However, it had variation with the economic categories. The share of production loans among surplus-appropriating households was around 32 per cent. It was around 26 per cent among owner-cultivator households and 22 per cent among non-farm households. In contrast, among LML (non-cultivating) households, only around 5 per cent of the loans were for production purposes (Table 4.9).

Table 4.9 Socio-economic classes and credit market indicators.

Economic Categories	IOI (%)	Debt to asset (%)	Share formal loans (%)	Share production loan (%)	Annual interest rate (informal) (%)
Surplus-appropriating households	64	0.89	16.22	32.43	13.9
Owner-cultivator	79	4.66	7.14	26.29	32.8
LML (pure tenant)	79	14.84	0	14.46	46.6
LML (non-cultivating)	83	25.95	1.14	5.32	50
Non-farm	67	7.23	2.41	21.69	35.5
Total	79	13.78	4.41	18.14	40.3

Source: PARI survey data, IOI: Incidence of Indebtedness.

Among LML households, loans were predominantly for consumption, from informal sources and at very high interest rates. It kept them on the verge of falling into a debt trap. Many of the LML households were in the generational debt-attached labour bondage. Even in the cases when labour attachment was not visible. Indebted labour households had certain labour obligations to the lending households. The debt-labour attachment will be discussed in detail in chapter seven.

The situation of the LML households was such that they were forced to take food grain loans. Although it was not significant, it was prevalent in the village. LML households borrowed food grains on interest. In this credit contract, the borrower had to pay grains in the next season with interest, which was also paid in the form of grains only. The interest rate was 1/8th the quantity of borrowed grains. In a few cases, when LML (pure tenant) households had a crop failure or low production, and the rental contract was fixed rent. They borrowed food grains to pay rent. In some cases, landed households allow them to continue cultivating the same parcel of land for the next agricultural season; however, rent becomes rent plus grain interest. That is paid in the form of grains only.³⁵

The section discussion shows that the village had limited access to formal credit. That was primarily to the surplus-appropriating households. In informal debts, interest rates are a

³⁵ A LML (pure tenant) household had crop failure in a fixed rent (produce) contract in the previous agricultural season (2010-11). In the survey reference year (2011-12), they continued cultivation on the same plot with a rental agreement of fixed rent plus unpaid grains of the previous year's rent plus 1/8th of unpaid grains of the previous year's rent. In 2011-12, despite being a normal production, their rent was more than the total production. This pushed households into the debt cycle.

considerable variation with the socio-economic classes. With this brief discussion on the functioning of the credit market, let us move to the functioning of the labour market in the village.

4.6 Functioning of the labour market

The literature on agrarian studies in India has widely discussed labour relations and wage determination. This is primarily because labour relations in agriculture are very complex and heterogeneous. As Bharadwaj, 1989, argues, the labour market in Indian agriculture is still under formation. Ramachandran, 1990, based on fieldwork in Tamil Nadu, highlights the predominance of direct and indirect labour control despite the penetration of capitalistic production organisation. Chakravorty, 2001, based on fieldwork in Bihar, presents a complex interplay of caste and class in the functioning of the labour market. Ramachandran, 2011, emphasises that in the Indian countryside, agricultural labour and non-agriculture labour have become a homogenous group. Singh & Kumar, 2023, argue that with growing mechanisation and piece-rated agriculture labour, even poor peasantry cultivation is also becoming hired labour dependent. This means that labour-supplying households are also emerging as demanders of labour.

In these contexts, this section explores the functioning of the labour market in the village. The section has four subsections. The first subsection explores the availability of agricultural labour in the village and the gender dimension of agricultural labour. Subsection two discusses agricultural wage rates and their complexities in the village. Subsection three briefly discusses the functioning of long-term labour in agriculture in the village. Subsection four explores the condition of non-agricultural labour and prevailing wage rates in non-agricultural tasks in and around the village.

In this thesis, a working person is defined as a person aged 16 to 65 who reportedly engages in paid economic activities in primary or secondary status.³⁶ In the village, around 812 people engaged in agricultural labour and 351 in non-agricultural labour. Workers, particularly male

³⁶ The study understands that non-remunerative activities are equally economic activities, which are often more important in our lives than paid economic activities. This definition of the working person has the potential to hide the contribution of female labour in the village economy, particularly reproductive work. However, this definition is opted only for the sake of comparability with other similar studies.

workers, engaged in both agricultural and non-agricultural labour based on the availability of non-agricultural work.

4.6.1 Labour absorption in agriculture

This subsection explores the following questions: How many total labour days were available in agriculture in the village in the survey reference year? What were the different kinds of labour utilised, and what was their relative importance? What were labour-intensive crops, and what were the operations in the village? Does gender play any role in the labour market in agriculture in the village?

In agriculture, different forms of labour were utilised: family, hired, long-term, exchange and piece-rated. One presents the total labour demand of all different kinds of labour by households in different economic categories. The number of work hours in agriculture depends on the particular agricultural operation. For instance, harvesting is a full-day task. However, weeding is usually done only in the first half of the day. Due to that, the days of labour use are standardised into eight hours a working day. There are a few caveats to this. In long-term labour, the work days and tasks are not defined. Furthermore, the long-term labour contracts were primarily made with male labourers. Households that reported long-term labour reported days of only male labourers, even though female labourers also had to work. In this contract, tasks performed by female labourers are unaccounted and unenumerated. Due to these limitations, reported labour days used are not standardised in long-term labour, and only male labour is presented. Second, in piece-rated labour, a task is contracted on the piece-rated, and a group of workers takes the contract and finishes the task. The households do not keep track of who is employed and their working hours. Due to that, the sex of the labourers could not be segregated.

In the survey reference year, the total number of days of labour absorption was around 41 thousand work days. This means that, on average, the availability of labour opportunities in agriculture was around 51 days for each labourer per year. In the village piece, rated labour was the predominant form of labour use. Around 44 per cent of all labour use was through piece-rated contracts. Furthermore, around 58 per cent of hired labour use came on piece-rated contracts (Table 4.10).

When one looks into socio-economic class-wise kind of labour use, it shows that the hired labour (casual and piece-rated) was predominant across the groups. The share of family labour was the highest among the LML (pure tenant) households. However, among them, it was also less than 50 per cent. Family labour declined in the subsequent groups, and for the surplus-appropriating households, the share of family labour in the total labour use was around 5 per cent. Moreover, it was predominantly supervision and irrigation. The use of long-term labour was a specific class feature of the surplus-appropriating households. The use of exchange labour was negligible. Moreover, it was prevalent only among LML (pure tenant) households and owner-cultivator households (Table 4.10).

In analysing the gender aspect of labour use, one faces difficulty that sex-wise information on labour use in piece-rated contracts was unavailable. And as discussed earlier, it was a pre-dominant labour contract in the village. Here, one analyses female labour use in hired daily casual labour. It shows that more than 62 per cent of hired daily casual labour was female labour. Even in exchange labour, female labour use was higher than male labour. Only in family labour, the male labour use was higher than female (Table 4.10).

Table 4.10 Socio-economic class and kind of labour use.

Economic Categories	Family		Causal		Piece rated	Long-term	Exchange		Total
	Male	Female	Male	Female			male	female	
LML (pure tenant)	942	392	237	558	578	0	78	38	2822
Owner-cultivator	5431	1357	1991	3922	6688	0	94	222	19704
Surplus-appropriating households	1080	64	2500	3390	10758	809	0	0	18601
Total	7459	1815	4728	7869	18023	809	172	260	41,136

Source: PARI survey data

One presents operation-wise labour use for the principal crops, sugarcane and paddy, to understand crop-wise labour absorption. These were also the main labour-absorbing crops in the village. Together, these two crops utilised around 90 per cent of the village's total labour use in agriculture. Here, one presents labour use for four operations: land preparation, transplanting and intercultural activities, harvesting and post-harvesting tasks. These four operations together covered around 94

per cent of the total labour use in paddy and sugarcane combined. Here. Transplanting and intercultural operations include transplanting, sowing, weeding, irrigation, etc. In that case, transplanting was applicable only to paddy. The operation-wise labour use pattern shows that transplanting and harvesting were the most labour-intensive in paddy cultivation. In the case of sugarcane cultivation, sowing and harvesting was the labour-intensive operation. The labour utilisation in the sugarcane ratoon crops was almost one-third of the planted crops (Table 4.11).

Table 4.11 Labour absorption in main agricultural operations in principal crops.

Crop/agricultural Operations	Land preparation (days)	Transplanting and intercultural operations (days)	Harvesting (days)	Post Harvesting (days)	Labour use per acre (days)
sugarcane Planted	875	3435	7063	276	51
sugarcane ratoon	490	2077	3973	71	18
Paddy	1379	8190	5861	742	49

Source: PARI survey data

Patterns of use of different kinds of labour and labour intensity of different agricultural operations pose an intriguing question: Does any pattern of agricultural operations and kind of labour used exist? What operations were done by family labour, piece rated and hired casual daily labourers? Here, one drops exchange labour as its use was minuscule in the village.

The agricultural operations and kind of labour use give some interesting observations. First, family labour was proportionately present in all major operations. However, it was primarily used in land preparation. The hired female labour was primarily utilised in transplanting and intercultural activities and post-harvesting operations. Furthermore, harvesting was done predominantly using the piece-rated labour (Table 4.12).

Table 4.12 Share of different kinds of labour use in main agricultural operations.

Operation/kind of labour	Family labour (male)	Family labour (female)	Hired labour (male)	Hired labour (female)	Long term labour (male)	piece rate
Land preparation	35.48	1.13	23.76	0.00	0.75	38.84
Transplanting and intercultural operations	17.20	4.07	15.76	35.52	0.91	26.54
Harvesting	13.56	5.02	5.02	7.17	0.22	69.02
Post Harvesting	17.02	3.32	5.41	43.80	7.16	23.30

Source: PARI survey data.

From the analysis of labour absorption, labour-intensive operations, and gender aspects in the division of labour, the next subsection discusses prevailing wage rates in the village.

4.6.3 Wage rates in agriculture

Agricultural wages differed from operation to operation, and wage differential over gender was mitigated through gender-based division of agricultural operations. However, in certain cases, even though males and females both engaged in the same operation, they were paid differently. The village had different kinds of labour payment arrangements. The most popular ones were daily cash payments and piece-rated kind (grain) payments.

Land preparation was done predominantly by male workers, who had negligible use of female labour. It was performed either through a tractor or bullock. Those households that owned tractors usually prepared land using family labour. However, surplus-appropriating households hired tractor drivers on long-term contracts, often for the whole agriculture season. In some cases, tractor drivers were hired on daily wages. In that case, daily wages were, on average, Rs 150 per day. In the case of land preparation through bullock, payment of wages includes rental charges for bullock and equipment. The prevailing daily wage rate for land preparation by bullock was Rs 200 per day. In case land preparation is done through a hired tractor. Usually, that was done on a piece-rate contract. That varies from operation to operation (wet ploughing or dry ploughing) and also

depends on the condition of the field. The most prevalent rate of land preparation through tractors was around Rs 50 per *kattah*³⁷.

Sowing and transplanting were mainly female operations in the village. The prevailing wage rate for transplanting paddy was Rs 30 per 60 saplings. Female labour usually takes 4-5 hours to finish this work, and transplanting paddy is very tiring work, so this becomes a whole day of labour. Sugarcane sowing includes making furrows and planting. This was piece-rated work; the prevailing wages were Rs 60 per *kattah*.

Harvesting was the operation that was majorly done by hired labour on piece-rate contracts. In the case of paddy and wheat harvesting, the popular wage rate was 1/12th of the total production.³⁸ For low-productive crops like lentil linseed and chickling vetch, the harvesting wages vary from 1/6th to 1/9th of total production based on cropping intensity.³⁹ Sugarcane harvesting was also done at a piece rate only. However, that was area-wise, and payment was cash and sugarcane leaves (used as animal feed). Few households, particularly those with smaller operational sizes, have hired daily wage labour for sugarcane harvesting. In that case, the average wages of male workers were Rs 100, and for females, it was Rs 35. The maximum wage reported to be paid to the female labourers for harvesting sugarcane was Rs 50. For male labourers, wage rates had considerable variation due to the persistence of different varieties of labour control institutions; however, these were in very complex and hidden forms. Some of this will be discussed in Chapter Seven.

4.6.3 Long-term labour

The exploitative nature of the attached labour institution has been one of the most debated issues of labour relations in rural Bihar. Till the 1980s, it was the dominant form of labour organisation

³⁷ In the village, land is measured in *dhur*, *kattah* and *bigha*. 20 *dhur* = 1 *kattah*, 20 *kattah* = 1 *bigha*. One *bigha* = 1.6 acre. The method of measurement of land in *dhur*, *kattah* and *bigha* is broadly followed across the eastern Indian states. The ratio of *dhur*, *kattah* and *bigha* is similar. However, the size of a *dhur*, a *kattah* or *Bigha* in standard measurement units differs. One observes that if one travels from south to north in eastern India region, the size of *kattah* increases. For instance, the conversion rate in southern Bengal (Bankura district) is approximately 50 *kattah*=1 acre. In north-central Bihar (Samstipur district) it is around 22.5 *kattah*=1 acre. By the time one reaches West Champaran (northern most part of the Bihar) it is 12.5 *kattah* = 1 acre.

³⁸ Labourers make bundles after harvesting; every 12th bundle is their wage.

³⁹ For mixed cropping, it was 1/6th, and for single cropping, it was 1/8th or 1/9th. In the case of low production, wages were even around 1/4th.

by big landowners (Prasad, 1976; 1979; 1987; Rodgers & Prasad, 1983; Wilson, 1999; Chakravorty, 2001; Jha, 2004). Recent literature on their respective fieldwork has pointed to the decimating or non-existence of attached labour relations (*begaari*) in Bihar's countryside (Jha, 2004; Sharma et al., 2012; Rodgers et al., 2013; Sahay, 2020). In this context, this subsection explores whether attached labour was prevalent in the village and, if yes, its extent.

The village had a prevalence of long-term labour, including attached labour. It was a unique feature of labour organising of surplus-appropriating households. For long-term labour, days of work and tasks were not defined. The village had three kinds of long-term labour: Long-term labour (non-attached), which was employed for machine operations, and attached labour (through land) and attached labour (through debt). Households with attached labour hold the 'right to first call' on their attached labour and their family members. These household members are forced to perform various unpaid services for their employer's family, which was always *begaar* (unaccounted and unremunerated). Abuse and disrelish are regular affairs for them.

The village had 26 attached labour households. The average annual cash earning for long-term labourers was Rs 13.5 thousand. Usually, all long-term labourers were served food when they worked a full day. At festivals or ceremonies, they receive clothes and grains. The prevalence and condition of long-term labour in the village will be discussed in detail in chapter seven.

In analysing agricultural labour in the village, one finds that labour absorption in agriculture was lower. Moreover, the wage rates were generally low. Even with such low wage rates, there existed a considerable gender gap. The wage differential in wages is generally mitigated through gender division in agricultural operations. However, there existed cases in which male and female labourers worked in the same operation, and there were differences in wages. Furthermore, the village sees a continuity of attached or bonded labour institutions. From agriculture labour, let us now explore the extent of availability of non-agricultural labour in and around the village and prevailing wage rates.

4.6.4 Labour Absorption in non-agriculture

Labour employment availability in the non-farm sector was limited and low. It was primarily construction, piece-rated loading unloading work in a sugar mill and Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) work. Total labour days absorption in the non-agricultural sector in the survey reference year was around 15 thousand days. On average, the total availability of work per person in the non-agricultural sector was 43 days. The average wage rate for construction labourers and loading and unloading labourers in Sugar mill was around Rs 150 per day.

As one observes with the condition of the village labour market, the average number of days of employment was low, 51 days in agriculture and 43 days in non-agriculture. Furthermore, the prevailing wage rates were also low. In these conditions, the village observes high rates of labour migration. The next section explores the conditions of work migration from the village.

4.7 Labour Migration from the village

This section discusses the extent and nature of migration from the village. The village had a historic migration channel to a village named Tehang in the Jalandhar district of Punjab. The section will briefly discuss that as well.

As seen in the previous sub-section, labour days available in and around the village were low, not even 100 days per year per person. In that situation, migration emerged as one of the most prevalent livelihood avenues among labour-supplying households. In the survey reference year, 189 households reported labour migration of at least one member from working age for work. A total of 346 members were reported to be in labour migration. The labour migration was primarily prevalent among LML households. Migration and its impact on the livelihood of LML households will be discussed in chapter five.

The labour migration from the village was informal, short-term, seasonal and highly mobile in nature. The workers migrate to even 4-5 destinations in a year and engage in distinctly different

activities in each place. Here, the migrants are precisely male from the working age group. This particular nature of migration has converted a large number of households into bi-nuclei households, where members of the households are residing at two different locations. However, they are connected by economic interests. In this set-up, the Head of Household continued to make major household decisions even in absentia.

The nature of labour migration poses a complex question: Where can one place this kind of migration in the broader literature of migration? Based on three criteria –the likelihood of migrants to return, the frequency of return, and the duration of migration – Gonzalez, 1960, classified migrants into three types: temporary-recurrent, indefinite, and permanent relocation (cited in Wiest 1973). The temporary-recurrent type of migration (sometimes called “circular migration”) is similar to the village’s labour migration pattern. As defined by Wiest, temporary-recurrent migration applies to individuals who are absent for a period of time usually not exceeding one year, but who indicate their intention to return, so the resident household members describe the absence in temporary terms where “...temporary migration emphasises the intent of the migrant as perceived by himself and/or household members, rather than the length of his absence” (Wiest, 1973). Apart from the nature of migration, the location of wage-labour migrants in a household – in terms of economic cooperation, co-residence, and domestic function – needs to be established (Wiest, 1973).

In Katkuian, the wage-labour migrants perform the function of economic cooperation, as their wage earnings in the destination, in some cases, supplement household income in the village and in others, change the structure of income generation through the acquisition of certain MoP. Furthermore, the wage-labour migrants influence household affairs, even in absentia, through different modes of communication, and they remain attached to the household as a “non-localised family,” according to Gonzalez (1960).

The village has a historical labour migration network to Tehang village of Jalandhar district, Punjab. Since the late 1960s, workers from this village have been migrating to Tehang in large numbers yearly as agricultural labourers for sowing and harvesting paddy and wheat. In the survey, 73 workers reported seasonal migration to Tehang. Besides agricultural labour migration to

Tehang, workers also migrated to urban localities. Towns of Punjab like Jalandhar and Ludhiyana were other major migration destinations for the villagers.

Few LML households managed to create some assets through migration. Eight owner-cultivator households bought land in the last years and became owner-cultivators from landless households. However, the impact of migration, in general, failed bring any material changes in the LML households living condition. To assess the impact of migration on the life of LML households, the study takes the case of the first migrant of the most popular migration route.

At the time of the survey, Mr Haroo Sahni (name changed) was 65 years old and the HoH of an LML household. He got to know about the prevalence of higher wages in the Tehang village in Punjab through his in-law's family, who were from a village in the Gorakhpur district of eastern Uttar Pradesh. He reported his first migration to Tehang as an agricultural labourer in 1977, and he continued seasonal migration throughout his life. During the survey, his family consisted of seven members, including his two illiterate sons. His younger son also reported migration to Tehang as an agricultural labourer in the survey year. Other working members worked as casual labourers in the village.

After almost four decades of constant migration, Mr Haroo's living conditions remained impoverished. They were residing in a small kachcha house made of bamboo and thatch, lacking basic amenities such as a toilet and access to clean drinking water. They also lack a proper kitchen space and rely on cooking with firewood.

Work migration also prevailed among the landed households but on a smaller scale. It was more of a permanent migration in nature, even though not necessarily for white-collar jobs. Many of them even engaged as security guards in various places. However, a migrating male from a landed household manages to settle at the destination and bring his nuclear family (wife and kids) to settle down there. As the PARI survey was of the village's residents, details of permanent migrants could not be covered. Another kind of migration prevalent among the landed households was study migrations; students, specifically males, move to other states or Patna (state capital) to prepare for competitive exams or higher education purposes. Some households had even sent their male children to boarding school.

This chapter explores various aspects of the village economy, land and asset distribution, differences in agrarian production organisation among different economic categories, differentiated treatment of different socio-economic classes in the land and credit market, and employment conditions. Here, one intriguing question emerges: What was the extent of income differences that emerged from this unequal access to resources and unequal treatments in various markets? The next section explores this question.

4.8 Socio-economic Classes and Household Income⁴⁰

When one calculates the average annual household income and average annual per person income, it gives two striking observations: a low average income for most households and stark income inequality among surplus-appropriating households and the rest of the households. The annual household income of the surplus-appropriating households was around Rs 9.5 lakh. The average earnings of all other groups were less than one lakh. The annual household income of the surplus-appropriating households was almost 10 times that of owner-cultivator households and around 20 times that of LML households. The household income of non-farm households was also low, just around 70 thousand. These patterns hold even for the per-person income (Table 4.13).

Table 4.13 Average annual and per capita income in different socio-economic classes.

Socio-economic classes	Annual Household Income (Rs)	Annual per person income (Rs)
Surplus-appropriating households	9,49,642	1,56,193
Owner-cultivator	92,494	15,283
LML (pure tenant)	55,036	13,284
LML (non-cultivating)	45,319	9,916
Non-farm	67,468	17,132
Total	96,463	17,940

Source: PARI survey data

Suppose one applies the Tendulkar committee poverty line, which is an income of just Rs 27.2 per person daily. The poverty line of the village becomes Rs 9,792. This means, on average, LML (non-cultivating) households were on the line. The village's average household size was 6.4 persons. This means the poverty line for the village was around Rs 62,669 per household. If one

⁴⁰ FAS has done all income-related calculations.

applies this poverty line, one average LML (non-cultivating) and LML (pure tenant) household failed to cross the poverty line. It highlights the impoverishment and near-destitution conditions of the village.

4.9 Conclusion

The village economy had four major features: stark landlessness and skewed land distribution, a cropping pattern with a dominance of cash crops, low-productive subsistence cultivation with century-old primitive cultivation practices, high levels of seasonal labour migration, and large-scale prevalence of mortgaged relations. All four major features of the village economy have deep historical links from the colonial period. As discussed in Chapter Three, the permanent settlement had become a watershed moment for the region's agrarian history. In the subsequent phase, forced commercial cultivation in monopsonic conditions and regular famine forced peasants and workers into destitution conditions, creating a distress migration, subsistence cultivation, along with forced cash cropping. Even now, one sees a deep imprint of these historical developments in the villages' economy. These factors are reflected in the form of extremely unequal land distribution, large-scale landlessness, and very high instances of circular and seasonal labour migration. A cropping pattern is that a state-supported cash crop is a predominant crop (sugarcane), and cultivators grow household consumption needs crops like paddy, pulses, oilseeds and vegetables.

This continuity highlights the rigidity in the region's social change process. Post-independence, the failure of the state to create a radical land reform had created a 'semi-feudal' society. Bonded labour relations, usurious debt and low levels of agricultural investments had been defining features of Bihar's agrarian economy. The lack of investment over the centuries made Bihar's agriculture stagnant and backward. One sees a continuity of bonded labour relations even now in the village. 26 households continued to be in attached labour relations.

When one observes major productive infrastructures in and around the village, it gives an interesting observation. Triveni canal, sugar mill, and Giridharan Mishra Inter college. These were major productive infrastructures with capabilities to enhance production and human capabilities. Notably, none of them were created by the Indian state with any strategic planning to develop the

region or improve people's lives. The college was constructed by a landlord to safeguard ceiling surplus land. The British government made the canal as part of the negotiation of the decade-long militant struggle of the people. The sugar mill was converted from an indigo factory to utilise resources during British rule. These processes highlight the ignorance of the region from India's development trajectory. In these circumstances, people in the village had been forced to continue with the old social-economic institutions. A deep observation of these institutions shows that these are survival strategies for most people in near-destitution conditions.

The story of the village is not merely a story of stagnation. The village is going through the process of change. However, mainly by households' individual economic moves. One sees a substantial level of modern input uses in cultivation. Migration does improve the prevailing land labour relations and conditions of LML households. Eight currently owner-cultivator households were landless labour households in the last decade before the survey. The subsequent chapters will explore and analyse households' economic strategies and actions in different economic groups. Chapter Five analyses the livelihood strategies of LML households (pure tenants and non-cultivators). Chapter Six analyses the production organisation of cultivator households. Finally, Chapter Seven analyses the sources of surplus and accumulation strategies of the surplus-appropriating households.

Appendix 4.1

Table 4.A1: Distribution of households by Caste and Caste groups

Caste	Caste groups					
	SC	ST	BC 1/EBC	BC 2	Other	Total
Ansari/Julaha			15			15
Badhai			18			18
Bhar/Rai			5			5
Bhumihar					1	1
Brahman					7	7
Chamar	40					40
Chauhan				1		1
Dewan			5			5
Dhobi/Baitha			31			31
Dhunia			3			3
Gharbhooj				1		1
Gond		7				7
Hajjam/Thakur/Nau			5			5
Hawari			1			1
Kalwar/Byahut				8		8
Kamkar			2			2
Kanu			6			6
Kurmi				18		18
Kushwaha/Koiri/Bhagat				24		24
Lohar		2				2
Malar/Malhor			1			1
Mallah/Sehni/Been/Beendh/Nishadh/Machhuara			42			42
Musahar	2					2
Nunia			6			6
Rajbhar			6			6
Sheikh					7	7
Teli			17			17
Yadav/Ahir				69		69
Total	42	9	163	121	15	350

Source: Survey data

Appendix 4.2

The rationale for 'mortgaged out' land for Landed households

The mortgage relation in this village poses an intriguing question. Why do landed households go into land mortgaged-out debt in relation to the migration-earner landless and near-landless households? Why do landless and near-landless households enter in land mortgage relations rather than directly lending money or investing their savings? What is the rationale for landed households to give operational rights over their land parcel or pay rent on their land to access credit in the village? They have channels to access institutional credit or through friends and family. This question becomes important given the social meaning of the mortgage in someone's land in the village. This phrase often came in group discussions: "...What will he say? I have mortgaged his land."

This question should be seen in the backdrop of a general cash crunch in the village economy, particularly in the duration of crop standing. The village's main crop was sugarcane, an annual crop. Second and more important is the village's credit market's functioning. Around 94 per cent of the total debt in the village was from informal sources. The modal rate of interest was 60 per cent per annum. The mean interest rates from informal sources were also exorbitantly high. Even for households with more than 5 acres of land, it was around 30-35 per cent. The average mortgage rate in the village was around 75 thousand per acre. It means landed households can access credit of Rs 75 thousand on average by giving operational rights over one acre of land. This means that if these households try to access direct credit in the village from informal sources, they have to give an annual interest of anything between Rs 25,000 and Rs 45000 based on the class and caste position of the household.

The village has two kinds of mortgaged arrangements. First, the 'usufructuary mortgage' is where the mortgagee gets operational rights over mortgaged land as interest over loan until the money is not repaid. Second, the mortgagor will 'lease in' the 'mortgaged land' either at share rent or fixed rent from the mortgagee. In this arrangement, the mortgagor will keep paying rent on that land to the mortgagee till the amount is repaid.

Suppose a landed household opting the first kind of mortgage arrangement. The average net income per acre in the village was Rs 7,000. Even for best-performing households, it was around Rs 17,000 per acre. Also, households generally mortgaged their less productive piece of land. Here, monetary loss in the form of usufructuary interest payments was around Rs 7,000 to Rs 10,000. Now, take those households opting for the second type of mortgage arrangement. The average rent in the village is around 30-40 per cent of the GVO. The average GVO in the village for principal crops was Rs 18,000 per acre. Even for best-performing households, it was less than Rs 30,000 per acre. So, the rent will again be around Rs 7000 to Rs 10000.

In both cases, landed households make significant economic gains by engaging in mortgages rather than taking direct credit from the village's informal sources or even from the same landless households.

The rationale for the landless and near-landless was that they could access some operational holding in the village and manage households' basic food security. Second, taking back money from affluent landed households in the village is difficult; social and political factors compel them to go for the mortgage over engaging in the village credit market.

Chapter Five

Livelihood Strategies of Landless Manual Labour Households

5.0 Introduction

As discussed in Chapter Two, Bihar's rural population's share and the sectoral workforce's composition have remained unchanged with the highest population density. In the Situation Assessment Survey (SAS) of Agricultural households, 2018-19, more than 50 per cent of the rural households were found landless. Moreover, in 2011-12, agricultural labour households comprised around 40 per cent of the rural households (Census of India, 2011). These factors make rural Bihar one of the most concentrated habitats of manual labour households. According to Isabel Guerrero's analysis for the World Bank, "...Bihar represents one of the most densely populated agglomerations of poor people anywhere in the world" (Guerrero, 2009). When one takes the West Champaran district, around 57 per cent of the households were agricultural labourers (Table 3.2). It highlights the significance of the rural labour class in the study region.

On the conditions of landless labour households, Ramachandran, 2011, states that the rural proletariat (landless labourers) are one of the most vulnerable sections of the Indian countryside. They do not own any MoP; they have nothing else to survive but their manual labour. Jha, 2004, based on longitudinal field studies in Bihar, reveals that agricultural wage labourers continued to be extremely poor by any reckoning. Those who could make some progress are due to migration. Bernstein, 2006, 2010 and Lerche, 2010 argue that due to mechanisation, the agricultural labour demand has considerably declined in the countryside. Meanwhile, the neo-liberal regime does not provide them with stable and fairly enumerative employment opportunities in the non-farm sector. In these conditions, the rural labour class has been fragmented into 'classes of labour'. It has become highly mobile and engages in various possible livelihood avenues of a very distinct nature.

Studies on the livelihood of rural Bihar, based on secondary databases as well as on primary field surveys, have highlighted a rise in levels and degree of diversification of earning and employment sources adopted by households in the last two decades, particularly among poorer sections (Sharma

et al., 2012; Rodgers et al., 2013; Kumar & Bhagat, 2017; 2021; Datta, 2016; 2023; Dutta & Dhar, 2022). In this context, the chapter analyses the livelihood strategies of the village's LML households. Here, LML (pure tenant) and LML (non-cultivator) households are clubbed as a single group LML households. A total of 157 households are classified as LML households. These households are analysed in this chapter.

The recent studies on the livelihood of rural labourers of Bihar highlight an increasing trend of livelihood diversification and a growing significance of work migration. However, enquiries into the factors that explain differences in livelihood choices remained skewed. For instance, in a similar socio-economic condition, what factors separate a household with a member witnessing work migration from a household without work migration? In this context, this chapter aims to understand three related questions. First, what are the choices available to LML households? Second, do different livelihood strategies result in varying levels of household economic well-being? If so, the third question is, what factors enable some households to choose better livelihood strategies while limiting others?

The chapter consists of six sections, excluding the introduction section. Section One discusses the socio-economic condition of the LML households. Section Two examines the livelihood choices of LML households and their livelihood strategies. Section Three analyses the levels of earnings in the different livelihood strategies. Section Four discusses possible factors influencing a household's choice of a particular livelihood strategy. Furthermore, Section Five presents a Household Livelihood Strategy Choice (LSC) Model using multinomial logistic regression to analyse variables influencing a household's choice of a specific livelihood strategy. Finally, Section Six is the chapter's conclusion.

5.1 Socio-Economic Conditions of LML Households

This section briefly presents the general socio-economic conditions of LML households. It has three sub-sections. The first sub-section discusses the social composition of LML households. The second sub-section discusses the conditions of the basic amenities and asset position. Moreover, the third sub-section discusses the composition of the workforce—the first two sub-sections

present household-level descriptions. However, the third section presents information on individuals.

5.1.1 Caste Composition of LML Households

Households from a total of 23 castes were in the LML household category. When one compares the caste category composition of the LML households with that of the village, it shows that SC households had a double share in LML households than in the village. Among LML households, SC households were around 22 per cent. Meanwhile, in total households in the village, their share was around 12 per cent. At the same time, the share of BC-2 households in the LML households was around 23 per cent. Whereas in the village, their share was around 34 per cent. The share of BC-1 households had marginally higher representation among LML households. It shows an over-presence of socially marginalised caste categories in LML households (Table 5.1).

Table 5.1 Caste category-wise share of households among LML households and in village.

Caste category	Share in LML households	Share in total households
ST	1.27	2.86
SC	22.93	12
BC 1	49.04	46.57
BC 2	22.93	34.29
Other	3.82	4.29
Total	100	100

Source: PARI survey data

Suppose one looks at the share of households in the LML group from the total number of households from a particular caste category. i.e., the number of SC households in the LML group to the total SC households in the village. It shows that 85.71 per cent of the SC households and 55.4 per cent of the BC-1 households belonged to the LML category. Among the BC-2 group, which is the dominant caste group of the village, the proportion was 24.67 per cent. This observation indicates that though the LML group was caste heterogeneous, it predominantly encompassed marginalised sections of society, i.e., SC and EBC/BC-1.⁴¹

⁴¹ Main castes constituted LML households were following: the Chamar caste (34 households) from the SC category, Mallah/Nishad caste (27 households) from the EBC/BC-1 category, and Ansari/Julaha caste (12 households) from the Muslim community.

5.1.2 Conditions of Housing and Other Basic Amenities

This subsection demonstrates the differences in housing conditions and access to basic amenities between LML households and non-LML households. Among LML households, 16.56 per cent did not own homestead land. Even among those who did own homestead land, a significant proportion belonged to the category of gair-mazurua land. In contrast, among non-LML households, only 1.5 per cent did not own homestead land. Furthermore, not a single LML household had a *pakka* house, which is defined as a house with a concrete roof, brick walls, and flooring. Instead, more than 87 per cent of LML households were residing in *kachcha* houses, which was made of thatch, bamboo, and mud. In comparison, among non-LML households, only 5.7 per cent were living in *kachcha* houses (Table 5.2).

Regarding access to essential amenities, among LML households, only 35 per cent had access to drinking water in their homestead. This was less than four per cent for non-LML households. Similarly, only one per cent of LML households had a latrine facility in their homestead, while the remaining households depended on open defecation. The situation was not much better for non-LML households, as less than 20 per cent had access to latrine facilities (Table 5.2).

This subsection gives two observations. First, in the village, access to basic housing facilities and amenities was overall low. However, even at this lower level, there were significant disparities between LML and non-LML households. Second, there was a stark difference in the access to private and state-provisioned amenities. As electricity connectivity was only a state-provisioned amenity, it showed the least disparity between LML and non-LML households (Table 5.2).

Table 5.2 Housing and other basic amenities among LML and non-LML households.

Basic Amenities	LML household (%)	non-LML households (%)
No ownership of homestead land	16.56	1.5
Pakka house	Nil	11.5
Kachcha house	87.3	5.7
Access to drinking water in the homestead area	65	96.3
Latrine facility in Homestead	1.2	19.9
Electricity connection	49.10	57
Authorised Electricity connection	31.84	29

Source: PARI Survey data

5.1.3 Education and Demography of Workforce

Education is essential for an individual's social and economic upliftment (Mirza & Lathabhavan, 2020). It opens up many new avenues of employment with better upward mobility possibilities. It also makes an individual aware of his/her rights and confident in claiming them. This subsection discusses education levels and workforce composition in terms of age and sex among working members of LML households.

In total, 380 people were part of the workforce among LML households. Of that, around 58 per cent were male. One can see from the age and sex composition of the work that the share of female members improves in the age group of 40 to 65 years compared to the 16 to 39 years age group (Table 5.3).

The literacy rate among male workers was 55.3 per cent. However, among female workers, it was just 15.6 per cent. The median years of schooling among male workers was three years, and it was zero among female workers (Table 5.3). It clearly shows that the level of literacy and schooling was generally low among working members of LML households. However, a huge disparity persists between males and females.

Table 5.3 Demography of workforce among LML households.

Statistics	Male	Female	Total
workforce age group (16 to 39)	139	93	232
Workforce age group (40 to 65)	82	66	148
Workforce (Total)	221	159	380
Literacy rate	55.3	15.6	38.8
Median years of Schooling	3	0	

Source: PARI survey data.

From assessing the caste belongingness, amenities condition, composition of the workforce and levels of education, one understands that this group is compromised of the socially marginalised group with an impoverished resource base and low levels of education. The next section explores what were the livelihood choices available to them in these conditions.

5.2 Livelihood Choices of the LML Households

Livelihood diversification is a process in which an individual or a household diversifies its activities and social support systems to strengthen its capabilities to improve living standards or survive (Ellis, 1998; 2000; Deb et al., 2002). Reasons for livelihood diversification can broadly be classified into two categories: diversification for improving opportunities or accumulation and diversification for survival. In the first category, households diversify to invest in high-expected return investments or migrate if they get a lucrative job prospect. In the second category, households diversify to fulfil day-to-day survival needs. This includes keeping an alternative option to survive if a crop fails, coping with calamities like drought or flood, and seasonality of employment opportunities (Agarwal, 1990; Koppel & James, 1994; Ellis, 2000).

The LML households engaged in varied occupations. In total, they engaged in eight occupations. These were agricultural labour, long-term labour (agriculture), non-agricultural labour, petty business/self-employment in non-agricultural activities, private salaried jobs, casual work migration, tenant cultivation, and animal rearing. However, most households were primarily involved in agricultural and non-agricultural labour, work migration, and animal husbandry; more than 100 households reported their engagement in these livelihood avenues. 43 households engaged in cultivation also through tenancy or mortgaged contracts.

LML households' livelihood depended not on particular occupations but on combinations—households engaged in multiple livelihood avenues. A household may engage in farm and non-farm labour in the village, and with a member engaging in seasonal migration, they may have a small shop in the village or cultivate a small parcel of land. In some cases, individuals also engaged in multiple occupations of a very distinct nature. Let us take the case of one of the households to illustrate the general livelihood condition of LML households.

At the time of the survey, in 2012, Jeet Kumar (name changed) was 25 years old and HoH of an LML household consisting of five members, including his wife, two children, and his ailing mother. Jeet had been engaged in manual labour migration since the age of 14, when he first migrated to Srinagar, Jammu and Kashmir, as a construction labourer. By age 25, he had migrated to six different cities across the country, working as a daily wage labourer. In the survey reference year (2011-12), Jeet's household also cultivated a small parcel of leased land. Jeet participated in farming operations during the sowing and harvesting seasons and migrated for the rest of the year. In his absence, his wife would take care of the farm.

Jeet's household illustrates the heterogeneous character of the labour and scattered livelihood situation of the LML households with the multiplicity of work. In total, only nine households had a single occupation. The rest engaged in combinations of different occupations. In total, they had combined up to six occupations. However, most of the households (63 per cent) were in combinations of three or four occupations (Figure 5.1). One could not find a distinguishable pattern in the caste category and the number of occupations combined. The average number of occupations among SC, BC-1 and BC-2 households were 3.5, 3.4 and 3.2, respectively.

Figure 5.1: Distribution of households based on number of occupations.



Source: PARI survey data

Here, one has re-classified the livelihood sources into two groups based on whether a household decides to engage in that particular occupation each year. In other words, choice livelihood avenues are those occupations which household can plan, choose and engage in— which does not need a long span of time to get engaged in. Agriculture labour, non-agricultural labour, long-term labour contracts (within agriculture) with the option to repay debt or continue with the contract, leasing in land and cultivate and migration were choice livelihood avenues. Furthermore, agricultural labour, long-term labour (agriculture) and non-agriculture labour were merged and named ‘manual labour’ because the nature of work and location of work in these three avenues were similar. Finally, the choice livelihood avenues were manual labour, migration and cultivation—all households engaged in manual labour, 108 in migration and 43 in cultivation (Table 5.4).

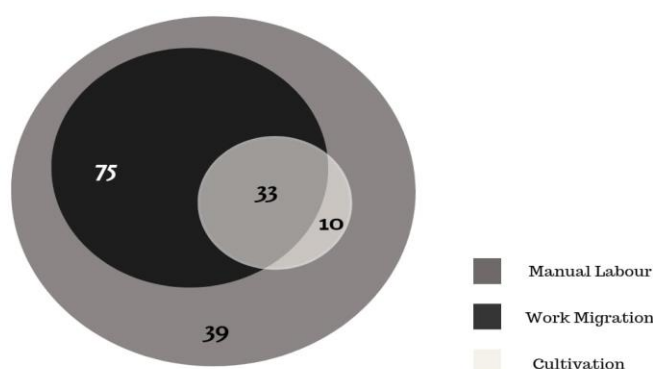
Table 5.4 Distribution of households in different livelihood sources.

Occupation	Number of HH	Livelihood source groups
Manual labour	157	Choice Livelihood avenues
Work Migration	108	
Cultivation	43	
Animal rearing	108	Other
Petty business/self-employment	10	
Private salaried job	4	
Mortgage earning (money lending)	2	

Source: PARI survey data

Another way to look at the households is one where in 33 households, at least one member was in manual labour, migration as well as cultivation. 10 households had at least one member in cultivation and manual labour. 75 households had at least one member in manual labour and migration. 39 households were in only manual labour (Figure 5.2). All these groups are mutually exclusive and do not have any interaction element. These are identified as four alternative livelihood strategies among LML households.

Figure 5.2: Number of households in alternative livelihood strategies.



Source: PARI Survey data

From analysing the livelihood choices of the LML households. Let us see their levels of earnings in the choice livelihood avenues.

5.3 Average Household Income in Principal livelihood strategies⁴²

Does the level of earnings of the LML households differ in the different livelihood strategies? The mean annual household income for those who opted for only labour as a livelihood strategy was around Rs 24 thousand per annum. It was around Rs 51 thousand per annum for the households who opted for all three livelihood avenues (Table 5.5). It shows that annual household income increases with an increase in the number of occupations in the livelihood strategy. Notably,

⁴² FAS-PARI survey finds income from all relevant components. FAS has done all income-related calculations. In this section, the household income comprises of cumulative earnings from choice livelihood avenues: manual labour, crop production, and migration.

household income improves substantially with the inclusion of migration in the livelihood strategy. However, the impact of cultivation on the annual household income is limited. Cultivation may be primarily for household food security—the operation size of all households was less than one acre, and the majority of the households grew only paddy, pulses and oil seeds. Moreover, the marketable surplus of these food crops was negligible (less than one per cent). The income per person was also higher for the households who witnessed migration. If this is true, why do not all households induce an individual to migrate?

Table 5.5 Mean and CV of annual household income and per capita income and sources.

Livelihood strategy	Household income		Labour earnings		Migration earnings		Cultivation earnings		Income per person	
	Mean (Rs)	CV	Mean (Rs)	CV	Mean (Rs)	CV	Mean (Rs)	CV	Mean (Rs)	CV
Only Labour	23,851	0.62	23,851	0.62					6,042	0.91
Labour + Migration	48,934	0.55	17,332	0.69	31,602	0.88			9,417	0.63
Labour + Cultivation	27,641	0.42	25,312	0.56			2,329	2.83	6,050	0.54
ALL three	51,425	0.89	19,785	0.93	31,657	1.19	942	10.49	8,915	1.19

Source: PARI survey data. Note: Household income and Income per person include income from manual labour, migration and cultivation only. It does not include income from other sources. However, these three sources comprise over 80 per cent of all groups' total annual household income.

One potential answer could be the variability in income. This measure is captured in terms of coefficient of variation (CV). If one considers households' total income - the choices with the lowest CV are where individuals are also leasing in land. This is followed by labour and migration, followed by only labour and the highest CV is for households who are diversified in all three options. If one compares the mean income and CV from labour and migration, one sees that the mean income is lower in labour compared to migration, but the CV is higher for migration. In the case of cultivation, mean income is far lower than the other options and the variability is also high. So, the choices also impact the uncertainty that the households are exposed to (Table 5.5). But a question that continues is why do households cultivate land and not just migrate and get higher income. Before one can answer that question, one needs to see if the means are really different between the different choices. Here, a pairwise t-test is conducted to check for differences in the mean of annual household income (Table 5.6).

Table 5.6 Test for differences in mean of household income for alternative livelihood strategies.

	Only Labour	Labour + Migration	Labour + Cultivation
Only Labour			
Labour + Migration	Significant*		
Labour + Cultivation	Not significant	Not significant**	
All three	Significant*	Not significant	Significant*

Source: calculated from PARI survey data, *, ** significant at 5% and 10% level of significance, respectively.

The pairwise t-test results show a significant difference between mean annual household incomes among households with different livelihood strategies. (Table 5.6). Out of a total of six possible comparisons, three are significant at a five per cent and one at the ten per cent level of significance. The mean income of only labour is significantly different when compared to households with migrations. Households who are cultivating do not have significant differences with households with only labour income or migrations.

A similar pairwise t-test is also conducted for the per-person income. The mean per-person income shows that the households in the livelihood strategy, Only labour, and households with livelihood strategy, Labour and migration, were significantly different at the five per cent level of significance. The mean per person income of the households with the livelihood strategy, Only Labour, and households with livelihood strategy, with all three occupations, were significantly different at the ten per cent level of significance. The rest of the comparisons did not turn out to be significantly different. It again highlights a significant increase in household income with a livelihood strategy with migration.

These statistics raise the need to analyse the factors which may have influenced the household's decision to opt for a particular livelihood strategy.

5.4 Factors Influencing Household Livelihood Strategies

The socio-economic conditions of LML households were similar. All households were landless and hardly owned any agricultural or non-agricultural machinery. The levels of education were low, and most of the working members were illiterate. Then, what are the factors that separate households with different livelihood strategies? Here, one looks into three possible factors: household labour endowment, debt and asset conditions, and caste of the household.

Labour endowment: Studies have shown that labour endowment (size and composition) significantly influences livelihood diversification decisions (Dutta & Dhar, 2022; Heyer, 2022; Workie, 2023). Migration is considered one of the most important choices agricultural labour households make. In the case of Bihar, multiple studies have highlighted the importance of migration decisions for these households (Sharma et al., 2012; Rodgers et al., 2013; Datta, 2023). In addition, it is also shown that mostly male members of the households migrate in search of employment. The number of members, age and gender also significantly influence the choices for these households (Kusumo et al., 2023). In a more specific case, Pant, 1983, shows a strong relationship between household family size and their land leasing in or out decision through a study based on six villages in Maharashtra. Heyer, 2022, based on four decades of longitudinal village studies in Tamil Nadu villages, concludes that the younger labour tends to migrate to urban locations; however, after a certain age, they come back to the village agrarian economy.

In this study, to analyse the impact of labour endowment, household's working members are segmented over sex. Since migration generally involves male members, male working members are categorised into two age groups: 16 to 39 years and 40 to 65 years.⁴³ Here, one has three explanatory variables: the number of female working members, male working members (16 to 39 years) and male working members (40 to 65 years). Another decision under consideration to explain the choice variable is the age of the Head of the Household (HoH). In studies like Hayer, 2022, younger members migrate while older members come back to the village. If the HoH's are younger, are these households more prone to migrate? So, the age of the HoH is classified into two groups: those aged 18 to 39 years and those above 40 years and above.

Debt and Asset Conditions: There are interesting literature on landless labour households' migration decision and their levels of debt. In a study by Breman, 1986, tribal villages of Baridoli, Gujarat, which examined the livelihood conditions and patterns of migrations among agricultural labour and poor peasant households, the study brings out that debt plays an important role in

⁴³ The age category of the female working members is not taken as a variable because the prevailing socio-cultural factors often restrict female labour mobility and limit their role in household decision-making. Also, the total number of female workers was only 160. Further, subdividing may cause sample size issues.

explaining circular migration. Mosse et al., 2002, Sengupta & Vijay, 2018, Meher, 2021 also bring out similar trends through their respective field study and highlight strong linkages between indebtedness and rural labour migration. Datta, 2023, based on a longitudinal study of multiple villages in Bihar, brings out that debt repayment was one of the primary usages for remittances sent by migrants.

Here, indebtedness is taken as an explanatory variable.⁴⁴ The indebtedness among LML households was widespread. Almost all households reported some indebtedness. However, it was with huge variation. The mean household indebtedness was Rs 6 thousand, and the standard deviation was more than Rs 10 thousand. The CV was 1.73. Considering these aspects, indebtedness is taken as a categorical variable, and two categories are made. The two categories are household indebtedness less than mean indebtedness (Rs 6,000) and household indebtedness more than and equal to mean indebtedness (Rs 6,000). The study expects a positive relationship between indebtedness and migration (Mosse et al., 2002; Sengupta & Vijay, 2018; Meher, 2021).

Landless labour households are generally asset-poor in rural areas. However, even in these households, there is variability in terms of asset ownership. Does the ownership of assets have any impact on the choices that the households are making? The total household asset value is taken as an explanatory variable to assess this question. Here, assets are the value of possession of homestead land, MoP, animal resources, non-perishable consumable goods, and storage of valuable resources.

Caste: Caste is a social institution that significantly influences every aspect of life in Indian society. It has historically determined access to resources, impacting not only social and cultural spheres but also political and economic domains (Ambedkar, 1936/2014; Srinivas, 1957). Chakravarti, 2001, demonstrates how caste is deeply embodied in Bihar's agrarian class society. Studies on the Katkuian village by Dhar et al., 2022; and Kumar, 2022, highlight the profound impact of caste, ranging from land ownership and resource distribution inequalities to the day-to-day livelihood options available to households.

⁴⁴ It is presumed that debt and migration are exogenously determined.

The caste category of the households is taken as an explanatory variable. ST households are merged with SC households because there were only two ST households. The caste category is a categorical variable with four categories, these are SC-ST, BC-1, BC-2 and Other. It is expected that households from the BC-1 and BC-2 caste categories should be in livelihood strategies with cultivation, and SC-ST households should be more in the Only labour category (Chakravorty, 2001).

Seven explanatory variables are taken: four are continuous, and three are categorical. The continuous variables are the number of female working members, the number of male working members (16 to 39 years), the number of male working members (40 to 65 years), and the total asset value of the household. The categorical variables are the age of HoH, indebtedness and caste category.

By analysing means, one can get some intuitive relationships between the choice of livelihood strategies and these explanatory variables. The means of all continuous explanatory variables for different categories of livelihood strategies are presented in Table 5.7. As indebtedness is a categorical variable, the average debt is presented here. One can see a positive influence of the average number of working members on the number of avenues in livelihood strategy. Among the households who chose only labour as a livelihood strategy, the average number of working members was 1.8 persons; in contrast, among the households who chose all three avenues in their livelihood strategy, it was 3.12 persons. The average working male (16 to 39) was more than one in both groups that engaged in migration, and it was just around 0.5 among non-migrating groups. Notably, a positive relationship between female labour and male workers (40 to 65) with a livelihood strategy involving cultivation is also highlighted. Furthermore, among the households who opted for labour and migration, the average debt was Rs 5,719, which was considerably higher than the other groups. It shows a possible negative relationship between debt and cultivation and a positive association between debt and migration.

Table 5.7: Distribution of average working members, asset and debt value by household livelihood strategy categories.

Household livelihood strategy	Working member	Working female	Working Male (16 to 39)	Working Male (40 to 65)	Asset value (Rs)	Average debt (Rs)
only manual labour (1)	1.80	0.90	0.59	0.31	71587	2,849
Manual labour + migration (2)	2.47	0.92	1.03	0.52	77032	5,719
Manual labour + tenancy (3)	2.60	1.50	0.40	0.70	123838	1,690
Manual labour + tenancy + migration (4)	3.12	1.24	1.15	0.73	137103	2,343
All households	2.44	1.02	0.90	0.52	91287	4,040

Source: PARI survey data, * among indebted households.

One can see intuitive relationships between these explanatory variables and households' choice of livelihood strategy. To understand the statistical significance of these associations, a LSC is designed.

5.4 Livelihood Strategy Choice Model

Given its household characteristics, this model tries to understand the odds of a household falling into a particular livelihood strategy. In other words, what are the impacts of household characteristics variables discussed in the previous section on household choice of a particular livelihood strategy?

When one has a categorical dependent variable, the possible regression models are the Linear Probability Model (LPM), Discriminant Analysis (DA), Probit and logistic regression model. The DA model can be used only if all independent variables should be continuous. However, in the current analysis, some independent variables are also categorical. The LPM is a simpler method that gives coefficients that are easier to interpret. However, the normality assumption may be violated due to the non-linear outcome. Also, in the binary outcomes, using Ordinary Least Square (OLS) may not hold constant variance of errors. It can cause possibilities of heteroscedasticity. The logistic function proves to be better due to two reasons. First, it restricts predictability in the range of zero to one. Second, it also captures non-linear relationships. So, the study chooses the

logistic regression model. Since the number of categories of the dependent variables is more than two, it uses the multinomial logistic regression model. The multinomial logistic regression, along with other assumptions of the OLS like independence of observations, no multicollinearity, no heteroscedasticity, and no perfect predictor, additionally presumes that the relationship between the independent variables and logits (log odds) of each category of the dependent variable is linear.

The LSC model uses multinomial logistic regression to understand the factors that influence the shift of households from the base category (here, individuals in a household only enter in the labour market) to other choices (Table 5.8).

Table 5.8 Description of Variables used in Variable description of Livelihood Strategy Choice Model.

Dependent Variable	
Category One: Only Labour	Base category
Category Two: Labour + Migration	
Category Three: Labour + Cultivation	
Category Four: Labour + Migration + Cultivation (all three)	
Independent Variables	
Number of working females in the age group (16 to 65)	Continuous
Number of working males in the age group (16 to 39)	Continuous
Number of working males in the age group (40 to 65)	Continuous
Total Household Asset value (Rs)	Continuous
Indebtedness	Categorical
0 (base category)	Indebtedness less than mean indebtedness (less than Rs 6000)
1	Rest others
HoH age	Categorical
0 (base category)	Age of HoH in the age group 16 to 39 years
1	Rest others
Caste category	Categorical
1 (base category)	Schedule Caste and Schedule Tribe households*
2	Extremely Backward Class (EBC)/Backward Class-1 (BC-1) households
3	Backward Class-2 (BC-2) households
4	Other Households

Source: PARI survey data, * LML households had just 2 ST households, so they are merged with SC households.

If one has a dependent variable with a K category, the multinomial logistic regression takes K-1 equations, considering one category as the baseline. These equations explain the odds of the household taking a specific category from the baseline. In this case, it should be odds of the shift from Only labour to the other three respective categories.

The dependent variable Y is a categorical ordered variable. A household can be in any specific category. Here, $y=j \dots [j = 1,2,3,4]$

The multinomial density function for one variable is defined as;

$$f(y) = p_1^{y_1} \times \dots \times p_m^{y_m}$$

$$= \prod_{j=1}^m p_j^{y_j} \dots$$

$$[m = 4]$$

Here, the probability of the household i chooses j^{th} livelihood strategy is

$$p_{ij} = P_r[y_i = j]$$

Since the Independent variables—number of working members, age of HoH, and caste of the household are unique for the i_{th} household, it does not vary. This means,

$$P_{ij} = P(Y_i = j) = \frac{e^{w_i' Y_j}}{\sum_{j=1}^4 e^{w_i' Y_k}}$$

And,

$$\sum_{j=1}^4 P_{ij} = 1$$

$[w \text{ is the coefficient}]$

In the logistic regression model, the coefficient of the base category is normalised to zero; therefore, the coefficient of the other alterations is interpreted to the base outcomes.

The marginal effect of an increase in independent variable means:

$$\partial P_{ij} / \partial w_i = P_{ij}(r_j - \bar{r}_j)$$

Table 5.9 Factors influencing the choices of livelihood strategies: Results of LCS model.

			Number of observations	=	157
			Wald chi2 (27)	=	831.29
			Prob> chi2	=	0
Log pseudolikelihood			Pseudo R2	=	0.2996
Diversification Category	Coefficient	Robust Std. err.	Z	p> z	[95% conf. interval]
1	Base Outcome				
2					
Working female	-2.8812	0.4308	-0.65	0.514	-1.1257 0.5633
Working male (16 to 39)	2.3201	0.9957	2.33	0.02**	0.36853 4.2717
Working male (40 to 65)	2.6921	0.84684	3.18	0.001*	1.032415 4.351965
Total asset value	1.06E-06	4.41E-06	0.24	0.81	-7.57E-16 9.70E-06
Caste code					
2	-3986545	0.602009	-0.66	0.508	-1.57857 0.781262
3	-2.40162	0.78448	-3.06	0.002*	-3.93173 -0.86407
4	-0.97752	1.352946	-0.72	0.472	-3.62425 1.679193
Indebtedness code	1.403466	0.669231	2.1	0.036**	0.091799 2.715134
HoH age code	-1.14079	0.780227	-1.46	0.144	-2.67001 0.388423
Constant	-0.98117	1.184382	-0.83	0.404	-3.30946 1.333229
3					
Working female	2.016937	0.758009	2.66	0.008*	0.531267 3.502608
Working male (16 to 39)	-3.03963	1.746441	-1.74	0.082	-6.4626 0.383324
Working male (40 to 65)	3.826082	1.097755	3.49	0*	1.674521 5.977642
Total asset value	7.81E-06	4.95E-06	1.58	0.11	-1.86E-06 -0.00002
Caste code					
2	14.81633	0.817751	18.12	0*	13.21357 16.4191
3	14.34716	1.01632	14.12	0*	12.35521 16.33911
4	16.92929	1.913158	8.85	0*	13.17957 20.67901
Indebtedness code	-1.22319	1.023883	-1.19	0.232	-3.22997 0.785756
HoH age code	-5.85175	1.908994	3.07	0.002*	-9.59321 -2.1103
Constant	-15.8714	1.57379	-10.08	0	-18.9560 -12.7868
4					
Working female	0.412504	0.47178	0.87	0.382	-0.51216 1.337176

Working male (16 to 39)	2.457918	1.009851	2.43	0.015**	0.478647	4.437189
Working male (40 to 65)	2.833258	0.951094	2.98	0.003*	0.969149	4.697367
Total asset value	1.08E-05	4.45E-06	2.44	0.015**	2.12E-06	1.96E-05
Caste code						
2	0.654142	0.862595	0.76	0.448	-1.03651	2.344797
3	-1.48026	0.915442	-0.16	0.872	-1.94225	1.646207
4	0.974122	1.502731	0.65	0.517	-1.97117	3.91942
1. Indebtedness code	0.362744	0.815264	0.44	0.656	-1.23514	1.960631
2. HoH age code	-0.76850	0.845195	-0.91	0.363	-2.42505	0.888044
Constant	-4.8643	1.328172	-3.66	0	-7.46747	-2.26113

Source: PARI survey data, *, **significant at 1% and 5% per cent level of significance, respectively.

The pseudo-R square of the model is 29.96 per cent (Table 5.9). This means that the model explains around 30 per cent of the causes of the shift from the base category (only manual labour) to other subsequent categories. Further sub-sections will discuss the impacts of the explanatory variables on the odds of a household being in a specific livelihood strategy. Variables that significantly explains the odds of a household shift from base category to other subsequent categories are presented in Figure 5.3.

Figure 5.3: Variables significantly influence households' choice of a particular livelihood strategy

Only Labour	Labour + Migration	Labour+Cultivation	All Three
•Low labour endowment.	•More number of male working member •Indebtedness higher than mean.	•More number of female labour •More number of male labour in the age group of 40 to 65.	•More number of male working members, in both age categories. •A better asset position.

5.5.1 Variables Significantly Influence Shift of a Household from Only Labour (base category) to Labour & Migration (Category Two)

The test results indicate that the probability that a household will shift from the only labour (base) category to the category with labour and migration is significantly influenced by the number of male working members (16 to 39), the number of male working members (40 to 65), indebtedness and caste category. The male working members in both age categories positively influence a household's choice of livelihood strategy. If a household's indebtedness is more than the mean indebtedness (code 2), the household is more likely to choose livelihood strategy - labour and

migration, implying higher indebtedness positively induces the choice of migration. In the case of caste, where SC-ST households are the base group, BC-2 households are less likely to choose livelihood strategy, labour and migration.

The migration among the LML households was seasonal and casual; all household members could not leave the village and migrate. As the number of male working members increases in a household, the household may send them for migration. However, it was not the case with the female working members due to maybe the prevailing socio-cultural factors restricting female labour migration. In addition to the male working members, indebtedness is another variable that positively influences the households' choice of livelihood strategy, labour and migration. This means that households surpassing the mean indebtedness are more likely to choose livelihood strategy, labour and migration. The relationship between indebtedness and migration can also be understood through the debt-labour interlocking institution prevalent in the village. Under this arrangement, a manual labourer used to get debt from large landowning households on the condition that the labourer could not leave the village without permission (borrower household cannot migrate) Furthermore, the lender would not accept repayment in the form of money but rather in the form of days of labour. The land-owning households are likely developed this institution to control high debt-induced labour migration from the village.

5.5.2 Variables Influence Shift of Households from Only Labour category (Base Category) to Labour and Cultivation (category Three)

The variables that significantly influenced the household shift from the only labour (base) category to livelihood strategy labour and cultivation are the number of female working members, the number of working male members (40 to 65), the age category of the HoH, and the caste category. Here, the female working members and the male working members (40 to 65) had a significant positive influence. Moreover, if the HoH is 40 years and above, it is more likely to choose livelihood strategy, labour and cultivation. Furthermore, if SC-ST households are the base category, then households of all other caste categories are positively likely to shift to livelihood strategy, labour and cultivation.

In the village, the female labourers worked predominantly in two avenues: agricultural labour and on-farm family labour. It had a limited presence in non-agricultural works and work migration. So, a household with extra female labour in possession preferred to go for cultivation. Similarly, male worker in the age group of 40 to 65 is less likely to be preferred over young male worker for hired labour activities. So, households would prefer cultivation to utilise the labour of male workers aged 40 to 65 years. Variable the age of HoH also shows that if HoH is in the relatively less mobile age bracket, it would prefer going for cultivation.

5.5.3 Variables Influence Shift of Households from Only Labour (Base Category) to Labour + Migration + Cultivation (Category Four)

The variables that significantly influenced a household's shift from the only labour (base) category to the category all three (Labour + Migration + Cultivation) are the number of male working members (16 to 39), the number of male working members (40 to 65) and the total asset value of the household. All three variables influence positively.

As the number of male working members increases, the household's total mobile workforce increases. So, the households are in a position to choose cultivation as well as migration. The household asset value, for the first time, is a significant influence variable. It shows that households with better asset positions are more likely to diversify to more avenues.

5.5 Conclusion

The chapter raises some interesting observations on the livelihood strategies of landless labour households. LML households are showing a considerably high degree of livelihood diversification. However, their levels of earnings were low. This shows that the household livelihood diversification was primarily for survival. Nonetheless, with the choice of a particular livelihood strategy, household income did improve, particularly with migration. The question raised here was why some households could not diversify and some households could diversify but could not migrate.

The first choice was between households, who only entered the labour market and some members entering the local labour market and some migrating. The mean income of households is higher in households with migration when compared to those without migrations. The per capita income is also higher for households with migration. The size and composition of the household's labour endowment played the most crucial role in the determination of livelihood strategies. The variable that influences the choice is the presence of male workers. The male working members (16 to 39) are an aspirational group and want to migrate to make themselves better off. This group was not looking into employment possibilities in the village economy and 98 per cent of them have engaged in migration.

In the case of the choice between households entering only the local labour market and members entering the local labour market and tenancy market. The mean income per household is not statistically significant between these choices, but the CV decreases with the added choice of cultivation. The variable that explains the difference in choice is the number of female workers in the household. As female members increase, households are more likely to lease in land. One potential reason could be cultural patterns in the village. There seems to be a cultural taboo for women to migrate, but they can enter the local labour market and may prefer to self-cultivate. The other variables are the number of male workers in the household in the age group of 40 to 65 years and the age of the HoH. As the age of the workers increases, they might be less and less aspirational and prefer to stay in the village.

Households which have members in all occupations have significantly higher income when compared to the base level households. The probability that a household will choose this option significantly depends on the number of male working members and the assets owned by the household. Here, the added variable, in addition to labour endowment, is the value of the household asset. Those households who have assets are able to finance the migration and also advance the money for cultivation. So, a household's asset position may be an important constraining feature for this diversification.

Landless labour households do have choices to be made in terms of occupation diversification. With specific choices, mean income does increase, but there looks to be entry barriers to these

choices. The composition of labour endowment, debt, and asset position significantly influences the choices. One important result is that if the aspirations of the young labourers are met with migrations, they will convert themselves into permanent migrants. However, if that does not take place, households will look for survival strategies in the village economy and the pattern of temporary migration may continue.

Chapter Six

Production Organisation of Cultivator Households

6.0 Introduction

In the recent literature, Bihar's agriculture is depicted as one in prolonged agrarian distress due to the high labour-to-land ratio, poor physical infrastructure, natural calamities, and lack of a conducive formal sector credit market (World Bank, 2006; Chanda, 2011; Rodgers et al., 2013). One can observe the impact of this distress through four statistics: First, between 1996-97 and 2021-22, Bihar cultivators have consistently made negative income from cultivation (CACP).⁴⁵ Second, there is a consistent decline in the significance of crop production in GSDP. In 2021, its share in total GSDP was just around 10 per cent (EPWRF). Third, there is a secular decline in the share of cultivators in the total rural households. Between 1991 and 2019, the share of cultivator households declines from 69.75 per cent to 48 per cent (NSSO, 1998; 2021b). Fourth, for more than 98 per cent of Bihar's agricultural households, the share of labour earnings was higher than crop production income in the total monthly household income (NSSO, 2021a).

As one observes from Chapter Two, the cropping economy of Bihar has seen considerable changes in the last four decades, particularly in its input use pattern. However, the impact of changed inputs had a limited impact on the yield. Moreover, on average, Bihar cultivators are making near zero and negative crop income per ha at cost C2. In the post-1990s phase, two major developments were observed in Bihar's agrarian economy: revival of tenancy, primarily led by landless and near landless households, and increasing rural debt, particularly informal debt.

The tenancy is increasing in an overwhelmingly marginal and small cultivator economy, and tenants are primarily landless and marginal landowners. Modern input and machine use have shown remarkable improvement. Moreover, indebtedness is rising, which is essentially informal. Under these pretexts, this chapter explores the cultivator households' production organisation and investment behaviour. Owner-cultivator households and LML (pure tenant) households are clubbed together and defined as cultivator households. A total of 183 households are classified as

⁴⁵ At the cost C2.

cultivator households. This chapter analyses these households. It explores differences in land organisation, input use patterns, investment behaviour, access to credit and returns from cultivation among different strata of cultivators.

The chapter has six sections, excluding the current introduction section. Section One discusses the general socio-economic conditions of different strata of cultivators. Section Two analyses the production organisation of different cultivator groups. It explores land organisation, differences in input & machine use and cropping patterns. Moreover, it also explores credit market functioning to understand how working capital is organised among different strata of cultivators. Section Three analyses agrarian investment of different strata of cultivators. Section Four analyses differences in the return from cultivation among different strata of cultivators. Section Five explores when a scale advantage exists in the economy, why the ones with substantial holdings did not expand the most aggressively. Finally, Section Six is the chapter's conclusion.

6.1 Socio-Economic Condition of Cultivator Households

Cultivator households exhibit two interconnected features: First, households had considerable variation in their socioeconomic conditions. Second, the scale of cultivation and the socio-economic condition of households were highly associated. Considering these two factors, one divides cultivator households into four operational holding size classes: Cultivators (0 to 1 acres), Cultivators (1 to 2.5 acres), Cultivators (2.5 to 5 acres) and Cultivators (5 to 10 acres).

This section has two sub-sections. The first sub-section discusses the caste composition of cultivator households from different operational holding size classes. The second sub-section discusses economic disparities among cultivator households from different operational holding size classes.

6.1.1 Caste Composition of Cultivator Households

The cultivator households were primarily comprised of Backward Classes (BC)-1 and BC-2 households. More than 90 per cent of the cultivator households belonged to the BC-1 or BC-2

caste category. However, when one segregates the cultivator households into the operational holding size classes, it shows that households in the highest operational holding size class, 5 to 10 acres, were primarily BC-2 households. On the other hand, SC and ST households were in the operational holding size class, 0 to 1 acre and 1 to 2.5 acres (Table 6.1).

Table 6.1 Cultivator households by operational holding size classes and caste categories.

Operational holding size class	Caste Categories					Total
	SC	ST	BC 1	BC 2	Other	
0 to 1	3	1	46	26	4	80
1 to 2.5	4	1	25	26	2	58
2.5 to 5		1	12	13		26
5 to 10			2	15	2	19
Total	7	3	85	80	8	183

Source: PARI survey data

6.1.2 Economic Disparities among Cultivator Households

This section explores disparities among cultivators in different operational holding size classes; it explores three variables: land ownership, the value of MoP ownership and annual household income.

The average land ownership of cultivators in the operational holding size class, 5 to 10 acres, was around 4 acres. On the other hand, the average land ownership of cultivators in the operational holding size class, 0 to 1 acre, was just 0.3 acres. The pattern also looks similar for the MoP value. The average value of MoP ownership of cultivators in the operational holding size class, 5 to 10 acres, was around ten times that of the cultivators in the operational holding size class, 0 to 1 acres. When one looks into annual household income, it shows that the average household income of cultivators in the operational holding size class, 5 to 10 acres, was three times that of cultivators in the operational holding size class, 0 to 1 acre. These three indicators amplify the prevalent economic disparities among the cultivator households (Table 6.2).

Table 6.2 Average land ownership, value of MoP and household income of cultivator households.

Operational Holding size class	Average of Ownership (acre)	Average MoP value (Rs)	Average household income (Rs)
0 to 1	0.29	1,386	45,998
1 to 2.5	1.25	11,704	77,756
2.5 to 5	2.14	41,084	92,107
5 to 10	4.02	1,17,914	1,41,825
Total	1.24	22,395	72,564

Source: PARI survey data

In this section, one observes that cultivator households were not a homogenous group. There existed socio-economic disparities. The next section observes how production is organised among cultivators of different classes of operational holding size classes.

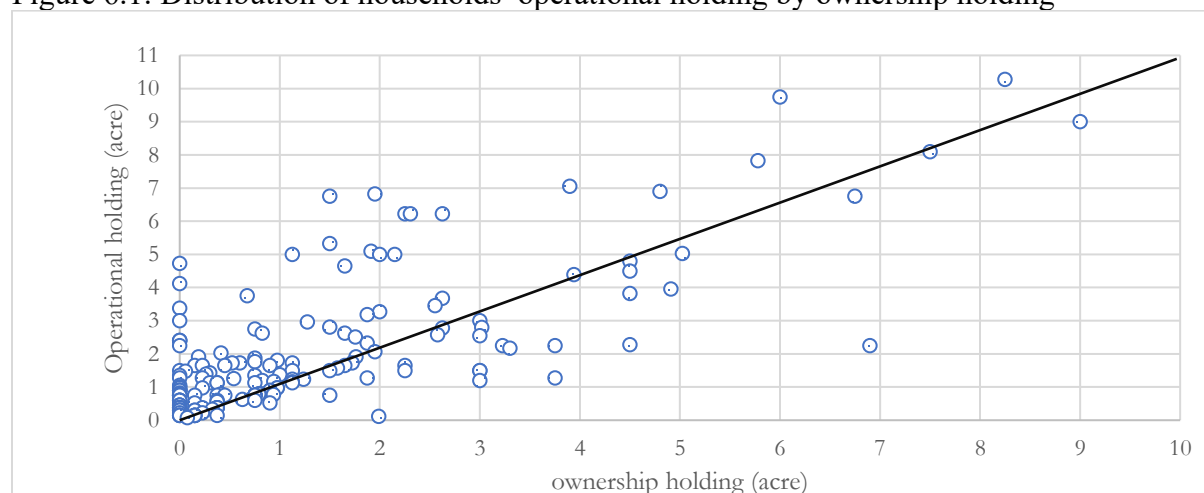
6.2 Production Organisation

This section explores the production organisation of cultivators from different operational holding size classes. It has six sub-sections. The first sub-section analyses how cultivators organised land for cultivation. The second sub-section discusses the cropping pattern. The third sub-section analyses input use patterns. The fourth sub-section analyses labour use patterns. The fifth sub-section analyses machine use patterns. The sixth and final sub-section discusses differences in access to credit.

6.2.1 Organising Land

In cultivation, the land is the primary MoP. It can be organised through two means: self-cultivation and leasing the land. In self-cultivation, a household cultivates the amount of land it owns, which means ownership holding and operational holding should be the same. However, in the case of leased land, it should be different. One present mapped information on land owned and operated for all cultivator households (Figure 6.1). Here, the 45° line presents the line of self-cultivators. For these households, land owned and operated were the same. For households below the 45°-line, land owned is more than land operated. This means that they had either leased out land or kept land fallow. Meanwhile, for households above the 45°-line, land owned was less than land operated. Which means they had leased the land.

Figure 6.1: Distribution of households' operational holding by ownership holding



Source: PARI survey data

The cultivator households are concentrated mainly above the 45° line. This means more households have engaged in tenant cultivation. By nature of tenancy, tenants can be categorised into two groups: subsistence tenants, landless or marginal land owners leased in land for subsistence or utilise household labour endowments. Second, market-oriented tenants, households with substantial land ownership lease in land for scale advantages (Patnaik, 1998). In the village, tenant cultivators were predominantly landless and near landless households (In Figure 6.1, households on the Y-axis and between 0 to 1 land ownership).

Given that the village has an importance of tenancy, Table 6.3 presents the relative importance of land owned and leased in to access land for the cultivator households. In the village, operational holding was greater than ownership holding. This could indicate the presence of non-cultivating land-owning households or non-resident households in the village.

Among cultivator households more than 50 per cent of operational holding was leased in. Land ownership and operational holding distribution among cultivator households give two striking observations: First, the share of total operational holding cultivated by different operational holding size classes was positively related. Cultivators in the operational size class, 0 to 1 acre, operated around 12 per cent of the land. It increased to 35 per cent for the cultivators in the operational size class, 5 to 10 acres. Second, the share of leased in the area as a share of the total

operated area and operational holding size class was inversely related. For the cultivators in the operational holding size class, 0 to 1 acre, it was around 63 per cent. For the cultivators in operational holding size class, 5 to 10 acres, it declined to around 44 per cent (Table 6.3).

Table 6.3 Distribution of operational holding with its components among cultivator households.

Operation holding size class	Operation holding (acres)	Ownership holding (acres)	Leased in (acres)*	Leased out (acres)^	Leased in/total operational holding
0 to 1	45.63	22.83	28.8	6	63.12
1 to 2.5	102.03	72.16	55.23	25.35	54.13
2.5 to 5	86.76	55.7	46.06	15.01	53.09
5 to 10	127.86	77.06	57.1	6.3	44.66
Total	362.28	227.75	187.19	52.66	51.67

Source: PARI survey data, * includes mortgaged in, ^ includes mortgaged out.

Despite being lesser in numbers, cultivators in the higher operational holding size classes had cultivated a considerably higher share of the total operational holding. However, their share of leased in the total operated area is considerably less (Table 6.2 and Table 6.3). It highlights that a higher share of their operational holding came through land ownership. This means a capitalistic style of large extent of land leasing may not have prevailed among them. Nonetheless, most cultivators were in the operational holding size class, 0 to 1, and 63 per cent of their operational holding was leased in. This means that landless and near-landless households leasing was the main leasing pattern of the village. It poses an interesting puzzle regarding the village's production condition. Was there any peculiarity in the system that encourages small-scale cultivation? Or was there any constraint for the cultivators with substantial land holdings to expand aggressively? The chapter will explore these questions in upcoming sections. Before, let us look at whether rental disparities existed in favour of smaller holdings in the leased market.

6.2.1.1 Land rent

Among cultivator households, primary contract forms were fixed rent (grain) and share rent. The prevalent rental contract was 50:50 shares in total produce in the share rent contract. It excluded harvest and threshing costs. In the village, wages or machine rent for harvesting and threshing were predominantly kind payment. Where remuneration was fixed as a share of the total produce.

In a fixed rent (produce) contract, rent was fixed as a fixed produce. It has to be paid by the tenant household irrespective of final production.

Did operational holding size class have any impact on the variation of rent? In the share rent contract, rents were 50:50 shares in the total produce. So, a differential in rents should be mainly attributed to yield differentials. However, in the case of fixed rent (produce) contracts, rent is fixed before the production, which has to be paid, irrespective of the quantity of final production. So, in fixed rent (produce) contracts, operational holding size class can have an impact. To assess that, one calculates the average rent and CV of rent paid by cultivators in different operational holding size classes.

In the case of paddy, the fixed rent per acre was considerably higher for the cultivators in the operational holding size class, 0 to 1 acre, than other operational holding size classes. For the other three size classes, the rent per acre was similar. In the case of sugarcane, the average rent for households in different operational holding size classes does not show a clear trend (Table 6.4).

Table 6.4: Rents in fixed rent contracts for different operational holding size classes.

Operation size class	Paddy		Sugarcane	
	average (Kg/acre)	CV	average (Kg/acre)	CV
Cultivator (0 to 1)	1293	0.3	7556	0.1
Cultivator (1 to 2.5)	1053	0.33	8148	0.26
Cultivator (2.5 to 5)	1025	0.21	6563	0.25
Cultivator (5 to 10)	1061	0.27	7429	0.1

Source: PARI survey data.

As one can see, the smaller holdings did not have any advantages in terms of rent in the lease market. One moves to explore the other aspects of production organisation. In the upcoming sub-sections, one will analyse cropping patterns, input, labour, and machine organisation patterns. The primary focus would be understanding the significance of the market for the cultivators in different operational holding size classes in production organisation.

6.2.2 Cropping Pattern

Cultivators had a diverse cropping pattern. They grew more than 20 crops. In that, sugarcane and paddy hold prominence. When one looks into the cropping pattern of the cultivators in the different operational holding size classes, there is a pattern of decline in the share of GCA under paddy, oilseeds, and pulses with an increase in operational holding size classes. Furthermore, there is an increase in GCA under sugarcane with an increase in the operational holding size classes (Table 6.5). It shows that though sugarcane was a major crop for all cultivators, households with smaller crops dedicated a larger share of crop area to food grains compared to those with substantially larger operational holdings. This may be an indication that household food consumption may be an important factor in the decision to cultivate crops with smaller holdings.

Table 6.5: Share of crops in total crop area by operation size class.

Operation size class	Gross crop area (acre)	Sugarcane (%)	Paddy (%)	Oilseed and pulses (%)	Wheat (%)	Others (%)	Total (%)
0 to 1	92.99	33.95	34.51	23.43	6.84	1.27	100
1 to 2.5	204.64	43.52	29.22	18.98	5.63	2.65	100
2.5 to 10	163.86	52.77	27.53	10.49	6.64	2.57	100
5 to 10	207.68	54.83	23.56	14.96	4.76	1.89	100
Total	669.17	47.97	27.78	16.27	5.78	2.2	100

Source: PARI survey data

Analysing input and labour use patterns of all 20 crops was difficult. The number of cultivators growing crops other than paddy and sugarcane was smaller. Moreover, analysing it over the operational holding size classes caused sample size issues. Facing this limitation, the study considers only the principal crops. Paddy and sugarcane together covered more than 75 per cent of the GCA of cultivator households (Table 6.5). Moreover, around 85 per cent of cultivators grew paddy, and 75 per cent grew sugarcane. These two statistics make sugarcane and paddy the principal crops.

The next sub-section explores the input organisation of the cultivators from different operational holding size classes. The main focus would be to understand the differences in the use of modern/marketized inputs.

6.3.3 Input Use Pattern

In the analysis of input use, one takes the principal crops: paddy and sugarcane. However, there is a caveat here: Sugarcane cultivation is a multi-periodic crop with annual harvesting and regrowth. It grows multiple times with a single sowing. Seed expenses constitute a substantial share of the total input cost in sugarcane cultivation. Moreover, Sowing is one of the most labour-intensive operations. Furthermore, machines were used primarily for land preparation. Considering these three aspects, the study only takes sugarcane (planted crops) for analysis of production organisation.

The nature of input use and farm productivity show a strong association (Murari et al., 2017). Modern inputs such as High-yielding varieties (HYV) seeds, genome-edited (GE) seeds, fertilisers, and plant protection significantly improve yields. Scientifically balanced use of fertilisers further sustains long-term land fertility (Murari et al., 2017).

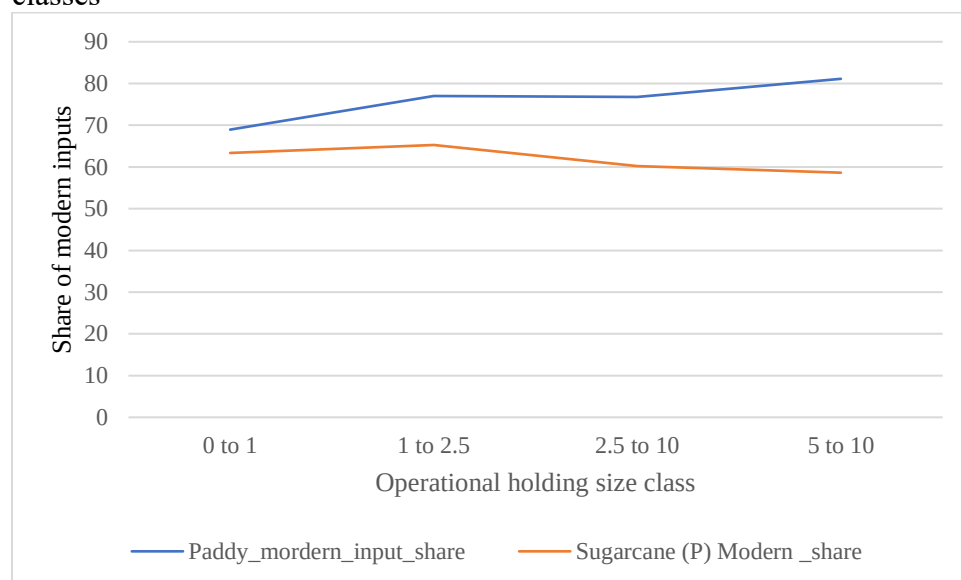
Cultivators from all operational holding size classes blended modern and traditional inputs. Homegrown and HYV seeds were utilised equally. Some even used the System of Rice Intensification (SRI) techniques. Similarly, both Farm Yard Manure (FYM) and fertilisers were used together. Was the utilisation of modern inputs dependent upon the operational holding size class?

One method involves computing the proportion of modern inputs in the total input expenditure, encompassing expenses on purchased seeds, fertilisers, and plant protection. When one plots the share of modern inputs in total input costs across households for different operational holding size classes for paddy and sugarcane, it gives contrasting trends (Figure 6.2). In the case of paddy, an escalation in the operational holding size class correlates with an augmented share of modern inputs in the total input cost. Conversely, this share diminishes for sugarcane as the operational holding size increases (Figure 6.2).

Paddy is a food grain crop, where smaller operational holdings primarily cater to household consumption, while larger holdings potentially cater to the market. The marketable surplus of

cultivators in operational holding size class, 0 to 1 acre, of paddy was around 2 per cent. Moreover, except for the operational holding size class, 5 to 10 acres, for all other groups, it was less than 10 per cent. Hence, more extensive operational holdings exhibit more reliance on modern inputs. In contrast, sugarcane, a cash crop, is primarily cultivated for sale across all operational holding sizes. Consequently, smaller operational holdings might over-utilise modern inputs, anticipating higher yields. For sugarcane, all groups had more than 90 per cent marketable surplus.

Figure 6.2: Share of modern input cost in total input cost for different operational holding size classes



Source: PARI survey data

From input use patterns, now let us move to the labour organisation. The next sub-section explores the labour organisation of the cultivators. The primary objective will be to understand the differences in the significance of hired labour among different operational holding size classes.

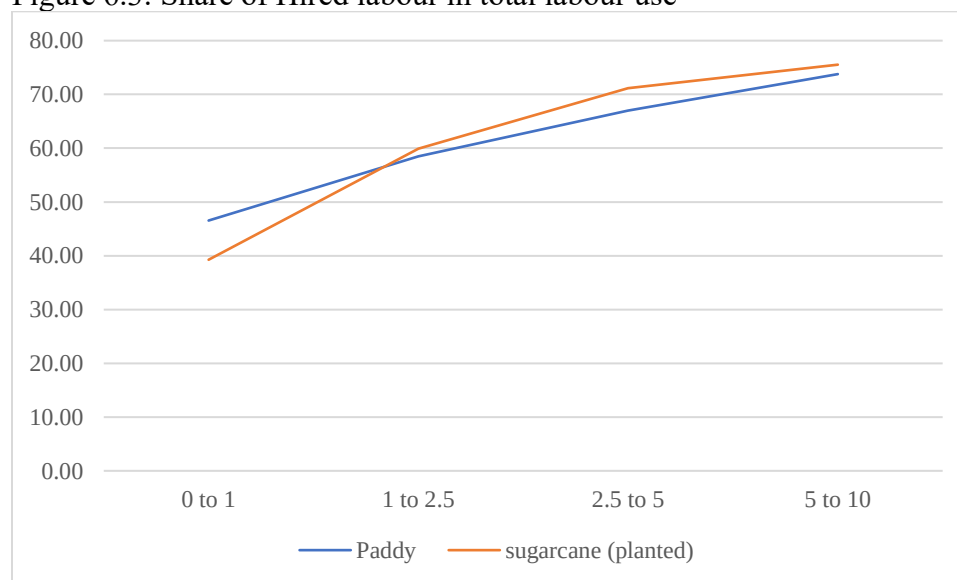
6.2.4 Hired Labour Use

Labour is an essential aspect of farm organisation. Cultivators organise farming through two kinds of labour: family labour and hired labour. Pant, 1983 and Skoufias, 1995 based on their respective studies, have highlighted that utilising family labour is a crucial consideration in the production organisation of small farmers. In fact, surplus family labour had a significant role in a household's decision to lease the land. Dhar & Patra, 2017, based on village studies from 25 villages from 12

states of India, bring out that family labour use was predominantly higher among small farmers compared to cultivators with substantially larger operational holdings. However, there existed a regional disparity in family labour use among small farmers. Small farmers in Uttar Pradesh, Rajasthan and Madhya Pradesh had a family labour share of more than 70 per cent. In contrast, Andhra Pradesh and Maharashtra had a share of less than 40 per cent. Did there exist differences in hired labour use among cultivators in different operational holding size classes? If yes, what's its extent?

One way to understand the significance of hired labour in the production organisation is by taking a ratio of days of hired labour use in the per acre total labour use. It reveals households' dependency on family labour or hired labour. Plotting the share of hired labour in total labour use per acre across different operational holding size classes reveals a notable trend for both crops: an increasing reliance on hired labour with a rise in operational holding size class. This trend emphasises a shift toward increased dependence on hired labour as the operational land size of households enlarges. However, one also notes that there was a substantial prevalence of hired labour even among the cultivators in the operational holding size classes, 0 to 1 acre. It was around 47 per cent for paddy and 40 per cent for sugarcane (Figure 6.3).

Figure 6.3: Share of Hired labour in total labour use



Source: PARI survey data

From labour organisation, let us move to another important aspect of production organisation: machine organisation. The next sub-section explores, whether there exist differences in machine use among cultivators from different operational holding size classes.

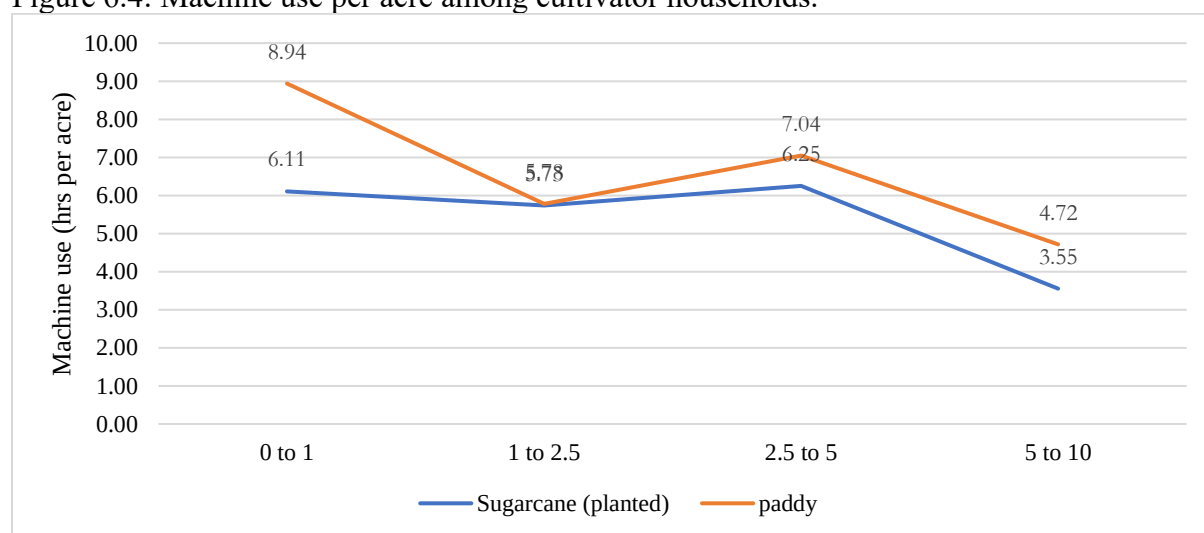
6.2.5 Machine Cost Pattern

Machine use in agriculture improves labour productivity, leading to better cropping intensity. The mechanisation of physically demanding operations such as land preparation reduces excessive human drudgery (Dhar & Patra, 2017). Did a difference in machine use exist among cultivators in different operational holding size classes?

To understand the machine use pattern, one calculates machine use hours per acre for sugarcane (planted) and paddy for different operational holding size classes. For cultivators in the operational holding size class, 0 to 1 acre, the machine use per acre was around 9 hrs and 6 hrs, respectively, for paddy and sugarcane. It was the highest for both crops. The machine use per acre for the cultivators in the operational holding size class, 5 to 10 acres, was around 4.7 and 3.5 hrs per acre—the lowest for both crops. This means an inverse relationship existed between operational holding size classes and machine use per acre. (Figure 6.4).

The inverse relationship between machine use per acre and operational holding size classes could be due to two possible factors: differential in machine ownership or improvement in machine use efficiency with an increase in the operation size. Machine ownership patterns will be discussed in section 6.3.2. It will be interesting to analyse machine use efficiency with an increase in operational holding size. However, it is beyond the scope of the current study.

Figure 6.4: Machine use per acre among cultivator households.



Source: PARI survey data

Now that one has analysed machine use patterns let us move on to analysing differences in access to credit among cultivators of different operational holding size classes.

6.2.6 Access to Credit

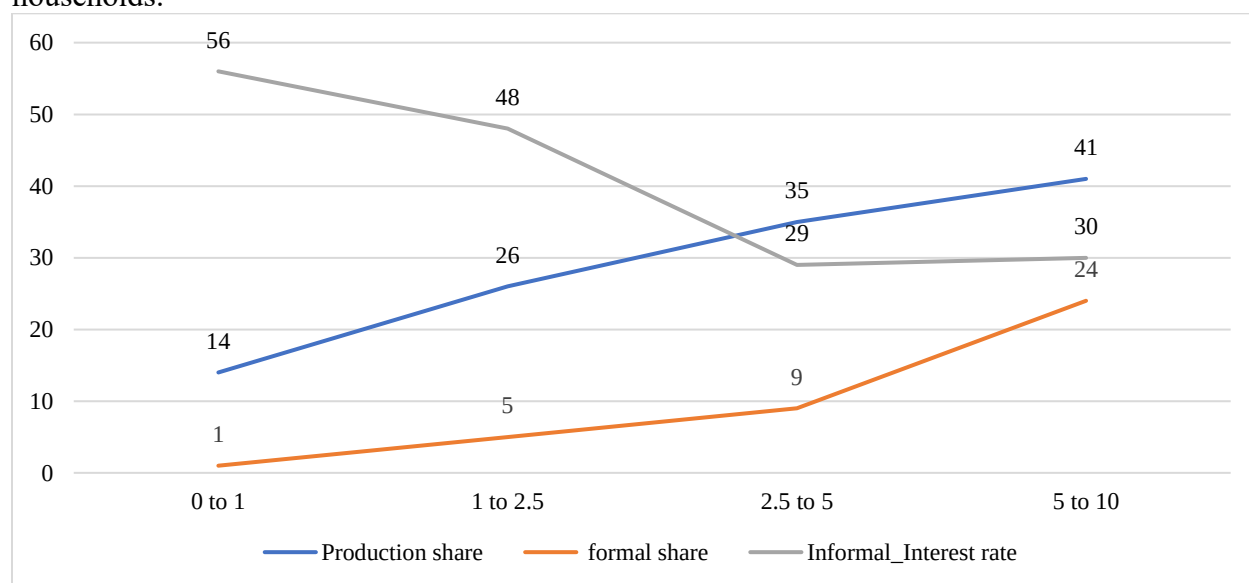
A cultivator needs monetary capital to organise production. They need it for working capital and to buy MoP. There are two means: household savings and credit. For cultivators, credit becomes instrumental in organising production due to the long gestation period in cropping. A better credit flow positively impacts production and productivity in agriculture (Das et al., 2009; Yadav & Sharma, 2015).

To understand the condition of credit market access among cultivator households, one checks three statistics: the share of formal loans in the total household loans, the average interest rate in informal loans and the share of production loans in total loans. The share of formal loans in total loans was generally low. However, there was considerable variation in the different operational holding size classes. For the operational holding size class, 5 to 10 acres, the share of formal loan in the total outstanding loan was 24 per cent. Meanwhile, it was just 1 per cent for the operational holding size class, 0 to 1 acre (Figure 6.5).

All strata of cultivators could access credit through informal sources. However, the rate of interest paid becomes a crucial variable of interest. The rate of interest in informal credit was invariably high. Even at such a high prevailing interest rate, there existed variation over the operational holding size classes. The average interest for the cultivators in operational holding size class, 5 to 10 acres, was 30 per cent. Meanwhile, cultivators in the operational holding size class, 0 to 1 acre, had to pay 56 per cent, which almost double (Figure 6.5).

When one looks into the purpose of loans, one observes that the share of production was low for all cultivator groups. However, a positive association existed between the share of production loans and operation holding size class. For cultivators in operational holding size, 0 to 1 acre, the share of production loan was merely 14 per cent. This means that around 90 per cent of their indebtedness was for consumption purposes. Meanwhile, for the cultivators in the operational holding size class, 5 to 10 acres, the share of production loan was around 41 per cent (Figure 6.5).

Figure 6.5: Share of formal credit and interest rate share in informal loan among cultivator households.



Source: PARI survey data

One analyses the different aspects of the production organisation of cultivators from different operational holding size classes: organising land, making decisions regarding cropping patterns, organising inputs, machinery, and credit. From the production organisation, let us move to the

question of long-term or durable investment. In the next section, one analyses the pattern of durable investment among cultivators from different operational holding size classes.

6.3 Durable Investment in Agriculture

The durable agricultural investments reflect households' intent to continue with agriculture (given they have investable capital). If a household invests in irrigation sources or buys land and machinery, it means the household would prefer to continue with agriculture in the coming years. The PARI collects information on the following aspects of agrarian investments:

1. Purchase of agricultural land.
2. Purchase of agricultural machinery (old or new)
3. Investment in borewell/tubewell

This section briefly discusses differences in the investment behaviour of cultivators from different operational size classes in land, machinery and borewell/tubewell.

6.3.1 Purchase of Agricultural land

The PARI survey collects land purchase and sale information for approximately thirty years preceding the survey reference year. However, one presents information on land purchases and sales for the last ten years preceding the survey reference year to understand cultivators' recent investment patterns in agricultural land.⁴⁶ Recent land transaction trends show that the total land sale and purchase amount was low (Table 6.6). If one looks at the average purchases, it was around a half acre. Maybe this is a reflection of the inactive land market. Besides, the reported total sale was just around one-third of the total purchases. This means that sellers were either non-residents or underreported their land sale. Another inference is that the highest operational holding size class, 5 to 10 acres, had the highest purchase of land, 8.02 acres, with an average purchase of 0.65 acres.

⁴⁶ Since the survey covers only resident of the village, those households who entirely sold their land and left the village would not come here. That may have impact on overall net purchase of the particular operational holding size class.

Moreover, all the operational holding size classes (excluding households in the 2.5 to 5 acres) had positive net purchases of land (Table 6.6).

Table 6.6 Agricultural land purchased and sold among cultivator households. (in acre)				
Operational holding size class	Area purchased	Area sold	Net purchase	Average purchase per transaction
0 to 1	5.71	1.61	4.1	0.31
1 to 2.5	11.04	6.28	4.76	0.48
2.5 to 5	2.57	2.63	-0.06	0.42
5 to 10	9.75	1.73	8.02	0.65
Total	29.07	12.25	16.82	0.53

Source: PARI survey data

By observing the land and tenancy markets, one might not be wrong to infer that the production structure was relatively stable (low land transaction), and tenancy was an important adjustment process for organising production. Moreover, all cultivator households looked to invest in land (depending on their socio-economic condition). However, cultivators in the operational holding size class, 5 to 10 acres, were the ones who invested the most in the land.

6.3.2 Purchase of Machinery

In this sub-section, one looks into two sets of information. First, what was the current possession of machinery among cultivators in different operational holding size classes? Second, investment in machinery in the last five years preceding the survey reference year among cultivators from different operational holding size classes.

The PARI survey collects information on current possession of machinery, purchase of machinery with year of purchase, amount paid, and current value. However, it did not have past information on the sale of machinery. Among cultivator households, two major machinery were the pump set (diesel) and the tractor. The cultivator household, in total, had 10 tractors and 22 pump sets. In that the tractor ownership was primarily among cultivators in the operational holding size class, 5 to 10 acres, and 2.5 to 5 acres. Meanwhile, the pump sets were more evenly owned (Table 6.7).

To understand the pattern of recent investment in machinery, one looks into the purchase of tractors and pump sets in the five years preceding the survey reference year. The recent purchases of machinery show data shows that most of the possessed machinery was recently purchased. This may be because the PARI survey collects information through recall, which may skew the purchases in recent times. Alternatively, due to the predominance of second-hand machinery among cultivator households, the total age of machinery may be less. The machine purchase data shows that a total of eight tractors were purchased in the five years preceding the survey reference year; out of those cultivators in the operational holding size class, 5 to 10 acres and 2.5 to 5 acres were purchased seven. In the case of pump sets, a total of 17 were purchased. the operational holding size class, 5 to 10 acres, was also a major purchaser of the pump set. However, other operational holding size classes also had a considerable recent purchase (Table 6.7).

The possession and purchase of machinery data show that in the tractor, the total ownership and recent purchase both were primarily by cultivators in the bigger operational holding size classes. However, pump set ownership and recent purchases were comparatively more evenly distributed among different operational holding size classes (Table 6.7).

Table 6.7 Ownership and purchase of tractor and pump set among cultivator households.

Operation size class	Tractor		Pump set (Diesel)	
	Total owned	Purchased in last five years	Total owned	Purchased in last five year
0 to 1			4	4
1 to 2.5	2	1	1	1
2.5 to 5	3	3	5	4
5 to 10	5	4	12	8
Total	10	8	22	17

Source: PARI survey data.

6.3.3 Investment in tubewell/borewell

An investment in the tubewell/borewell is considered a sunk cost because it can not be recovered unless the land itself is sold. So, investments in tubewell/borewell indicate a cultivator's intent to continue farming in years to come. This sub-section explores two sets of statistics: first, the total number of tubewells/borewells possessed along with average depth among cultivators from

different operational holding size classes. Second, the total number of tubewells/borewells installed in the last five years preceding the survey reference year among cultivators in different operational holding size classes.

PARI collects information on the total current ownership of the tubewell/borewell and the installation year. In the case of borewell/tubewell, along with the number owned, the depth of the tubewell/borewell also becomes a variable of interest. As its depth determines the durability of the investment. Here, one presents the total number of tubewells/borewells owned by the cultivators in the different operational holding size classes, along with the average depth. It shows that the cultivators in the operational holding, 5 to 10 acres, owned the majority of the tubewells/borewells. Moreover, they had the highest average depth. Meanwhile, cultivators in the operational holding, 0 to 1, did not own any (Table 6.8).

To understand the pattern of recent investment, one looks into tubewells/borewells installed in the last years preceding the survey reference year. It also shows a similar pattern as the total ownership. Cultivators in the operational holding size class, 5 to 10 acres, had the lion's share of recently installed tubewells/borewells. Furthermore, they also had the highest average depth (Table 6.8).

Table 6.8: Ownership of tubewell/borewell among cultivator households.

Operational holding size class	Total ownership		Installed in the last five years	
	Number	Average depth (ft)	Number	Average depth (ft)
0 to 1				
1 to 2.5	2	78	2	78
2.5 to 5	6	68	4	68
5 to 10	10	86	8	92
Total	18	79	14	80

Source: PARI survey data

The investment pattern in land, machinery, and borewells/tubewells shows that cultivators from all operational holding size classes engaged in investment. However, cultivators in the operational holding size class, 5 to 10 acres, had invested most. They had an overwhelming share of all the major durable investments. Notably, they also had the highest possession.

Did differences in production organisation and investment patterns translate into a better return from cultivation? To assess this question, the next section will explore the yield, prices and crop income pattern for cultivators from different operational holding size classes.

6.4 Yield, Output Prices and Crop Income

Did differences in input, labour, machine organisation, access to credit, and agrarian investment patterns have an impact on farm productivity? prices are another important determinant of return. Were cultivators from varied operational holding size classes treated differently in the output market? Eventually, did all these differences make any significant differences in return to cultivation among different operational holding size classes? Let us first look into patterns of yield and output prices.

6.4.1 Yield and Output Price

In this sub-section, one looks into differences in yield and price of principal crops, paddy and sugarcane, among cultivators in different operational holding size classes.

The yield of paddy and sugarcane shows a similar pattern. It remained similar for the first three operational holding size classes; however, there was a substantial increase for the operational holding size class, 5 to 10 acres (Table 6.9). The pattern of the yield of cultivators in different operational holding size classes poses an interesting take on the well-debated issue of farm size and productivity in Indian agriculture (Sen, 1962; 1964; Patnaik; 1972; Bharadwaj; 1974; Rao, 1995). The village farm productivity pattern shows that the yield and operation size did hold a positive relationship—however, the operation size needed to reach a substantially bigger size to make an observable difference. Nonetheless, suppose one tries to understand differences in yield through input use patterns. The modern input use per acre pattern in paddy shows a positive association with operational holding size. And yield also shows a similar pattern. This means that modern input use may have a positive impact on yield (Figure 6.2 and Table 6.9). However, it did not hold for sugarcane. Markedly, in the case of sugarcane cultivators in smaller operational holding size classes had higher modern input use per acre. It will be interesting to observe whether

cultivators with smaller operational holdings overused the marketed inputs in the expectation of better returns from the cash crop (sugarcane). That also had an assured price. However, it is beyond the scope of the current study.

Unlike yield, the prices of paddy and sugarcane followed different patterns. The pattern of the average price of paddy was similar to the yield. It remained similar for the first three operational holding size classes. Then, a considerable rise for the cultivators in the operational holding size class, 5 to 10 acres (Table 6.9).⁴⁷ When one looks at the prices of sugarcane, it shows a very different picture. Its prices did not vary. It was around Rs 215 per qt for all cultivators. (Table 6.9). Another interesting observation between the prices of sugarcane and paddy was the differences in CV. For the paddy, the CV of prices were generally around 0.15. And varied among cultivators of different operational holding size classes. However, in the case of sugarcane, it was low, around 0.05. Moreover, it remained similar for all operational holding size classes (Table 6.9).

One can understand the differences in paddy and sugarcane price patterns by prevailing marketing agencies. To encourage private parties in agricultural marketing, the Government of Bihar repealed the APMC Act in 2006, dismantling the mandi system (Kumar, 2020; Pandey, 2021). After that, PACS started engaging in grain procurement. PACS are fundamentally village-level credit cooperative institutions. In Bihar, however, they are also mandated to buy grains from its members. From there, state and central agencies procure (Kumar, 2020). PACS gives prices equivalent to MSP. In the village, only a few affluent households could sold to PACS. The rest of the households sold their paddy to private merchants. These merchants offered prices lower than the MSP. Moreover, the prices also varied with the volume of output sold. In contrast, in the case of sugarcane, the principal marketing agency was the sugar mill. All the cultivators had access to mill. In the sugar mill, prices were decided by the state policy, which was mixed and similar for all sellers, known as Fair Remunerative Prices (FRP). Hence, prices were similar, and CVs were low.⁴⁸

⁴⁷ The average price for the operational holding size class, 2.5 to 5 acres, was considerably lower, Rs 757 per qt. However, it also had a significantly lower CV.

⁴⁸ Cultivators with a lesser output volume or those who could not register to mill sold their output to the local market for making jaggery. However, their share in total sales was low.

Table 6.9: Yield and prices of paddy and sugarcane for different operation size classes

Operation size class	Paddy			Sugarcane		
	Yield (kg per acre)	Price (Rs per quintal)	CV	Yield (qt per acre)	Price (Rs per quintal)	CV
Cultivator (0 to 1)	1,654	800	0.16	164	214	0.06
Cultivator (1 to 2.5)	1,667	819	0.14	156	216	0.05
Cultivator (2.5 to 5)	1,684	757	0.08	160	215	0.05
Cultivator (5 to 10)	1,910	951	0.13	183	217	0.06

Source: PARI survey data.

Are cost structure, yield, and price differences also reflected in crop income? In other words, did cultivators in different operational holding size classes have differences in return to cultivation? To explore this question, in the next sub-section, one ponders patterns of crop income per acre among cultivators in different operational holding size classes.

6.4.2 Crop Income⁴⁹

The crop income is calculated by deducting the cost of cultivation from the GVO. The crop income per acre is calculated as

$$\text{Crop income per acre} = \text{Price per unit} \times \text{Yield} - \text{Cost of cultivation per acre}$$

Let us first look into paddy crop income. The crop income per acre over operational holding size classes shows first declines with an increase in the operational holding size class and then increases for the last size category, 5 to 10 acres, making a U-shaped association. Let us see what factors cause this U-shaped pattern. The crop income per acre has two components: GVO (Price per unit of output*yield) per acre and cost of cultivation per acre. The GVO per acre has shown an increasing pattern over operational holding size classes. However, the cost per acre had first increased and then declined for the last operational holding size class, 5 to 10 acres. This means that the cost per acre and operational holding size classes had an inverse U-shaped relation (Table 6.10). This means that the cost per acre was primarily behind the pattern of U-shaped crop income per acre over operational holding size classes.

⁴⁹ FAS has done all income-related calculations, and the cost of cultivation was calculated using the cost A2 method.

When one looks into the crop income per acre of sugarcane, it also gives a similar pattern as paddy. The crop income per acre over operational holding size classes first declined with an increase in operational holding size classes and then increased for the last size class, 5 to 10 acres. However, in the case of sugarcane, the GVO also had a similar pattern. Nonetheless, the cost per acre shows a similar pattern as paddy, an inverse U-shaped relation; it first increased and then declined for the last size class, 5 to 10 acres (Table 6.10).

Table 6.10: Crop Income per acre among Cultivator Households.

Operation holding size class (acre)	Paddy			Sugarcane		
	GVO (Rs)	Cost (Rs)	Crop income (Rs)	GVO (Rs)	Cost (Rs)	Crop income (Rs)
Cultivator (0 to 1)	15,894	11,879	4,015	38,143	23,925	14,218
Cultivator (1 to 2.5)	15,954	12,495	3,459	36,274	23,949	12,325
Cultivator (2.5 to 5)	16,011	13,397	2,614	36,272	23,962	12,310
Cultivator (5 to 10)	19,369	12,311	7,058	39,875	22,460	17,414
Total	16,864	12,130	4,734	36,334	26,598	9,736

Source: PARI survey data, *sugarcane is an annual crop.

The analysis of crop income per acre for different operational holding size classes poses two puzzles: First, the crop income per acre shows a U-shaped pattern with operational holding size classes. Second, households in the operational holding size class, 5 to 10 acres, had an absolute advantage in the return to cultivation (crop income), which was reflected in GVO as well as in cost per acre; then why were cultivators with substantial land were not the ones who aggressively expanded their operational holding. The village did not have any sign of reverse tenancy.

The U-shaped pattern of crop income per acre over the operational holding size classes was quite clear for the paddy. Nonetheless, it also holds for sugarcane. The U-shaped crop income pattern is primarily caused by the cost factor, which first increased and decreased for the last operational holding size class. Meanwhile, the GVO remained almost similar for the first three groups (Table 6.10). Several factors may cause this pattern. From the patterns of costs discussed in Section 6.2, one could observe two factors. First, there was growing use/dependence on hired labour with increased operational holding size class (Figure 6.3). The operational holding size class, 0 to 1 acre, had the lowest share of hired labour in total labour use. This means that their cultivation was

most dependent on family labour. Afterwards, the hired share had increased. However, FAS calculates crop income at cost A2. Cost A2 does not include imputed wages for family labour. Hence, it reduces the total cost for those who use more family labour. Second, there was a trend of a growing share of modern (purchased) input in total input use with an increase in operational holding size class. It holds strongly for Paddy (Figure 6.2). That may be a cause for a clearer U-shaped crop income per acre for paddy. In the village agrarian economy, does an increase in modern input uses need an optimal operation size and related factors to translate higher modern input uses in yield? It is an interesting question to explore. However, it is beyond the scope of the current study.

The next section will explore the second puzzle: Why did cultivators in the operational holding in size class, 5 to 10 acres, not the ones who expanded their operation size the most aggressively?

6.5 Exploration of the Village's Land Re-organisation Pattern

Cultivators in the operation holding size class, 5 to 10 acres, had a clear advantage in yield, prices, cost and crop income per acre. One gets back to the puzzle, which is observed in sub-section 6.2.1. Why were cultivators with substantial land holdings, not the ones who expanded operation size the most aggressively? One can see three possibilities: First, any prevailing constraint in the village's agrarian production system. Second, were there better incentives that prevailed in the non-farm sector, and third and last, were there any institutional constraints in the village to access additional land for the cultivators with substantial land holdings? This section explores the first two possible reasons. Chapter Seven will explore the third one.

6.5.1 Analysis of Principal Cost

Almost all cultivators essentially need inputs (homegrown or purchased), machines (owned or hired), and labour (family labour or hired) to organise production. The occurrence of other costs is conditional. Like rent comes if one leases in the land, the marketed cost comes if a cultivator goes for sale. Due to that, in this section, the study analyses only input, labour, and machine costs. For convenience, one calls them principal costs. Here, one takes principal cost and calculates shares of its three segments: input, labour and machinery (Table 6.11). Then, one compares the relative

significance of these three components in the total principal cost for the cultivators in the different operational holding size classes.

When one analyses the principal cost shares of paddy with respect to different operational holding size classes, it shows that the input use cost was similar for all groups. However, machine cost share and hired labour cost share give contrasting patterns. The machine cost share declines with an increase in operational holding size class. Meanwhile, the hired labour cost increases with an increase in the operational holding size class (Table 6.11). When one observes sugarcane (planted), it shows a very high input cost share. Moreover, the input cost share declined with increased operational holding size class. The machine cost share was, in general, low. However, it shows a declining trend with the operational holding size class. Furthermore, the hired labour cost share had an inverse relationship (Table 6.11).

One sees two observations from the patterns of share of different cost components in the total principal cost. First, with an increase in operational holding size classes, one sees an increase in the hired labour cost share. As discussed in Section 6.2.4, the hired labour share in total labour use had a positive association with the operational holding size classes (Figure 6.3). This factor may have come as a constraint in for the cultivators with substantial land holding to expand their operational holding. Second, the machine cost share declines with an increase in the operational holding size class. As discussed in Section 6.2.5, the machine use per acre had an inverse association with operational holding size classes (Figure 6.4). The machine cost share was comparatively higher than that of other size classes for the cultivators in the smaller operational holding size class (0 to 1 acres and 1 to 2.5 acres). From these statistics, one can sense that cultivators with smaller holdings may have faced issues with optimal machine utilisation. It could be more concerning for them as they mainly depended on rented machinery. So, this factor may push cultivator with small land holdings to lease additional land and improve their operational holding size.

Table 6.11: Share of principal costs among cultivator households.

Operational holding size class (acres)	Paddy				Sugarcane (planted)			
	Input share	Machine share	Labour share	Total	Input share	Machine share	Labour share	Total
Cultivator (0 to 1)	36.93	25.7	37.37	100	64.09	8.28	27.63	100
Cultivator (1 to 2.5)	37.79	29.21	33	100	54.64	9.31	36.05	100
Cultivator (2.5 to 5)	37.49	16.12	46.39	100	51.51	7.31	41.18	100
Cultivator (5 to 10)	36.14	17.26	46.6	100	51.99	7.16	40.85	100
Total	37.1	22.14	40.76	100	53.48	7.92	38.6	100

Source: PARI survey data

From the principal cost analysis, let us move to the second possible reason: if a better rate of returns exists in any other earning sources.

6.5.2 Rate of Return in Different Earning Sources

If other earning sources give higher returns or secure returns than cultivation, households with a substantial surplus may decide to diversify their income sources from cultivation. However, there exists a limitation: the PARI survey covers only the earnings of the non-agricultural sector, such as petty businesses, self-employed, and artisanal activities. It doesn't cover cost or investment. Nonetheless, one can explore the rate of return in the machine rental market. It was prevalent in the village, and almost all machine owners had engaged in it.

Here, the study defines the rate of return in cultivation as the return on per rupee expenditure in cultivation in the survey reference year.

$$\text{Rate of return cultivation} = (\text{Net crop income} / \text{Total paid out cost}) * 100 \quad \text{Eq (1)}$$

The rate of rental return on machinery is defined as the rental return on per rupee expenditure on a machine: tractor or pump set. However, machinery is purchased once and used for many years. Due to that, one does not take the total purchase but only the annual depreciation and expenditure

on maintenance. The PARI calculates the annual depreciation of machinery using the following formula:

$$\text{Annual depreciation} = (\text{Present value} - \text{salvage rate} * \text{present value}) / (\text{Total life} - \text{age}) \quad \text{Eq (2)}$$

Machines also have operational costs; this becomes more prominent as the village does not have electricity for cultivation. So, the Tractor and pump sets were operated by diesel. One approach to factor in this cost component can be computing the per-unit (over area, distance or time) machine operation cost. However, in the survey, the rental earnings of machinery are reported in aggregate. And their operational costs are not reported. To overcome this issue, the study takes the machine operation cost of the self-use of owned machines and takes it as a proxy for machine operation cost in hired machines.

The study takes the average operation cost for major operations like land preparation, irrigation and output transportation of self-use of owned machines. For instance, irrigating one acre of the field using an owned pump set needed 17 litres of diesel, and the diesel price in 2011-12 was around Rs 45 per lt. So, the average operation cost for irrigating one acre of land was Rs 765. However, the average rental payment to irrigate one acre of land amounted to Rs 1,440 (Average time requirement of 12 hours and a modal rental rate of Rs 120 per hour). Consequently, the operating cost of the pump set was estimated to be approximately 50 per cent of the total rental income. Similarly, when assessing the transportation costs of sugarcane, it was found that owned tractors incurred an average cost of Rs 80 per quintal, while the average rental payment for a hired tractor used in sugarcane transportation was Rs 240 per quintal. For land preparation as well, the ratio was similar. Hence, one-third of the rental earnings for transportation by tractor were considered the operational cost of the tractor.

Hence, the formula used for calculating the rate of return from machinery is:

$$\text{Machine rental return} = ((\text{total rental earning} - (\text{maintenance cost} + \text{annual depreciation} + \text{operation cost})) / (\text{maintenance cost} + \text{annual depreciation} + \text{operation cost})) * 100 \quad \text{Eq (3)}$$

Here, only rental earnings are considered for the return on machinery. However, these machineries were also used on the machine owners' farms. The implicit return of machinery on the farm of machine owners could not be considered due to insufficient data. This means the rate of return calculated from Eq (3) will underestimate the actual return from machinery.

When one sees the rate of return in cultivation, it gives two striking observations. First, the rate of return increases with an increase in operational holding size classes. Second, the CV increases for the first three groups. However, it substantially declines for the cultivators in the operational holding size class, 5 to 10 acres. Nevertheless, the rate of return remained in the range of 50 to 70 per cent for all groups (Table 6.12). When one looks into rental returns from machinery, it shows that the pump set gave an average rental return of 26 per cent, which was considerably lower than the return from cultivation for any operational holding size class. However, the average rental return on a tractor was around 100 per cent. It is almost four times higher than pump sets and double the average return from cultivation (Table 6.12). As discussed earlier, cultivators in operational holding size class, 2.5 to 5 acres and 5 to 10 acres, were the ones who owned tractors among cultivator households (Table 6.7).⁵⁰

Additionally, in the case of cultivation, negative income was quite prevalent. Even cultivators from the operational holding size class, 5 to 10 acres, also had negative crop income. Crop failure was also a common occurrence in cultivation. In the machine ownership, no household reported a negative return.

⁵⁰ Among cultivators in operational holding size class, 5 to 10 acres, the share of machine rental income in the total household income was around 10 per cent. which was substantially higher than other cultivator groups.

Table 6.12: Rate of return from cultivation and machine rental among cultivator households

Returns from Cultivation		
Operation size class	Mean	CV
0 to 1	52.38	1.21
1 to 2.5	47.04	1.39
2.5 to 5	59.30	1.46
5 to 10	68.55	0.69
Total	53.35	1.24
Rental returns from Machine		
Machines	Mean	CV
Pump (Diesel)	26.53	0.39
Tractor	100.39	1.51
Total	58.01	0.79

Source: PARI survey data

When the returns from renting out tractors were high, why did only a few cultivating households invest in tractors? To understand this, one explores the cost of purchasing machinery. The study takes machines bought in the five years preceding the survey reference year (2006-2011-12) and calculates the average prices of different machinery. Many cultivators had purchased second-hand machinery. So, one separates average prices for new and second-hand machinery. The average price of a new tractor was around 4.5 lakh. Moreover, even second-hand tractors cost around 1.73 lakh (Table 6.13). These prices were multiple times higher than the pump-set prices. Nevertheless, the price of pump sets was around 21 thousand. As one sees, the average annual household income of the cultivators, in the operational holding size class, 0 to 1 acre, was less than 50 thousand. Moreover, it was less than one lakh for the first three operational holding size classes (Table 6.2). As discussed in Section 6.2.6, access to formal credit was very low among cultivators, particularly among smaller operational holding size classes (Figure 6.5). In these circumstances, it becomes quite clear that most cultivators could not afford to buy machinery without affirmative state policies.

Table 6.13: Average price of machinery bought between 2006-2011-12 by cultivator households

Major machines	Average price (Rs)
Diesel pump	21,107
Diesel pump (second hand)	11,900
Tractor	4,41,500
Tractor (2nd hand)	1,73,000

Source: PARI survey data

6.6 Conclusion

The chapter analyses production organisation, investment behaviour, and return to cultivation in different strata of cultivators. In that, one observes the nature of tenancy, which shows that the village's primary tenant group were landless and near-landless cultivators. However, when one explores investment behaviour, cultivators in higher operational holding size classes were the ones who invested most in all aspects of agrarian investments. Additionally, they had an absolute advantage in cultivation in terms of yield, prices and crop income per acre. It poses an intriguing puzzle about the village's cultivation economy. When a scale advantage exists in the economy, why did cultivators with substantially higher land holdings, not the ones, expand their operation size?

To explore this puzzle, the chapter looks into two possible reasons. First is the composition of principal cost, in that the share of labour cost increases with the increase in the operational holding size class. This may have come as a constraint for the cultivators to expand after a limit. Additionally, machine cost share shows a negative relationship with the operational holding size classes. This means that cultivators with smaller holdings may have expanded their operation size to eliminate this disadvantage. This could be a possible reason for near-landless cultivators to expand their operation size. The second reason explored was the prevalence of a better return on tractor renting. When one checks tractor prices, it shows that only cultivators with a substantial surplus (cultivators with better land holdings and operation size) could afford to buy tractors.

In Chapter Seven, one will explore another possible constraint: the prevalence of any institutional barrier for cultivators with substantial land holding to access additional cultivable land.

Chapter 7

Sources of Agrarian Surplus and Accumulation Strategy of Surplus Appropriating Households

7.0 Introduction

In the village, a small group of households made agrarian surpluses in an otherwise distressed economy. These households had diverse characteristics. However, possessing disproportionately large amounts of land and MoP and not putting their physical labour into production was their common and defining characteristic. These households are classified as surplus-appropriating households. The terminology is borrowed from Sreeraj & Vakulabharanam, 2015 and Mandela, 2018. Using the Marxian framework, they broadly classify society into two classes: a class of surplus creators (workers and peasantry) and a class of surplus appropriators (landlord, capitalist, manager, etc). The criteria used to define the surplus-appropriation group are households that operate more than 10 acres of land, agricultural income as the primary source of earning, and zero labour ratio. A total of 11 households had these characteristics. This chapter studies these households.

As discussed in Chapter Four, the surplus-appropriating households had annual household incomes of more than 10 times that of cultivator households and more than 20 times that of LML households. This chapter inquires into their production organisation and explores how they made agrarian surpluses when cultivators generally struggled with breaking even. The chapter also explores how where they invest their surplus.

The analysis in previous chapters flows through aggregated statistics of groups. However, this chapter also uses illustrations of individual households and micro-processes. The one reason for it is, of course, the sample size. The surplus-appropriating group has only 11 households. Apart from that, and more importantly, individual illustrations create a better picture of processes. For instance, aggregates can explain inequality. However, only the detailing of the micro-processes can illustrate dominance.

The chapter has seven sections, excluding the current Introduction section. Section One discusses the genesis of the surplus-appropriating households. It traverses through the history of how the current surplus-appropriating households emerged to be the dominant households of the village. Section Two studies the socio-economic dominance of the surplus-appropriating households in the village. It highlights their absolute control over all social and political institutions and overwhelming possession of all productive resources. Section Three analyses the distinguishing features of the production organisation of the surplus-appropriating households through those that could appropriate agrarian surplus. Section Four analyses their farm accumulation. Section Five discusses their earning diversification and non-farm accumulation. Section Six analyses the use of social capital to further strengthen their position and hold over the economy. Finally, Section Seven is the chapter's conclusion.

7.1 Genesis of Current Surplus Appropriating Households

Here, one intriguing question arises: How did these households emerge as the village's dominant socio-economic force? In other words, can a household from cultivator households or LML households enter this group merely through market forces? This section explores the genesis of this group.

As discussed in Chapter Four, till the 1980s, the village was dominated by landlords from Bhumihar and Brahmin caste. They were very few in number. However, they owned the majority of land in the village and dominated the village's agrarian economy. Managers primarily organised their cultivation. Gradually, they shifted to nearby cities and engaged in government-salaried jobs. By the 1990s, all of them left the village. They also gave away operational rights over their land. Some sold off their land, and others leased out on long contracts.

An interesting question arises: When the most powerful section in the village's class hierarchy left and gave away its operational holding, how did it impact the village's agrarian structure and prevailing agrarian relations? What happened to relieved surplus land? Did it lead to the breaking of old structures? Could a progressive production relation emerge?

When one traverses village history with the following questions, one observes that the relieved surplus land went to the two kinds of households. Firstly, Yadav landlords from the neighbouring villages bought or occupied a large extent of land in the village and got settled. Second, managers of old absentee landlords. They might not have enough resources to buy a large amount of land. They leased large extents of land on long-term contracts at a nominal rental contract. They transformed from managers to big tenant cultivators. How this process happened should be clearer with a few illustrations.

Mr Rammani Yadav (name changed) was a big landlord of Bhatoura village. In 1992, he moved to Katkuian. With the help of Jay Parash Yadav (name changed) (brother-in-law of Rammani and a large landowner in Katkuian) and Narender Jha (name changed) (a manager turned big tenant-capitalist farmer), Rammani purchased a large extent of land from Jwala Singh (an absentee landlord). At the time of the survey, Mr Yadav lived alone in the village. He was a wrestler. He had a huge *akhara*⁵¹. He also had a big fish pond. His family was in the Bhatoura village, where he owned over 150 acres of agricultural land. Additionally, he also owned around 100 acres of land in other villages. He had ten attached labourers (PARI Survey Data).

Let us take the case of another landlord.

Ramanand Yadav (name changed) was a landlord in Choutrawa village. In the mid-1980s, he and his family moved from Choutrawa to Katkuian due to law-and-order unrest. With the help of Narendar Jha (name changed), he bought 63 acres of land from an absentee landlord, Shivnath Singh (name changed). Afterwards, he continued accumulating land and bought it whenever he could, using money and muscle power. At the time of the survey, he had 138 acres of land in the village. When the situation improved in his ancestor's village, Choutrawa, he invested in agricultural land, there as well. He had a huge house in the village, the biggest one. He owned a few shopping complexes in the nearby towns. He had five or six attached labourers in the village (PARI Survey Data).

⁵¹ Wrestling ground

In the last two illustrations, one discussed the cases of landlords from other villages who entered the village as a dominant household. They bought or occupied large land and became the village's new landlords. Now, let us take the case of an old manager who grew to become a dominant household in the village.

Narender Jha (name changed) was a small peasant in Sugia Katsari village, Shivhar district. In 1962, he and his family were brought to the Katkuian village to work as Mahadev Singh's (name changed) farm manager. He was the manager of around 200 acres of land between 1962 and 1985. During this period, the family members of Mahadev Singh settled in various places in Bihar, and most were employed in government jobs. Mahadev Singh's family members leased out around 72.5 acres of land to Mr Jha. Since 1985, Mr Jha has become a big tenant cultivator. The rent hardly varied over the 25-30 years. He also owned 4 acres of land in this village. In the survey year, all agricultural operations were done by hired labour in his field. He had many attached labourers (PARI Survey Data).

The illustrations discussed above show that the land relieved from the old feudal forces went to the landlords or managers who grew with the old semi-feudal production relations. They just replaced the old feudal classes with continued production relations. When one sees managers, they are the ones who organise farming through semi-feudal modes for the landlords. They continued farming with similar farm organisation techniques once they got operational rights to the same land. They continued using the same labour and production relations. Even the practice of having attached labourers continued.

Apart from landlords from the neighbouring villages and managers of the old landlords, another group was part of the surplus-appropriating households. They were households from Yadav and Koeiri castes, who historically owned a large extent of landholding in the village. They were not the largest landholders or richest households in the village. However, they were politically strong in the village.⁵²

⁵² See Section 4.1

The three sets of households that formed the surplus-appropriating households had the following origins: First, those were the historically dominant households in the village. Second, those were dominant households in other villages, utilised a historical juncture, and managed to become dominant households in the village. Third, those were at an advantageous point at a certain historical juncture (managers), and they utilised their advantages and emerged as the dominant household. It shows that not a single household has entered this bracket through a general accumulation process (natural market forces). This means that the current surplus-appropriating group formed primarily due to historical advantage (initial conditions).

In this section, one explores the genesis of the surplus-appropriating households and realises that this group is a close group created from historical advantages. The next section explores the socioeconomic hold of the class in the village.

7.2 Socio-Economic Hold of the Surplus-appropriating Households

Surplus-appropriating households owned most and the best land in the village. They owned and operated more than 50 per cent of the total holdings. They controlled all social, political and economic institutions of the village. Village Mukhiya (President), Sarpanch and PACS chairperson, all key political positions were held by members of these households. People respected these households inside the village, in the block office, and in the local market. Local auto drivers of Bagaha recognised their homes and gave extra attention and respect to passengers going to their homes.

One important observation on the social affiliation of the Surplus-appropriating household was that all of them belonged to the dominant castes of the village. Out of 11 households, six were Koeiri, four were Yadav, and one was a Bhumihar caste household.⁵³

In the village, the surplus-appropriating households comprised just 3.14 per cent of all households. However, they owned 53.16 per cent of the village's total agricultural land holdings. The average

⁵³ Chakravorty, 2001, and Kumar & Pandey, 2021, also observe a similar feature in their respective village study in Bihar. These papers observe a strong association between caste and class; all large land-owning households belonged to the upper caste, and the land market in the village was inactive.

agricultural land holding was 26 acres. They cultivated 50.3 per cent of the village's total operational holdings. The average operational holding of these households was 32.6 acres. They had 52.33 per cent of the total MoP value. The average MoP value was Rs 4.12 lakhs. Furthermore, these households held 55 per cent of the villages' total asset value. Their average asset value was Rs 2 crore. 97 per cent of households in the village owned less land, MoP and other assets in the village than the three per cent of households (surplus-appropriating households). It highlights the extent of inequality in the village's resource distribution (Table 7.1).

Table 7.1: Share in total land ownership, operation Means of Production and asset value among different Socio-economic classes.

Household classifications	Share in total households (%)	Share in ownership holding (%)	Share in operational holding (%)	Share in value of MoP (%)	Share in total asset value (%)
Surplus appropriating households	3.14	53.16	50.3	52.33	54.99
Cultivator (5 to 10)	5.43	14.28	17.95	25.85	10.58
Cultivator (2.5 to 5)	7.43	10.42	12.4	12.33	11.36
Cultivator (1 to 2.5)	16.57	13.54	13.05	7.83	11.94
Cultivator (0 to 1)	22.86	4.27	6.21	1.28	5.4
LML (non-cultivating)	32.57	0	0	0.11	2.14
Others	12	4.32	0.09	0.27	3.6
Total	100	100	100	100	100

Source: PARI survey data

One sees that the surplus-appropriating households had the most agrarian resources. It becomes intriguing to explore how their production organisation differed from cultivator households. Chapter Four presents different aspects of the production organisation of surplus-appropriating households, such as cropping patterns, input, labour and machine use patterns, and credit conditions. The next section analyses the specificities of the surplus-appropriating households through which they could appropriate agrarian surplus.

7.3 Production Organisation: Appropriation of Agrarian Surplus

One finds two unique features in the production organisation of the surplus-appropriating households. First, they used long-term labour. They often used the land and credit needs of their labourers to make them attach labour by interlocking the terms of land, labour and credit markets. Second, they used tenancy as a labour assurance institution. This section analyses these two features of the production organisation of the surplus-appropriating households.

7.3.1 Labour relations: Interlocking of land-labour-credit market

Underdeveloped primary market in rural India, and the Interlocking of land, labour and credit markets was central theme studies in agrarian studies in the 1970s and 1980s (Bardhan, 1980; 1988; Bhaduri, 1983; Bharadwaj, 1985; 1989; 1994; Ramachandran, 1990). In Bihar, large landowning households in rural Bihar have historically utilised skewed land distribution and land hunger of other households to interlock the land, labour, and credit markets. It often led to generational labour bondage (Junnazi, 1974; Prasad, 1976; 1979; 1987; Das, 1982; 1983; Prasad & Rodgers, 1983; Sahay, 1998; Chakravorty, 2001). However, through respective field studies, Jha, 2004 Sharma et al., 2012 and Rodgers et al., 2013 observed that attached labour has now become invisible in Bihar villages.

However, the village had a prevalence of long-term labour and attached labour institutions. Employing long-term labour and attached labour was a common and specific feature of the surplus-appropriating households. The surplus-appropriating households exploited prevailing employment crisis, land hunger and lack of access to institutional credit sources among landless and near-landless households. The surplus-appropriating households acted as land owner (in tenancy market), moneylender (in credit market), and employer (in labour market). They interlock terms of contract of all markets, which reduces bargaining power of the landless and near-landless households in the village. It functions through institution of long-term labour or attached labour.

In long-term labour days of work and tasks were not defined. Households who employ them hold the 'right to first call' on them and their family members. Households usually abstained from

reporting employing attached labour. Due to that, the extent of the use of long-term labour may be under-reported. Long-term labourers were usually reported as daily wage labourers. Here, information on long-term labour, particularly on attached labour, is taken from the household schedules of labourer households.

In the village, there were three kinds of long-term workers: non-attached, attached through land, and attached through debt. Long-term labour non-attached were hired labourers on the monthly wage contract. This was primarily for the tractor drivers or other machine operations. In this contract, households usually had hired someone from their caste or hamlet.

Second, type of contract was the ones that were-attached through land. In this contract, labourer households were given a piece of agricultural land, usually ten *kattah* (0.75 acre). In return, they ensured a regular labour supply for the entire agricultural season. Their employer was their main source of debt. Attached labour through land was the most vulnerable section of the village society. Their homestead land also belonged to their employer. In case of even the slightest resistance to their employer's wishes, they may have to flee the village, leaving everything and clearing off all debts overnight. They were literally at the mercy of their employer households, with no say in the village affairs. They were given homestead spaces on the village boundaries. Mostly, Dalits and a few BC-1 Muslim households were attached to labour through the land.⁵⁴

Third, attached labour through debt was the village's most prevalent attached labour relation. In this contract, if a labourer household takes a loan from a big landed household, it must repay the loan in the form of labour. They would not get wages until the loan amount is fully compensated. The labourers' wages get adjusted from their debt. The wages for these labourers were lower than the usual prevailing wage rates in the village for the same operation. The differential in wages was the interest component. The employer household holds the 'right to first call' on that household's labour. The labourer cannot leave the village without permission from the employer's household. This attachment works in the village as an invisible attached labour; even labourer households did not report it (they may not understand attachment in this form). However, they reported the prevalence of this institution in case studies and group discussions. The prevalence of this contract

⁵⁴ See Dhar et. al., 2022, for a detail discussion attached labour through land.

could be traced only through differential in wages received from usual village wages for the particular operation and household indebtedness information. Using a few cases of attached labour, the extent, nature and conditions of attached labour relations in the village is illustrated.

Let's take the case of one landlord household and his relations to the attached labourer. An intriguing fact is that this household moved to the village just 20 years before the survey year. He had a few second-generation attached labourers.

Mr Rammani Yadav (name changed) runs a big *akhara* in the village. Due to that, he was known as Pahalwan (wrestler) Yadav. His cultivation was totally dependent on attached labour; his son occasionally oversees the farm management. He had three wrestling students who lived with him. They actually organised production on his behalf. He had ten attached labourers. All attached labour households were dependent on Mr Yadav for their indebtedness. They had no account of the amount outstanding or interest charged. Few of them reported that Mr Yadav's accountant still claims outstanding loans of their father. They were second-generation attached labourers. All attached labourers resided on the homestead land given to them by Pahalwan Yadav. Mr Yadav did not necessarily own these homestead lands. For instance, the Anuragi Devi family lived on a patch of land owned by Jay Parash Yadav (name changed) (a relative of Pahalwan Yadav). Anuragi Devi's family also had a debt of Rs 11 thousand from Pahalwan Yadav. Suriyan Ansari was another attached labourer of Pahalwan Yadav. He and his family were living on a tiny parcel of *gair-majazaru* land, which Mr Yadav occupied. This household was the second generation of Mr Yadav's attached labour. Suriyan's father became too old and lost his eyesight. Suriyan was not aware of how much money his family still owed to Mr Yadav (PARI Survey Data).

Let's take another case on how, in the debt-land-labour interlocking, the labourer households lose even basic rights to request not to be humiliated.

Muslim Miyan (named changed) was an attached labourer of Narender Jha (name changed) (a big tenant cultivator). He had received 0.75 acres of land as enumeration. He took out a Rs 10 thousand loan from Mr Jha. Once, he opposed the humiliation and abuse of his wife. For that, Mr Jha sacked him and snatched the agricultural land with crops. He also forced Mr Miyan to return 10 thousand within a week with Rs 5 thousand additional interest (PARI Survey Data).

The interlocking not only controls the possibility for labourers to better their condition but also shatters their ongoing attempts to break the shackles of impoverishment.

Mr Mukhi (name changed) had taken a loan from Ramacharan Yadav (name changed) (a landlord) for the marriage of his son. He was returning it through his labour. His son had migrated to Delhi. Remittances sent by his son were this household's primary livelihood source. In the survey year, Mr Mukhiya fell sick and had heart-related issues. He could not continue to provide labour to Mr Yadav's field. Mr Yadav forced his son to stay in the village and work in his field. Mr Mukhiya's son could not go to Delhi in the survey year. The amount outstanding was just Rs 5 thousand (PARI Survey Data).

Surplus-appropriating households were the primary landowners in the village. They were the ones supplying most land to the tenancy market. Their decision on whom they will lease out and under what terms and conditions had a dominant impact on the institutions in the tenancy market. One would map the tenancy transactions in the village and try to understand the tenant preferences of the surplus-appropriating households.

7.3.2 Tenancy relations: An institution of labour assurance

In the survey, the reporting of land leased out was, in general, low. The extent of under-reporting can be understood by comparing the difference between the number of transactions reported of leased in and leased out. The total number of leased-in contracts reported was 298. The total number of reported leased-out contracts was just 65. Among surplus-appropriating households, only five share rent leased-out contracts were reported. However, the study could trace out a minimum of 33 share rent contracts given by surplus-appropriating households. For the leased out at the fixed rent contract, the surplus-appropriating households reported a total of 8 contracts, and the study could trace out a minimum of 41 contracts given by surplus-appropriating households. Due to such a high extent of under-reporting of land leased out, one could not use the leased-out information provided by the households. Instead, it used information on leases from the surveys of tenant households.

The PARI survey gathers data from tenant households, including the lessors' names, castes, and land holdings. The study aims to map tenants' and lessors' ownership size class. However, in numerous cases, households couldn't provide information about the lessor's land holdings. In these instances, the study tried to ascertain the lessor's land holdings by tracing their name and caste information in their household data. However, achieving a complete mapping faced two challenges. Firstly, the lessor wasn't a village resident in some cases, so could not be part of the survey. Secondly, slight variations in the reported names between the tenant's records and the lessor's household survey hindered accurate matching. The study could map around 70 per cent of contracts. Here, the study presents mapped information.

The surplus-appropriating households and non-resident landowners were the village's main landholders. They were also the main lessor group. Their share in total land leased out was more than 65 per cent. So, the analysis in this section focuses primarily on their leasing out preferences. The surplus-appropriating households preferred leasing out to principal labour-supplying households in the village (landless and near landless households). More than 75 per cent of their leased-out land was given to landless or households with land ownership, 0 to 1 acres. Meanwhile, the non-resident landowners had leased out land only to the surplus-appropriating households (Table 7.2).

Table 7.2: Mapping of area under tenancy by ownership size class of tenant and lessor

Tenant size class (acre)	Lessor size class						Total
	0 to 1	1 to 2.5	2.5 to 5	5 to 10	surplus- appropriating	Non-resident landowners	
Landless	3.45	3.23	4.93	7.21	28.06	0	46.85
0 to 1	0.38	2.53	8.33	6.98	18.53	0	36.73
1 to 2.5 acre	2.48	6.67	6	12.75	4.28	0	32.16
2.5-5 acre	4.13	2.63	2.63	0	6.15	0	15.53
5- 10 acre	0.6	0	4.5	0.6	4.73	0	10.43
surplus- appropriating	0	0.3	0.15	0	0.98	92.15	93.58
Total	11.03	15.34	26.53	27.53	62.7	92.15	235.27

Source: PARI survey data

Surplus-appropriating households and non-resident landowners were the two groups that owned most of the land in the village. They were prime lessor groups as well. The surplus-appropriating

households preferred leasing out to principal labour-supplying households in the village (landless and effectively landless households). These tenants hold certain labour obligations for their lessor households. These tenants were not an attached labour of the lessor households. However, the surplus-appropriating households used to assert the 'right to first call'. The surplus-appropriating households mixed tenancy and labour contracts and ensured non-assertive labour availability. When one looks into the tenant preferences of the non-resident landowners, they had leased a large amount of land to a few surplus-appropriating households. The rents in these contracts were less than half of the prevailing rental rates in the village. This has further strengthened the hold of the surplus-appropriating households on the village economy.⁵⁵

The leasing out preferences of the main lessor groups of the village had two impacts on the village production structure. First, it strengthened the position of the surplus-appropriating households by having access to a large chunk of additional cultivable land at low rents. Second, it ensures a better hold in the labour market with the 'right to first call'. It had just the opposite impact on the cultivator households with substantial holdings. First, leasing out preferences of main lessor groups had created a situation in which cultivators, with ownership holding between 1 to 10 acres, could hardly access any land through the tenancy market. This explains the third possible reason why cultivators with substantial land holdings did not expand their operation size the most aggressively despite the village agrarian economy having a scale advantage.⁵⁶ Second, what becomes a labour assurance to the surplus-appropriating households actually becomes a labour shortage for the other hired labour-dependent cultivators. In the village, cultivators in the operational holding size class, 5 to 10 acres, were the most hired labour-dependent cultivator group. This phenomenon should be understood in the context of the cultivation economy, in that the timing of agricultural operation is delicately dependent on the weather conditions. Even a few days or a week's delay can lead to low production or crop failure.

⁵⁵ Bansal, 2020, studies a village in Jalandhar district of Punjab which has a high rate of emigration to European countries among landed households. The study brings out that a class of capitalist farmer has emerged from the relatives of emigrant households. They get access to emigrant household's land at a cheaper rent. In that social capital in the form of caste and land holding had a crucial role.

⁵⁶ Other two reasons are discussed in Chapter Six.

In economic theories, tenancy is seen as an institution that facilitates land organisation between land owners and cultivators, where rent should be a priority consideration for the land owners (Ray, 1998; Cheung, 2000). The village tenancy does not function according to this rationality. The non-resident landowners leased out consistently to surplus-appropriating households on much lesser rent, despite being aware of the prevalence of higher rent in the village. On the other hand, surplus-appropriating households leased out to landless and near-landless households, often on share rent, despite knowing that there exist possibilities of crop failure or low production in their cultivation. It becomes more interesting to explore, given that a demand for land exists among cultivators with substantial land holdings, whose farm organisation is more intensive.

This section explored the specificities of a labour organisation of surplus-appropriating households. It shows that through the use of disproportionate control over productive resources, they controlled the labour market and interlocked the land, labour and credit market. In the next sub-section, one explores the extent of excessive surplus appropriated by these households in comparison to cultivator households.

7.3.3 Surplus Appropriation with Difference in the Labour Organisation

To understand the differences in surplus of the surplus-appropriating and cultivator households, one presents the GVO per acre of the principal crops, labour cost per acre and share of hired labour in the total labour. The GVO per acre of paddy for the surplus-appropriating households was Rs 19.5 thousand. For sugarcane, it was Rs 41 thousand. Both were the highest among all cultivating groups. However, it was not much different from the cultivators in the operational holding size class, 5 to 10 acres (Table 7.3).

For the surplus-appropriating households, the cultivation depended totally on the hired labour—the use of family labour was almost nil. For a few households, even supervision was done through hired labour. The hired labour share of the surplus-appropriating households was around 100 per cent for both crops. However, it was around 75 per cent for the cultivator (5 to 10) households. This means there was around a 25 per cent difference in the share of hired labour used (Table 7.3).

When one looks into the labour cost per acre, it is almost similar to that of cultivators (5 to 10) households. The labour cost per acre of paddy for cultivator (5 to 10) households was Rs 3,061. It was Rs 3,180 for surplus-appropriating households. For sugarcane, labour cost per acre for households in the operation holding size class, 5 to 10 acres, was Rs 4,955. for the surplus-appropriating households, it was Rs 5,036 (Table 7.3).

When one compares the share of hired labour in the total labour used, the surplus-appropriating households had around 25 per cent more hired labour used than the cultivators in the operational holding size class, 5 to 10 acres. However, when one compares the labour cost per acre, it is similar. This means that surplus-appropriating households had around 25 per cent advantage in the labour cost per acre compared to households in the operational holding size class, 5 to 10 acres (Table 7.3).⁵⁷

Table 7.3: GVO and labour per acre of sugarcane and paddy, and share of hired labour among different socio-economic groups.

Operation holding size class	Paddy (Rs per acre)			Sugarcane (Rs per acre)		
	GVO	Hired Labour cost	Share of hired (%)	GVO	hired Labour cost	Share of hired labour (%)
Surplus-appropriating households	19,451	3180	99.4	41,024	5036	99.98
Cultivator (5 to 10)	19,369	3061	73.78	39,875	4955	75.33
Cultivator (2.5 to 5)	16,011	3477	67	36,631	4000	71.25
Cultivator (1 to 2.5)	15,962	2370	58.47	37,713	4043	59.88
Cultivator (0 to 1)	15,886	2421	46.55	38,637	2341	39.26

Source: PARI survey data

In this section, one observes the specificity of the production organisation of the surplus-appropriating households through that they appropriated surplus. Here, an intriguing question emerges: what did they do with their surplus? Did they accumulate or use it only in extravagance? If they accumulated, where did they accumulate? One observes that they consciously and aggressively accumulated both in farm and non-farm avenues. In the next two sections, one

⁵⁷ One should not get confused with the figures of family labour share reported in section 4.6.1. The section 4.6.1 analyses all crops. Here, only principal crops, paddy and sugarcane, are considered.

explores the accumulation strategies of the surplus-appropriating households. First, let us look into their agrarian accumulation.

7.4 Accumulation in Agriculture

Did the surplus-appropriating households continue to accumulate in agriculture? Or was the recent accumulation process causing a progressive distribution of agrarian resources or further intensifying concentration? This section explores these questions.

The PARI survey covers the following aspects of household agrarian accumulation, these are:

1. Purchase of agricultural land.
2. Purchase of agricultural machinery (old or new).
3. Investment in irrigation (borewell/tubewell)

It provides information on the total current value of accumulation and details on years of investment. Let us explore the extent of accumulation of the surplus-appropriating households in the total accumulation in these three avenues.

7.4.1 Purchase of Land

To explore which group of households accumulate most aggressively on agricultural land, One takes information on the total land purchase and land purchased in the ten years preceding the survey data. The PARI survey collects information on land sale-purchase for 30 years preceding the survey reference year. However, the respondents' reporting is based on recall, so there is a possibility of under-reporting of older transactions. In total, 134 land-purchased transactions have been reported, and surplus-appropriating households had just 26 transactions. However, when one sees the total land purchased. 149.29 acres of land purchased are reported. In that, surplus-appropriating households have bought more than 60 per cent of the land.

One checks land purchase transactions in ten years preceding the survey reference year to understand whether these households also continued to accumulate in agricultural land in recent

times. The land purchased in the last ten years shows a similar trend to that of 30 years. In fact, the share of land purchased by the surplus-appropriating households in the total land purchased increased. Between 2001 and 2011-12, 85 land-purchased transactions were reported, and surplus-appropriating households had just 17 contracts. However, when one checks the total land purchased, it shows that 101.17 acres were purchased. In that, more than 70 per cent were reported by the surplus-appropriating households. They had bought 71 acres of land (Table 7.4).

This means the recent purchase of land has caused further concentration of distribution of land holdings in the village. Surplus-appropriating households had more than 50 per cent of total ownership holdings. And through land purchase, they are the ones who accumulate land most aggressively.

Table 7. 4: Land purchases by different socio-economic classes.

Household classifications	All land purchase			Last ten years (2001-2011-12)		
	Transactions (no)	Total purchase (acre)	Share (%)	Transactions (no)	Total purchase (acre)	Share (%)
Surplus appropriating households	26	89.93	60.23	17	71.00	70.18
Cultivator (5 to 10)	34	20.99	14.06	23	12.09	11.95
Cultivator (2.5 to 5)	23	13.48	9.03	13	7.76	7.67
Cultivator (1 to 2.5)	23	12.53	8.39	15	6.00	5.93
Cultivator (0 to 1)	14	3.53	2.37	12	2.93	2.9
LML (non-cultivating)	11	6.93	4.64	1	0.03	0
Others	3	1.91	1.28	4	1.35	1.33
Total	134	149.29	100	85	101.17	100

Source: PARI survey data

7.4.2 Purchase of Machinery

Households buy machinery for two purposes: using it in their field (saving rent on hired machinery) and renting out machinery (rental earnings). In Chapter Four, one sees the prevalence of a very high rate of machine rental in the village. It highlights the significance of machine ownership and accumulation in agricultural machinery. As discussed in Chapter Four, tractors, threshers, and pumps (diesel) were major machinery of the village. In total, 64 items of major

machinery ownership were reported. Of that, 30 were owned by surplus-appropriating households. A total of 23 tractors were reported. Of that, 13 were owned by the surplus-appropriating households. A total of five threshers were reported. Of that, four were owned by the surplus-appropriating households. A total of 36 pumps were reported. Of that, 13 were owned by the surplus-appropriating households. It shows that the surplus-appropriating households owned a large share of the village agricultural machinery. They owned the majority of threshers and tractors. In the case of pumps, which are relatively low-cost machinery (see Chapter Six, Table 6.13), their ownership share was around 35 per cent (Table 7.5).

Did the surplus-appropriating households continue to accumulate in agricultural machinery? To explore it, one checks the purchase of machinery in the five years preceding the survey reference year (2006 to 2011-12). During this time, a total of 45 pieces of machinery were purchased. Of that, 16 were purchased by surplus-appropriating households. A total of 13 tractors were purchased. Of that, five were purchased by the surplus-appropriating households. A total of four threshers were purchased. Of that, three were purchased by the surplus-appropriating households. A total of 28 pumps were purchased. Of that, eight were purchased by the surplus-appropriating households (Table 7.5).

In the case of machinery accumulation as well, the major accumulating group was the surplus-appropriating households. However, the machine accumulation was less concentrated on them than on agricultural land accumulation. The cultivator (5 to 10 acres) looks to catch up and compete with them in terms of recent machine purchases.

Table 7.5: Agricultural machinery ownership and recent purchase among different socio-economic classes.

Household classifications	Total owned				Purchased in last five years			
	Pump (Diesel)	Thresher	Tractor	Total	Pump (Diesel)	Thresher	Tractor	Total
Surplus appropriating households	13	4	13	30	8	3	5	16
Cultivator (5 to 10)	12		5	17	10		4	14
Cultivator (2.5 to 5)	5		3	8	4		3	7
Cultivator (1 to 2.5)	1	1	2	4	1	1	1	3
Cultivator (0 to 1)	4			4	4			4
LML (non-cultivating)								0
Others	1			1	1			1
Total	36	5	23	64	28	4	13	45

Source: PARI survey data

7.4.3 Investment in Borewell/Tubewell

The village had canal irrigation facilities. However, the water supply from the canal was limited, only in the Kharif season. Apart from that, households from far-off places from the canal had difficulties accessing canal irrigation facilities. Due to these two factors, village cultivation primarily depended on groundwater.

Investment in the borewell/tubewell is a considered sunk cost in agriculture. It cannot be reverted back unless the land itself should be sold out. Accumulation in the borewell/tubewell highlights that the household intends to continue cultivating in the long run. Households invested in the borewells/tubewells for two purposes: to utilise groundwater for irrigating their field. Second, the sale of water to others who did not have borewells/tubewells in their field. The village had an active market for the sale of groundwater. It was conducted on an hourly basis. The modal rate was Rs 80 per hour.

Here, one presents two sets of information: the total number of tubewells/borewells owned and the average depth. The village had a total of 45 borewells/tubewells. Of that, surplus-appropriating households owned 27. That was around 60 per cent of all borewells/tubewells. Cultivators (5 to 10 acres) owned 20 per cent. All other groups of households, whose share in total households was

more than 90 per cent, owned just 20 per cent. The surplus-appropriating household had the highest average depth of the tubewell/borewell; for them, it was 89 ft (Table 7.6).

Did surplus-appropriating households continue to accumulate in irrigation facilities? To check it, one explores information on the number of new borewells/tubewells installed in the last five years preceding the survey reference year (2006 to 2011-12) and the average depth of the recently installed tubewells/borewells. The depth can differ based on the geographical need of that space and the investment capacity of the household. Here, the amount invested is taken as a variable to cover factors such as the intensity of investment, which also includes the aspect of depth of borewell/tubewell. To understand the levels of concentration, one presents the share of different socio-economic classes in the total money invested in borewell/tubewell in the last five years.⁵⁸

In the last five years, a total of 29 tubewells/borewells were installed. The surplus-appropriating households owned 15, more than 50 per cent. When one looks into the average depth of the recently installed tubewells/borewells, it shows that the average depth has slightly increased in the village. That may be due to a general decline in the water level in the village. This could not be explored in detail. Nevertheless, the surplus-appropriating households had the highest average depth, which was 92 ft. However, the cultivators in the operational holding size class, 5 to 10 acres, also had a similar average depth. When one looks into the share in total investment in borewells/tubewells in the village, it shows the surplus-appropriating households had the lion's share of around 61.29 per cent. This means they just did not have the maximum number of tubewells/borewells, but they also owned the best quality (Table 7.6).

⁵⁸ The amount invested is not presented for all ownerships, as they were installed at very different points in time, and it is very difficult to adjust expenditures with price levels and other related factors.

Table 7.6 Number of borewells/tubewells owned and amount invested in the last five years by different socio-economic groups.

Economic Categories	Total ownership		Installed in last five years		
	Number	Average depth (ft)	Number	Average depth (ft)	Share in total village investment (%)
Surplus-appropriating households	27	89	15	92	61.29
Cultivator (5 to 10)	10	86	8	92	22.26
Cultivator (2.5 to 5)	6	68	4	68	11.51
Cultivator (1 to 2.5)	2	78	2	78	4.94
Cultivator (0 to 1)					
Grand Total	45	84	29	88	100

Source: PARI survey data

The current section demonstrates that surplus-appropriating households did not just have a high share in the village's agrarian productive forces. Along with it, they were also the ones who accumulated most in all aspects of village agrarian accumulation. From agrarian accumulation, let us move to the non-farm sector and explore the non-farm accumulation pattern of surplus-appropriating households.

7.5 Non-farm Accumulation

Cultivation was the primary source of earnings for the surplus-appropriating households. 70 per cent of their household income came through cultivation. However, they had diverse other sources of earnings in the non-farm sector. The PARI data had limitations in exploring the non-farm accumulation in a holistic manner. However, one explores the various non-farm channels in which surplus-appropriating households invest in the non-farm sector.

The surplus-appropriating households primarily invested in three non-farm avenues: First, they invested heavily in the village's informal political and social formations. Using that, they held almost all the village's possible political and economic institutions. They held institutions such as village sarpanch, *Amin*, PACS president, and Gram Sevak. Second, they look to emphasise their sons' higher education. Many were studying outside the state, in places like Delhi and Kota. Sons of few were preparing for high-end, government-salaried jobs. Sons of few were working in

government salaried jobs as well. Third, investing in the non-farm renting avenues. They had shopping complexes, shops, and coaching institutes in the local markets. They had bought tempos and given on rent.

The non-farm accumulation followed an individualistic pattern for each household. Due to that, one presents a few illustrations to present a household's earning diversification and strategies of non-farm accumulation.

Mr Arul Kushwaha (name changed) was HoH of a household operating 16.5 acres of land. He was also *amin*⁵⁹ in the village panchayat. He had three brothers. All four of them were married and lived together as a joint family. His younger brother, Ramaanand Kushwaha (name changed) was PACS president. His second younger brother had an electric appliance shop in the Bagaha market and a few tempo running on rent. The third brother had an iron workshop in the Bagaha market (PARI Survey data)

Mr Ramacharan Yadav (name changed) was HoH of a household operating 138 acres of land in the village. They had more agricultural land under cultivation in other villages. He had four sons. All of them were married. His younger brother and his family were also living in the same house. This household had 19 members. All of them were living and eating together. Mr Yadav had a shopping complex in the Bagaha market. He had three more shopping complexes in other cities. His son, Sonu Yadav (name changed), was a contractor who used to take construction contracts from various government and private agencies. His daughter-in-law was a government school teacher. His brother was a wrestler. He had an *akhara*. One of his sons, Upendra Yadav (name changed), was an ex-sarpanch of the village. All the male family members manage his vast agricultural operations, shopping complexes, and other businesses (PARI Survey data).

Mr Rammani Yadav (name changed) had more than 250 acres of land across four villages. He had one son, Pratap Yadav (name changed), who was a supervisor in the sugar mill, Bagaha. Mr Yadav was a wrestler. He had a big *akhara* in the village. Three of his wrestling students were living in his house. These students used to manage his agricultural operations like

⁵⁹ The official who keeps land record details of the village. *Amin* plays crucial role in resolving land related disputes at the village level.

safeguarding the land, suppression, or coercion on attached labourers. Mr Yadav's son used to oversee his field occasionally. However, Pappu Yadav's connection to the sugar mill had various benefits to Mr Rammani Yadav and his brother-in-law Jay Paras Yadav (name changed) (another surplus-appropriating household) (PARI Survey Data),

Mr Narender Jha (name changed) was a big tenant farmer with an operational holding of 78.5 acres. He had three sons. Two of them were married. The elder son, Duleep Jha (name changed), was a manager in a private company in Jahanabad (another district of Bihar). The younger son, Sanjeev (name changed), also ran a big coaching institution in the Bagaha market. Mr Jha's youngest son, Sanjog Jha, was an advocate in the local court. Mr Jha's two younger sons also helped him manage the large extent of cultivation (PARI Survey Data).

Mr Mohar Prasad Yadav (name changed) was HoH of a household that operated 12 acres of land. He had two sons. His elder son, Amit Kumar (name changed), was a private salaried employee of Sahara India. His younger son, Sandeep Kumar (name changed), was employed in Bharat Sanchar Nigam Limited (BSNL). They also had some businesses in Betiah town (60 km from the village), of which details were not reported (PARI Survey Data).

Mr Suraj Kushwaha (name changed) was HoH of a household that operated 26 acres of land. In the village, he was living with his wife and daughter. He had two sons. The elder son, Ajay Kumar (name changed), was a scientist at the Bhabha Atomic Research Centre (BARC), Mumbai. He lived in Mumbai with his wife and children. He. Mr Kushwaha's younger son, Arvind Kumar, was preparing for engineering at Kota, Rajasthan (PARI Survey Data).

These illustrations show that surplus-appropriating households had diverse sources of earnings and accumulation in the non-farm sector. However, diversification of non-farm, even investment in non-farm rental avenues, was looked to be dependent on the number of male household members. Households whose male members have settled outside the district or state look to expand less in the local non-farm sector. Even households with fewer male members diversified less. This should get clearer with a few more illustrations.

Mr Jay Parash Yadav (name changed) was HoH of a household operating 23 acres of land. He had two sons. Both were unmarried and studying. He was the village

sarpanch as well. His family was a traditional large landowner in the village. He had strong social-political networks. However, he did not have any non-farm investment or earning avenues. (PARI Survey Data).

Mr Umakant Kushawaha (name changed) was HoH of a household operating 26 acres of land. He had one school-going son. His family was also a traditional large landowner in the village. He also had good networks. However, as a non-farm, this household had just a car, which ran on rent. (PARI Survey Data).

It is intriguing to see a relationship between the expansion in non-farm and the number of male members among surplus-appropriating households. There exist two possible reasons for this. First, there was a lack of proper development of the non-farm sector, with properly defined property rights. Second, they did not put direct labour into agriculture or non-agricultural activities. However, they may need the masculine presence of their household member to establish their hegemony and coercive structure. Moreover, they need to safeguard their businesses from their managers and hired goons. This is evident from the case of Mr Ramdhani Yadav, whose only son was in a private salaried job. In that case, Mr Yadav kept three wrestling students as his son in his house. They were handling his farms.

One analysed the agrarian surplus-appropriation and accumulation strategies of the surplus-appropriating households. In the next section, one observes how they utilised their overwhelming control of the productive resources to create an oligarchy to strengthen and uphold their position. One also explores the institutional favours of these households.

7.6 Social Capital

Halpern, 2005, defines social capital as the social networks, informal structures and norms that facilitate individual and collective action. Social capital is seen as a support system for a better development outcome. However, it can also act as an instrument of exclusion (Alha, 2018).

In the village, only surplus-appropriating households exhibited to have features of social capital. It was the most caste-homogenous economic group. They had a close internal support system and

a strong network for institutional support. They had social capital due to their socio-economic dominance and disproportionate control over productive resources, including but not limited to land. This section discusses how they utilised it to create a closed support system to strengthen their position further and how their social capital helped them receive distinct treatment from public institutions.

7.6.1 Social Capital and Consolidating the Hold

Extending intra-class support without any direct monetary return was another unique feature of the production organisation of surplus-appropriating households. These supports happened informally as support extended to friends or relatives. However, this phenomenon was lacking in all other sections of the village. Additionally, one could not find this kind of support from any surplus-appropriating households to any household from other socio-economic classes.

This intra-class support among surplus-appropriating households solidifies their position further. Among surplus-appropriating households, if any household is in crisis, they help them out. They also use the intra-class support system to maintain their dominance in village society. These supports were for production and household general needs as well. One can better explain the nature of these supports from an illustration of non-production support.

Mr Jay Parash Yadav (name changed) was the village sarpanch. He was one of the few households in the village who owned a motorcycle. One night, at a marriage ceremony, someone stole his bike. In the social setup of this village, it could be against the prestige of dominant households if someone stole their item. So, this household hid this information from spreading. Instead, his brother-in-law, Mr Rammani Yadav (name changed) (Pahalwan), bought a new, costlier bike the next day. They disseminated the news that he bought a new bike and gave his old one to someone (PARI Survey Data).

In the production realm, three kinds of intra-class support were observed: interest-free informal loans, low rental on land, and free share of machinery.

7.6.1.1 Informal loans

The surplus-appropriating households had reported 31 outstanding informal loans. Of that, 12 were interest-free and without any collateral. The average principal amount on interest-free without collateral loans was around Rs 50 thousand. This means around 1/3rd of total informal loans were interest-free and without any collateral.

Among households except surplus-appropriating households, interest-free and collateral-free loans were rare. The average principal amount of such loans was around Rs 7 thousand. Among landless and low land-owning households, households reported exorbitant interest payments like 50-60 per cent per annum, even to friends and relatives. In the previous section, one can see that labouring households had gone into generational bondage for loans of 10-20 thousand. Meanwhile, the surplus-appropriating households created a closed system to access around 50 thousand people without interest rates and collateral. Furthermore, even in informal loans with interest rates, the average interest rate was around 14 per cent, which was many times lower than the other economic groups of the village.

Apart from interest-free collateral-free loans from friends and relatives. The surplus-appropriating households received interest-free shop loans as well. They used to purchase large amounts of inputs on credits without any extra payments. For other households, interest rates on shop loans were similar to other indebtedness, 40 to 60 per cent.

7.6.1.2 Low agricultural land rent among surplus-appropriating households

One observes from the previous section that the surplus-appropriating households had leased land predominantly from non-resident landowners. They had leased 93.58 acres of land. Of that, 98.5 per cent was leased in from non-resident landowners. The rent charged by these contracts was less than half of the village's prevailing rental rates. The surplus-appropriating households paid average rent under a fixed rent (money) contract of around Rs 5 thousand per acre per annum. However, in the village, the average fixed rent for paddy was around Rs 9 thousand per acre; for sugarcane, it was Rs 11.5 thousand per acre.⁶⁰

⁶⁰ In the case of paddy, rabi crops were rent free. Sugarcane is an annual crop.

Only one household had taken land under a share rent contract from the surplus-appropriating households. The rent was 50 per cent of the total output produced. However, it was not similar to other share rent contracts. Let's see the nature of this contract.

Mr Ram Yadav (name changed) was Mr Harinarayan Tiwari's (name changed) manager. At the time of the survey, Mr Yadav managed around 30 acres of Mr Tiwari's land. Mr Yadav had leased various land parcels from Mr Tiwari at different locations. He had leased 10.5 acres of land from Mr Tiwari under five share rent contracts. Mr Yadav used to use all Mr Tiwari's machinery for free. He also took input from Mr Tiwari's warehouse. So, in brief, even though output was distributed at a 50:50 ratio, like other share rental contracts. This contract was different from all other contracts, as in this contract, the tenant received free inputs and machinery from the lessor (PARI Survey Data).

7.6.1.3 Free machine exchange

As one can see in Chapter Four, machine rental rate was very high in the village. However, the surplus-appropriating households had rented machinery among themselves for free. These households had, in general, possessed all major machinery. Tractor-trolley for transporting sugarcane to the mill was one thing for that predominantly machine exchange had happened. Surplus-appropriating households among themselves shared tractors-trolleys along with drivers for days. They did not even charge for drivers. When sugarcane is supplied to sugar mills, it gets lined up outside the mill. Sometimes, the queue goes on for days. Then, it takes days to get their turn to unload sugarcane in the mill. In that case, the tractors and drivers had to remain in the queue for days. For other households, the transportation cost of sugarcane to mill through hired tractor-trolley was around Rs 500-600 per trolley per day. Along with it, they also need to pay drivers for their meals and some extra tips.

In this section, one sees how the surplus-appropriating households used their strong resource position to create an oligarchical structure in the village economy. They extend support to each other and consolidate their collective hegemonic position. In the next section, one will explore how the functioning of formal institutions also adds to their surplus appropriation and consolidates their powerful economic position.

7.2.4 Institutional support

The village's agrarian economy had two major institutions: The sugar mill and PACS. Both engaged primarily in output purchase. The Bagaha sugar mill was the primary sugarcane-purchasing institution. Cultivators from all strata of the village had access to the sugar mill. However, its functioning had given certain advantages to the surplus-appropriating households. For instance, the mill officials provided interest-free advances to the surplus-appropriating households when they sought money. Later, when they sell their sugarcane, the mill adjusts advances from the sale amount. However, this facility was accessible only to surplus-appropriating households. Another instance of special favour of surplus-appropriating households was observed in free seed supply. The mill receives sample seeds to promote new varieties of seeds. The mill gave those seeds only to the surplus-appropriating households.

In the village, PACS was primarily engaged in paddy purchases. However, the share of sales to PACS in the total paddy sales was very low. In that, only surplus-appropriating households had access. Of all sales transactions to PACS reported, only two were to the non-surplus-appropriating households.

7.7 Conclusion

Bihar's agrarian economy is in severe distress. When looking into the village economy, cultivator households looked distressed and struggled to make a meaningful return from cultivation. Their annual household earnings were low. How did a set of households manage to appropriate surplus and accumulate in that economic system? This chapter addresses this question.

The surplus-appropriating households had control over a major share of the village's productive assets. They had created a condition where they could dictate the terms of all markets in their favour. They interlocked the land-labour-credit market. Through that, they created rigidities for labourers to choose their employer or bargain for better wages. The surplus-appropriating households utilised that situation and appropriated agrarian surplus. Apart from that, they created

an oligarchical system through which they extended support to each other, like cheaper land and credit, free machine exchanges, etc. These households also received special support from formal institutions like sugar mills and PACS. These were additional sources of surplus-appropriation of the surplus-appropriating households.

When one looks at the accumulation strategies of surplus-appropriating households, one sees that they invest heavily in agricultural land, machinery, and irrigation facilities. This means they looked further to consolidate their position in the village's agrarian economy. Additionally, all three avenues had rent-earning potential. They also invested in the non-farm sector, primarily in shopping complexes, rental shops, guest houses, and renting out cars and tempos. Again, in mainly in rent-earning avenues. Their accumulation pattern shows that they primarily invested in avenues that give assured rental returns, which exhibits typical rent-seeking behaviour of the class. In recent agrarian accumulation, they sought to strengthen their hold on villages' productive resources.

Chapter Eight

Conclusion

The thesis begins with a question: Why does Bihar, a region with abundant natural resources and production potential, have a backward economy? The thesis analyses Bihar's agrarian economy. It observes that it is witnessing a prolonged crisis. The rate of growth is low and unstable. The majority of cultivators are struggling to have a positive return from cultivation. Labourer households are witnessing migration at an unprecedented rate. Moreover, the migration is short-term and seasonal in that workers migrate to different locations in a year (Chapter Two). Is this distress universal? The thesis primarily enquires this question. To explore this question, the thesis analyses a village study from the West Champaran district. It found that there exists internal class dynamism in the current agrarian distress. The impact is differentiated.

Studies such as Kumar & Bhagat, 2012, 2017, 2021 and Rodgers et al., 2013 presented the agrarian economy of Bihar as a complete despair. In that, everyone looked to move out of agriculture or migrate. The claim that the Bihar economy going to be a remittance economy. The Katkuian village's agrarian economy was in distress. It lacked ample employment opportunities, and the return on agriculture was low. However, it was not a condition of despair or complete non-viability of agriculture. The Katkuian village economy was in distress but not in despair. Households from all socio-economic classes look to continue with the village economy. Even those labourer households who witnessed migration, among them many engaged in tenant cultivation. Cultivators of all operation holding size classes looked to invest in agriculture: land and machinery (Chapter Six). Moreover, there exists a class that managed to appropriate surplus from agriculture. Furthermore, they were accumulating aggressively in agriculture as well.

The distress is reflected in the form of layered constraints faced by most households in any attempt to improve their current material condition. Furthermore, it was not uniform for all households. It had a differentiated impact on the different socio-economic classes. The LML households faced an acute employment crisis in the village economy. The total days of available employment in and around the village was not even 100 days per person in the year. Moreover, the wages were low. Households look to diversify their livelihood avenues by adopting different livelihood strategies.

Household annual income changes with the increase in livelihood avenues and livelihood strategies. However, the size and composition of the household labour endowment and debt and asset condition emerged as a constraint. Working-age males, particularly younger ones, look at migration as a way out. However, the nature of migration remained short-term and seasonal, which compelled them to continue to look for employment avenues in the village. Households with more female labour and/or male labour in higher age brackets look for tenant cultivation. However, cultivation remained at a low scale, with a limited marketable surplus. Nevertheless, LML households remained in near-destitution conditions. The average household income of the most diversified households was also just around 50 thousand per annum (Chapter Five). These livelihood strategies of LML households indicate a possible employment crisis at a macro level. In that, labourers struggle to find stable employment avenues for their livelihood. Bernstein, 2006, 2010, describes it as the creation of ‘classes of labour’. It is described as the current development regime in the Global South, where the class of pure proletariat could no longer be dependent only on wage labour. With a growing livelihood crisis, the proletariat class has become more mobile (migration) and engages in wage labour, often combined with small-scale cultivation and petty businesses. It fragments them into ‘classes of labour’.

Analysing the livelihood strategy of LML households shows that the village economy fails to provide enough days of manual labour. If they look for assured days of employment in the village, attached/bonded labour is the only option left to them. Which brings an element of control and perpetuates the low-earning trap. Young male emerges as an aspirational group. They consider work migration as the primary employment avenue. The levels of earning do improve with migration in the livelihood strategy. However, the nature of migration is short-term and circular. It also brings hardship and uncertainty and fails to provide stability. Due to that, migration remains a crisis mitigation strategy. It is reflected in debt as a significant driver of migration, and households with better asset conditions had less migration. Furthermore, return from cultivation was low and negative crop income was also prevalent (even at cost A2). These observations indicate that all livelihood avenues available to the LML households were conditioned in such a way that it failed to uplift them from their current socio-economic conditions. They looked to be trapped in their current near-destitution situation. That was their fundamental crisis—a crisis of survival.

The cultivator households' production organisation shows that cultivators from all operational holding size classes were looking to expand their operation size and invest in land, machinery and modern inputs. However, cultivators generally received a low return from cultivation. Among smaller operational holdings, negative crop income was also common. There exists a scale advantage in the village's cultivation economy. Households with a higher operation size had an advantage in the credit market, yield and output prices. However, villages' production conditions constrain the cultivators with substantial land holdings from expanding their size of operation (Chapter Six). These features of the village's economy pose a profitability crisis for the cultivator households. The profitability crisis was primarily derived due to low yield and output prices. One sees that both were positively associated with the farm size. This makes the profitability crisis a differentiated experience among cultivators from different operational holding size classes. For the cultivators with the operational holding, 0 to 5 acres, it was a crisis to break even, or one can say the crisis to sustain due to low yield and prices. The cultivator with the operational holding, 5 to 10 acres, had a better yield, prices, and more machinery. Their primary crisis was expanding their operation size for an optimal utilisation of their capital resources.

The village's cultivation economy poses a complex puzzle. Despite the prevalence of scale advantage in cultivation, households with substantial land holdings did not pick the land most in the tenancy market. The possible reasons that came out were rental returns from tractors and hired labour. Tractor rental return was around double the cultivation, even for the best-performing strata of cultivators. Due to this, there might be a capital shift from cultivation to tractors (purchase/maintenance) with the expectation of better rental earnings. If this were the case, it would be a capital shift from a productive economic avenue (cultivation) to a rental avenue. It indicates the growing significance of a growth-retarding institution in an already backward economy.

How do labourers see an employment crisis in the same village, and labour-dependent cultivators see hired labour as a constraint? One can understand this through the prevailing production conditions. The surplus-appropriating households had control over a major share of village productive forces, creating a condition where they could dictate the terms of all markets in their

favour. They interlocked the land-labour-credit market. Through that, they created rigidities for labourers to choose their employer or bargain for better wages (Chapter Seven). Furthermore, the 'right to first call' practice on many labourers may have created an artificial labour shortage in the village during peak agricultural seasons and denied timely access to labour for labour-dependent cultivator households. As one understands, in cultivation, timely availability of labour is crucial. Even a few weeks' delay can impact productivity or crop failure. In that context, cultivators might have observed hired labour as a constraint for expansion. A positive association existed between operational holding size class and hired labour use in the village (Chapter Six).

In the tenancy market, surplus-appropriating households and non-resident landowners were the main lessor groups. The non-resident households absolutely preferred surplus-appropriating households to lease out their land. They leased out a large extent of land to a few households. That further strengthened the position of the surplus-appropriating households (they got access to more operational holdings at a cheaper rent). On the other hand, the surplus-appropriating households leased out primarily to landless and near-landless households. They leased small parcels of land to numerous households. The lease preference of the surplus-appropriating households was to ensure labour control. Due to the lease preference of the surplus-appropriating households and interlocking the land and labour markets, cultivator groups were deprived of land from the tenancy market and the timely availability of labour. This created land and labour constraints for cultivator households with substantial land holdings for an optimal farm size expansion. This prevented them from utilising scale advantage and deepened their profitability crisis. At the same time, the surplus-appropriating households used interlocking land-labour and credit markets to exploit labourers in all three primary markets. It made wage rates low and allowed the extraction of usurious rent and exorbitant informal interest rates (Chapter Seven). It limited the income and earning capabilities of the labour-supplying households. It restricts LML households in impoverished conditions.

The surplus-appropriation method of the surplus-appropriating households in the land and labour market has an important role in the current near-destitution condition of LML households and the crisis of cultivator households. Furthermore, the surplus-appropriating methods put a layered constraint on all other agrarian households to come out of their current economic condition. These

layered constraints also heavily impact the growth potential of the economy. These layered constraints were the fundamental source of the agrarian distress and backwardness in the village.

When one looks at the accumulation strategies of surplus-appropriating households, one sees that they invested heavily in agricultural land, machinery, and irrigation facilities. This means they looked further to consolidate their position in the village's agrarian economy. Moreover, all three sources had rental earning potential. In the non-farm sector, they invested primarily in rent-seeking avenues, shopping complexes, rental shops, guest houses, renting out cars and tempos, and occupying socio-political institutions. Their accumulation strategies indicate that they primarily put capital in rent-seeking avenues. If the state does not intervene with affirmative actions to break this structure. In that case, the surplus-appropriating households hold may further intensify in the village agrarian economy and local non-agricultural sector. It is more concerning, given that they are primarily a rent-seeker class, and their accumulation strategy was largely rent potential investments.

As a conclusive takeaway point, the thesis proposes two points. First, the distress in Bihar is not universal. It has its class dynamism. The village study shows that it was a survival crisis for landless labourers. The cultivators have two groups; for the cultivators with operational holding, 0 to 5 acres, it was a crisis of sustenance in agriculture, low yield and prices. For the cultivators with 5 to 10 acres of operational holdings, it was a profitability crisis due to sub-optimal farm-size access. Eventually, the surplus-appropriating households were making agrarian surplus and accumulating aggressively. Second, there exist micro drivers of the change. One needs to study and analyse smaller economic units, such as villages, to understand the dynamism of change.

Future Prospect

The thesis observes that the agrarian economic system has become more dynamic than in the 1970s and 1980s. One sees heavy uses of marketed inputs and the role of money in the production organisation—however, continuity of old practices in labour organisation by the surplus-appropriating households. Corrigan, 1977 reviews the agrarian change process with the penetration of capitalism in the countryside and highlights the duality: market institutions are penetrating input

and output markets. However, labour relations continued to be pre-capitalist or feudal. One should explore how this duality may impact the production conditions. Additionally, one needs to explore and analyse how methods of surplus appropriation, accumulation, and functioning of primary markets change with the improvement in modern input and technology uses.

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Analysing Livelihood Strategies of Landless Manual Labour Households in Rural Bihar: A Study of a North Bihar Village

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Abstract

The paper studies the livelihood strategies of Landless Manual Labour (LML) households of a village named Katkuan, located in the West Champaran district of North Bihar. The Foundation of Agrarian Studies surveyed the village as part of the Project on Agrarian Relations in India. LML households, despite engaging in various occupations, predominantly hinged their sustenance through manual labour (in and around the village), seasonal work migration and tenant cultivation. The paper has designed a Livelihood Strategy Choice Model to understand the factors that drive certain households towards more income-generating livelihood strategies while limiting others. The insights from this model indicate that the indebtedness status of the household and male labour endowment substantially influenced the decisions pertaining to household migration. The decisions about household cultivation heavily relied on female labour endowment. The composition of male labourers in a household spanning across diverse age groups emerges as a key determinant in the choice between different livelihood strategies.

Keywords Livelihood strategies of rural labour in Bihar · Seasonal labour migration from Bihar · Livelihood crisis of rural labour · Rural labour market

JEL Classification J61 · J43 · J11 · J24

1 Introduction

Historically, Bihar has been a poor agrarian society. However, post-liberalisation, the share of the primary sector in the total state GDP has gradually fallen from 38.58 per cent in 1993–94 to 17 per cent in 2021 (CMIE 2022). The share of agriculture has declined even more sharply, from 33 per cent to 10 per cent during this period (CMIE 2022). Despite these changes, the rural population's

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share and the sectoral workforce's composition have remained unchanged. According to the Census of India 2011, 89 per cent of the population in Bihar was rural. Despite low levels of urbanisation, the population density was 1106 persons per sq. km, the highest among major states in India, with an average household size of 6 persons (Census of India 2011). In the Situation Assessment Survey (SAS) of Agricultural households, 2018–19, more than 50 per cent of the rural households were landless. Among the households that owned land, around 85 per cent were in the marginal (0–1 ha.) land ownership category (NSSO 2021). Despite such stark land inequality and high population density, 77.8 per cent of the households reported being engaged in agriculture (cultivators or labourers). Additionally, nearly 40 per cent of the households categorised as labourer households primarily engaged in agricultural labour (NSSO 2021). These factors make rural Bihar one of the most concentrated habitats of manual labour households. According to Isabel Guerrero's analysis for the World Bank, '*...Bihar represents one of the most densely populated agglomerations of poor people anywhere in the world*' (Guerrero 2009). This is reflected in almost all poverty estimates in India, including the Multidimensional Poverty Index (MPI) prepared by the NITI Aayog, where Bihar as the last in ranks with 51.91 per cent of the population living below the poverty line (NITI Aayog 2021).

The *Zamindari* land revenue system (1793–1950) in the colonial rule and the 'semi-feudal' structure after Independence pushed Bihar's rural economy into prolonged stagnation (Jannuzi 1974; Mishra 1978; Das 1983; 1992; Mitra; 1985). Along with it, Bihar is India's most flood-prone state, with 73.6 per cent of the state's geographical area being considered vulnerable to floods (Das et al. 2021). Together, these two factors make Bihar's agrarian economy stagnate and unstable. To cope with it, rural households in Bihar have always adopted some level of diversification in their sources of earnings. Poor peasantry and labourer households, particularly from North Bihar, have historically engaged in migration (Sharma 2005; Kumar 2009; Haan 2010; Datta 2023).

Post-liberalisation of the Indian economy, the rural labour migration from Bihar has increased further (Kumar 2009; Rodgers et al. 2013). In the NSSO Migration in India survey, 2007–08, members from more than 30 per cent of households from Bihar had engaged in seasonal or short-term migration, which was highest among Indian states and double the national average (NSSO 2010). Rodgers et al. (2013) bring out that between 1998 and 2009, the number of rural households witnessing migration increased from 36 per cent to 60 per cent. In this phase, the state also experienced a sudden surge in tenancy relations, as evident from NSSO data showing a rise in the share of leased in land in the total operational holding from 8.9 per cent in 2002–03 to 25.1 per cent in 2018–19 (NSSO 2006, 2021). Furthermore, in 2018–19, around 14 per cent of tenant households were landless (NSSO 2021). So, in addition to seasonal labour migration, another option opened to rural labour households is cultivation as a tenant.

Studies on the livelihood of rural Bihar, based on secondary databases as well as on primary field surveys, have highlighted a rise in levels and degree of diversification of earning and employment sources adopted by households in the past two decades, particularly among poorer sections (Sharma et al. 2012; Kumar & Bhagat 2012, 2021; Rodgers et al. 2013; Datta 2016; 2023; Dutta & Dhar 2022).

Livelihood diversification is a process in which an individual or a household diversifies its activities and social support systems to strengthen its capabilities to improve living standards or survive (Ellis 1998, 2000; Deb, 2002). Reasons for livelihood diversification can broadly be classified into two categories: diversification for improving opportunities or accumulation and diversification for survival. In the first category, households diversify to invest in high expected return investments or migrate if they get a lucrative job prospect. In the second category, households diversify to fulfil day-to-day survival needs. This includes keeping an alternative option to survive if a crop fails, coping with calamities such as drought or flood, and seasonality of employment opportunities (Agarwal 1990; Koppel & James, 1994; Ellis 2000).

The current study analyses the livelihood strategies of the Landless Manual Labour (LML) households in a village in North Bihar.¹ These households had diversified sources of livelihood, primarily manual labour, seasonal work migration and tenant cultivation. The recent studies on the livelihood of rural labourers of Bihar highlight an increasing trend of livelihood diversification and a growing significance of work migration. However, enquiries into the factors that explain differences in livelihood choices remained skewed. For instance, in a similar socio-economic condition, what are the factors that separate a household with a member witnessing work migration and a household without work migration? In this context, this paper aims to understand three related questions. Firstly, what are the choices available to rural labour households? Secondly, do different livelihood strategies result in varying levels of household economic well-being? If so, thirdly, what factors enable some households to choose better livelihood strategies while limiting others?

This paper consists of seven sections, including the introduction. Section two introduces the study village and the LML households. Section three examines the livelihood choices of LML households and their livelihood strategies. Section four analyses the levels of earnings in the different livelihood strategies. Section five discusses possible factors influencing a household's choice of a particular livelihood strategy. Furthermore, section six presents a Household Livelihood Strategy Choice Model using multinomial logistic regression to analyse variables influencing a household's choice of a specific livelihood strategy. Finally, section seven provides a discussion based on the study's findings.

¹ The study chooses LML households instead all labour-supplying households to have a set of households for analysis with nearly similar initial conditions—those engaging in manual labour and possessing only human labour as an endowment.

Table 1 Number of households by land ownership size class and caste category

Land ownership size class (acres)	Caste category					
	SC	ST	BC 1	BC 2	Other	Total
Landless	38	7	97	39	8	189
0–1	3	3	39	29	2	76
1–2.5	1		18	18	3	40
2.5–5			7	19	1	36
5–10			2	6	1	9
More than 10				9		9
Total	42	10	163	120	15	350

Source: PARI survey data

2 Introduction to Village²

Katkuian is a village located in the Bagaha II block of the West Champaran district in North Bihar. It falls in the north alluvial Gangetic plains. The total number of households in 2012 was 350, with an average household size of 6.4 persons. The village had stark land inequality. Fifty-four per cent of the households were absolutely landless. Among those who owned land, around 30 per cent had ownership holding of less than one acre. On the other hand, two households had ownership holdings of more than 100 acres. The average land ownership among landed households was 3.1 acres.

The village had households from 28 castes. Yadav and Koiri castes belonged to the Backward Class (BC)-2 caste group and were economically and politically dominant. Caste category BC-2 was around 35 per cent of the households and owned more than 80 per cent of the total land. In contrast, more than 90 per cent of the Dalit households were landless (Table 1).

The village economy was primarily agrarian, as around 88 per cent of the households were predominantly engaged in the farm sector. Around 60 per cent of farm households engaged in cultivation, with an average operational size of 3.6 acres. The rest of the households in the farm sector were pure labour households (Table 2). Sugarcane and paddy were the principal crops in the village. However, households in the smaller operational size categories primarily grow paddy in the Kharif season and pulses and oil seeds in mixed cropping in the rabi season.

The non-farm households were a set of households with diverse natures of livelihoods. Half of the non-farm households were landless, and the rest had small landholdings that they had leased. They managed their livelihood through artisan and traditional caste call activities, petty businesses or self-employment, and government scheme jobs such as Anganwadi and Asha workers. Nine households did not

² The study has used the dataset collected by the Foundation of Agrarian Studies (FAS) as part of the Project on Agrarian Relations in India (PARI). PARI is a project to study socio-economic conditions in the Indian countryside from different agro-climatic zones. Till now, it has surveyed 27 villages across 12 states. The Katkuian village of Bihar was surveyed in 2012, and the survey reference year was July 2011–June 2012.

Table 2 Distribution of households in different economic activities

Sector	Sub-sector	Number of households
Farm sector	Pure labour households	114
	Labour households (Pure tenant)	43
	Owner cultivator households	151
Non-farm sector	Non-farm households	42
Total	Total	350

Source: PARI survey data

have any members in the working age group, they were surviving on the support extended from relatives.

The village had three kinds of landless households. They were pure labour households, labour households (pure tenant) and non-farm households. The study has clubbed the first two and named Landless Manual Labour (LML) households. The total number of LML households is 157 (Table 2). The paper studies these households.

2.1 Landless Manual Labour (LML) Households

LML households were caste heterogenous, as they had households from 23 castes. However, it was predominantly comprised of marginalised social groups; more than 85 per cent of the SC households and more than 55 per cent of the EBC/BC-1 households belonged to this group. The housing and other amenities condition of LML households were in impoverished conditions. Close to 90 per cent of the households lived in *kachcha* houses (made up of thatch, bamboo and mud). Not even one per cent of households had a latrine facility.

LML households had a total workforce³ of 380 persons in 159 were female, and 221 were male. Among males, 139 workers aged 16–39 years and 82 in the age group of 40–65 years. Among females, 93 were in the age group of 16–39 and 66 in the age group of 40–65. In the survey year, 187 workers from LML households engaged in the work migration (all male). Of that, 136 were in the age group of 16–39 years. The level of literacy and schooling among workers was, in general, low. The literacy rates among male and female workers were 55.3 per cent and 15.6 per cent, respectively. Moreover, the median years of schooling were just 3 and 0 years, respectively.

³ In this study, a person is considered as part of the workforce if s/he was in age group of 16–65 years and reported to be in paid economic activity either in principal or subsidiary work status.

3 Livelihood Choices of the LML Households

The LML households engaged in varied occupations. In total, they engaged in nine occupations. These were agricultural labour, long-term labour (agriculture),⁴ non-agricultural labour, petty business/self-employment in non-agricultural activities, private salaried jobs, casual work migration, tenant cultivation, animal rearing and mortgage rental earnings. However, most households were primarily involved in agricultural and non-agricultural labour, work migration and animal husbandry; more than 100 households reported their engagement in these livelihood avenues. Forty-three households engaged in cultivation also through tenancy or mortgaged contracts.

LML households' livelihood depended not on particular occupations but on combinations—households engaged in multiple livelihood avenues. A household may engage in farm and non-farm labour in the village, and with a member engaging in seasonal migration, they may have a small shop in the village or cultivate a small parcel of land. In some cases, individuals also engaged in multiple occupations of a very distinct nature. Let us take the case of one of the households to illustrate the general livelihood condition of LML households.

At the time of the survey, in 2012, Jeet Kumar (name changed) was 25 years old and HoH of an LML household consisting of five members, including his wife, two children and his ailing mother. Jeet had been engaged in manual labour migration since the age of 14, when he first migrated to Srinagar, Jammu and Kashmir, as a construction labourer. By age 25, he had migrated to six different cities across the country, working as a daily wage labourer. In the survey reference year (2011–12), Jeet's household also cultivated a small parcel of leased land. Jeet participated in farming operations during the sowing and harvesting seasons and migrated for the rest of the year. In his absence, his wife would take care of the farm.

Jeet's household illustrates the heterogeneous character of the labour and scattered livelihood situation of the LML households with the multiplicity of work. In total, only nine households had a single occupation. The rest engaged in combinations of different occupations. In total, they had combined up to six occupations. However, most of the households (63%) were in combinations of three or four occupations (Fig. 1). There was no distinct pattern in caste category and the number of occupations combined. The average number of occupations among SC, BC-1 and BC-2 households were 3.5, 3.4 and 3.2, respectively.

⁴ In long-term labour contracts, the days of work and tasks are not defined. Households who employ them hold the 'right to first call'. The village had three forms of long-term labour relations: long-term labour (non-attached), long-term labour attached through land and long-term labour attached through debt. Long-term labourers (non-attached) were primarily tractor drivers. Among LML households, all long-term workers were attached labour. Under these labour contracts, along with workers, even their family members had to perform various unpaid services for their employer's family, which were *begaar* (unaccounted and unremunerated). For a detailed discussion on long-term labour (agriculture) in Katkuan (see Dhar et al. 2022).

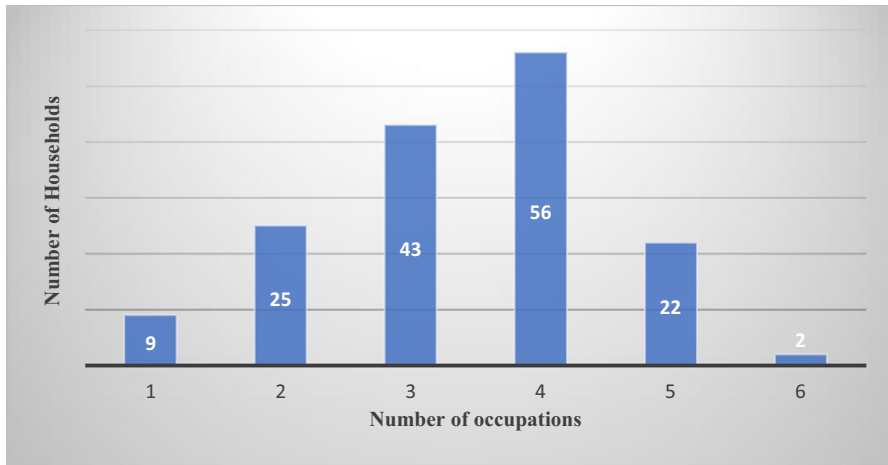


Fig. 1 Distribution of households based on number of occupations. *Source:* PARI survey data

Here, one has re-classified the livelihood sources in two groups based on whether a household decides to engage in that particular occupation each year. In other words, choice livelihood avenues are those occupations that households can plan, choose and engage in—which do not need a long span of time to get engaged in. Agriculture labour, non-agricultural labour, long-term labour contracts (within agriculture) with the option to repay debt or continue with the contract, leasing in land and cultivate and migration were choice livelihood avenues. Furthermore, agricultural labour, long-term labour (agriculture) and non-agriculture labour were merged and named ‘manual labour’ because the nature of work and location of work in these three avenues were similar. Finally, the choice livelihood avenues were manual labour, migration and cultivation—all households engaged in manual labour, 108 in migration and 43 in cultivation (Table 3).

Another way to look at the households is one where, in 33 households, at least one member was in manual labour, migration as well as cultivation. Ten households had at least one member in cultivation and manual labour. Seventy-five households had at least one member in manual labour and migration. Thirty-nine households were in only manual labour (Fig. 2). All these groups are mutually exclusive and do not have any interaction element. These are identified as four alternative livelihood strategies among LML households.

Table 3 Distribution of households in different livelihood sources

Occupation	Number of HH	Livelihood source groups
Manual labour	157	Choice livelihood avenues
Work migration	108	
Cultivation	43	
Animal rearing	108	Other
Petty business/self-employment	10	
Private salaried job	4	
Mortgage earning (money lending)	2	

Source: PARI survey data

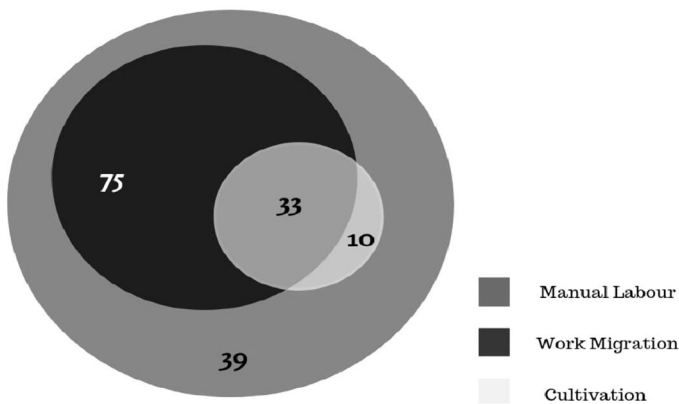


Fig. 2 Number of households in alternative livelihood strategies. Source: PARI Survey data

4 Average Household Income in Principal Livelihood Strategies⁵

Does the level of earnings of the LML households differ in the different livelihood strategies? The mean annual household income for those who opted for only labour as a livelihood strategy was around ₹24,000 per annum. It was around ₹51,000 per annum for the households who opted for all three livelihood avenues (Table 4). It shows that annual household income increases with an increase in the number of occupations in the livelihood strategy. Notably, household income improves substantially by including migration in the livelihood strategy. However, the impact of cultivation on the annual household income is limited. Cultivation may be primarily for household food security—the operation size of all households was less than one acre, and the majority of the households grew only paddy, pulses and oil seeds. Moreover, the marketable surplus of these households was negligible (less than 1%).

⁵ FAS-PARI survey finds income from all relevant components. All income-related calculations are done by the FAS. In this paper, the household income comprises cumulative earnings from choice livelihood avenues: manual labour, crop production and migration.

The income per person was also higher for the households who witnessed migration. If this is true, why did not all households induce an individual to migrate?

One potential answer could be the variability in income. This measure is captured in terms of coefficient of variation (CV). If one considers households' total income—the choices with the lowest CV are where individuals also lease the land. This is followed by labour and migration, followed by only labour, and the highest CV is for households who are diversified in all three options. If one compares the mean income and CV from labour and migration, one sees that the mean income is lower in labour compared to migration, but the CV is higher for migration. In the case of cultivation, the mean income is far lower than that of the other options, and the variability is also high. Thus, the choices also impact the uncertainty that the households are exposed to (Table 4). However, a question that continues is why households cultivate the land and not just migrate and get higher income. Before one can answer that question, one needs to see if the means are really different between the different choices. Here, a pairwise *t*-test is conducted to check for differences in the mean of annual household income.

The pairwise *t*-test results show a significant difference between mean annual household incomes among households with different livelihood strategies (Table 5). Out of a total of six possible comparisons, three are significant at a 5 per cent and one at the 10 per cent level of significance. The mean income of only labour is significantly different when compared to households with migrations. Households who are cultivating do not have significant differences with households with only labour income or migrations.

A similar pairwise *t*-test is also conducted for the per-person income. The mean per-person income shows that the households in the livelihood strategy, only labour and households with livelihood strategy, labour and migration, were significantly different at the 5 per cent level of significance. The mean per-person income of the households with the livelihood strategy, only labour and households with livelihood strategy, with all three occupations, were significantly different at the 10 per cent level of significance. The rest of the comparisons did not turn out to be significantly different. It again highlights a significant increase in household income with a livelihood strategy with migration.

These statistics raise the need to analyse the factors which may have influenced the household's decision to opt for a particular livelihood strategy.

5 Factors Influencing Household Livelihood Strategies

The socio-economic conditions of LML households were similar. All households were landless and hardly owned any agricultural or non-agricultural machinery. The levels of education were low, and most of the working members were illiterate. Then, what are the factors that separate households with different livelihood strategies? Here, one looks into three possible factors: household labour endowment, debt and asset conditions and caste of the household.

Table 4 Mean and coefficient of variation (CV) of annual household income and per capita income and sources

Livelihood strategy	Household income		Labour earnings		Migration earnings		Cultivation earnings		Income per person	
	Mean (₹)	CV	Mean (₹)	CV	Mean (₹)	CV	Mean (₹)	CV	Mean (₹)	CV
Only labour	23,851	0.62	23,851	0.62					6042	0.91
Labour + Migration	48,934	0.55	17,332	0.69	31,602	0.88			9417	0.63
Labour + Cultivation	27,641	0.42	25,312	0.56			2329	2.83	6050	0.54
ALL three	51,425	0.89	19,785	0.93	31,657	1.19	942	10.49	8915	1.19

Source: PARI survey data. Household income and income per person include income from manual labour, migration and cultivation only. It does not include income from other sources. However, these three sources together are more than 80 per cent of the total household annual income for all groups

Table 5 Test for differences in mean of household income for alternative livelihood strategies

	Only labour	Labour + migration	Labour + cultivation
Only labour			
Labour + migration	Significant*		
Labour + cultivation	Not significant	Significant**	
All three	Significant*	Not significant	Significant*

Source: calculated from PARI survey data, * and ** significant at 5% and 10% level of significance, respectively

5.1 Labour Endowment

Studies have shown that labour endowment (size and composition) significantly influences livelihood diversification decisions (Dutta & Dhar 2022; Heyer 2022; Workie 2023). Migration is considered one of the most important choices agricultural labour households make. In the case of Bihar, multiple studies have highlighted the importance of migration decisions for these households (Sharma et al. 2012; Rodgers et al. 2013; Datta 2023). In addition, it is also shown that mostly male members of the households migrate in search of employment. The number of members, age and gender also significantly influence the choices for these households (Kusumo et al. 2023). In a more specific case, Pant (1983) shows a strong relationship between household family size and their land leasing in or out decision through a study based on six villages in Maharashtra. Heyer (2022) based on four decades of longitudinal village studies in Tamil Nadu villages, concludes that the younger labour tends to migrate to urban locations; however, after a certain age, they come back to the village agrarian economy.

In this study, to analyse the impact of labour endowment, household's working members are segmented over sex. Since migration generally involves male members, male working members are categorised into two age groups: 16–39 years and 40–65 years.⁶ Here, one has three explanatory variables: the number of female working members, male working members (16–39 years) and male working members (40–65 years). Another decision under consideration to explain the choice variable is the age of the Head of the Household (HoH). In studies like Heyer (2022), younger members migrate while older members come back to the village. If the HoH's are younger, are these households more prone to migrate? So, the age of the HoH is classified into two groups: Those aged 18–39 years and those above 40 years and above.

⁶ The age category of the female working members is not taken as a variable because the prevailing socio-cultural factors often restrict female labour mobility and limit their role in household decision-making. Also, the total number of female workers was only 160. Further, subdividing may cause sample size issues.

5.2 Debt and Asset Conditions

There are interesting literature on landless labour households' migration decision and their levels of debt. In a study by Breman (1986), tribal villages of Bardoli, Gujarat, which examined the livelihood conditions and patterns of migrations among agricultural labour and poor peasant households, the study brings out that debt plays an important role in explaining circular migration. Mosse et al. (2002); Sengupta and Vijay (2018); and Meher (2021) also highlight similar trends through their respective field study and strong linkages between indebtedness and rural labour migration. Datta 2023, based on a longitudinal study of multiple villages in Bihar, brings out that debt repayment was one of the primary usages for remittances sent by migrants.

Here, indebtedness is taken as an explanatory variable.⁷ The indebtedness among LML households was widespread. Almost all households reported some indebtedness. However, it was with huge variation. The mean household indebtedness was ₹6000, and the standard deviation was more than ₹10,000. The CV was 1.73. Considering these aspects, indebtedness is taken as a categorical variable, and two categories are made. The two categories are household indebtedness less than mean indebtedness (Rs 6000) and household indebtedness more than and equal to mean indebtedness (Rs 6000). The study expects a positive relationship between indebtedness and migration (Mosse et al. 2002; Sengupta & Vijay 2018; Meher 2021).

Landless labour households are generally asset-poor. Nonetheless, even in these households, there is variability in terms of asset ownership. Did the ownership of assets have any impact on the household's choice of livelihood strategy? The total household asset value is taken as an explanatory variable to assess this question. Here, assets are the value of possession of homestead land, means of production, animal resources, non-perishable consumable goods and storage of valuable resources.

5.3 Caste

Caste is a social institution that significantly influences every aspect of life in Indian society. It has historically determined access to resources, impacting not only social and cultural spheres but also political and economic domains (Ambedkar 1936/2014; Srinivas 1957). Chakravarti (2001) demonstrates how caste is deeply embodied in Bihar's agrarian class society. Studies on the Katkuian village by Dhar et al. (2022) and Kumar (2022), highlight the profound impact of caste, ranging from land ownership and resource distribution inequalities to the day-to-day livelihood options available to households.

The caste category of the households is taken as an explanatory variable. ST households are merged with SC households because there were only two ST households. The caste category is a categorical variable with four categories, these are SC-ST, BC-1, BC-2 and other. It is expected that households from the BC-1 and

⁷ It is presumed that debt and migration are exogenously determined.

BC-2 caste categories should be in livelihood strategies with cultivation, and SC–ST households should be more in the only labour category (Chakravorty 2001).

Seven explanatory variables are taken: Four are continuous, and three are categorical. The continuous variables are the number of female working members, the number of male working members (16–39 years), the number of male working members (40–65 years) and the total asset value of the household. The categorical variables are the age of HoH, indebtedness and caste category.

By analysing means, one can get some intuitive relationships between the choice of livelihood strategies and these explanatory variables. The means of all continuous explanatory variables for different categories of livelihood strategies are presented in Table 6. As indebtedness is a categorical variable, the debt-to-asset ratio is presented here. Since the model has indebtedness and household total asset value, the debt-to-asset ratio is not considered as a variable later in the model because it may cause the problem of multicollinearity. One can see a positive influence of the average number of working members on the number of avenues in livelihood strategy. Among the households who chose only labour as a livelihood strategy, the average number of working members was 1.8 persons; in contrast, among the households who chose all three avenues in their livelihood strategy, it was 3.12 persons. The average working male (16–39) was more than one in both groups that engaged in migration, and it was just around 0.5 among non-migrating groups. Notably, a positive relationship between female labour and male workers (40–65) with a livelihood strategy involving cultivation is also highlighted. Furthermore, among the households who opted for labour and migration, the debt-to-asset ratio was 129. However, among the households who opted for labour & cultivation and all three, it was 19 and 23, respectively. It shows a possible negative relationship between debt and cultivation and a positive association between debt and migration.

One can see intuitive relationships between these explanatory variables and households' choice of livelihood strategy. To understand the statistical significance of these associations, a Livelihood Strategy Choice Model is designed.

6 Livelihood Strategy Choice (LSC) Model

The LSC model uses multinomial logistic regression to understand the factors that influence the shift of households from the base category (here, individuals in a household only enter in the labour market) to other choices. Here, three choices are studied. One, the choices that some members of households enter the labour market and some enter migration; two, some members of households enter the labour market and these households also do engage in tenant cultivation and, third, households have members in all three choices. Household characteristics specified earlier as the variables that influence these choices (Table 7).

The pseudo-*R* square of the model is 29.96 per cent (Appendix 1). It explains around 30 per cent of the causes of the shift from the base category (only manual labour) to other subsequent categories. Further sub-sections will discuss the impacts

Table 6 Distribution of average working members, asset value and debt-to-asset ratio by household livelihood strategy categories

Household livelihood strategy	Working member	Working female	Working male (16–39)	Working male (40–65)	Asset value (₹)	Debt-to-asset ratio* (%)
Only manual labour (1)	1.80	0.90	0.59	0.31	71,587	53
Manual labour + migration (2)	2.47	0.92	1.03	0.52	77,032	129
Manual labour + tenancy (3)	2.60	1.50	0.40	0.70	123,838	19
Manual labour + tenancy + migration (4)	3.12	1.24	1.15	0.73	137,103	23
All households	2.44	1.02	0.90	0.52	91,287	87

Source: PARI survey data, * among indebted households

of the explanatory variables on the odds of a household being in a specific livelihood strategy (see Table 8 for p -values).

6.1 Variables Significantly Influence Shift of a Household from Only Labour (Base Category) to Labour & Migration (Category Two)

The test results indicate that the probability that a household will shift from the only labour (base) category to the category with labour and migration is significantly influenced by the number of male working members (16–39), the number of male working members (40–65), indebtedness and caste category. The male working members in both age categories positively influence a household's choice of livelihood strategy. If a household's indebtedness is more than the mean indebtedness (code 2), the household is more likely to choose livelihood strategy—labour and migration, implying higher indebtedness positively induces the choice of migration. In the case of caste, where SC–ST households are the base group, BC-2 households are less likely to choose livelihood strategy, labour and migration.

The migration among the LML households was seasonal and casual; all household members could not leave the village and migrate. As the number of male working members increased in a household, the household might send them for migration. However, it was not the case with the female working members, may be due to the prevailing socio-cultural factors restricting female labour migration. In addition to the male working members, indebtedness is another variable that positively influences the households' choice of livelihood strategy, labour and migration. This means that households surpassing the mean indebtedness are more likely to choose livelihood strategy, labour and migration. The relationship between indebtedness and migration can also be understood through the debt–labour interlocking institution prevalent in the village. Under this arrangement, a manual labourer used to get debt from large land-owning households on the condition that the labourer could not leave the village without permission (borrower household cannot migrate). Furthermore, the lender would not accept repayment in the form of money but rather in the form of days of labour. The land-owning households are likely developed this institution to control high debt-induced labour migration from the village.

6.2 Variables Influence Shift of Households from Only Labour Category (Base Category) to Labour and Cultivation (Category Three)

The variables that significantly influenced the household shift from the only labour (base) category to livelihood strategy labour and cultivation are the number of female working members, the number of working male members (40–65), the age category of the HoH and the caste category. Here, the female working members and the male working members (40–65) had a significant positive influence. Moreover, if the HoH is 40 years and above, it is more likely to choose livelihood strategy, labour and cultivation. Furthermore, if SC–ST households are the base category, then households of all other caste categories are positively likely to shift to livelihood strategy, labour and cultivation.

Table 7 Description of variables used in variable description of Livelihood Strategy Choice Model

Dependent variable	
Category one: only labour	Base category
Category two: labour + migration	
Category three: labour + cultivation	
Category four: labour + migration + cultivation (all three)	
Independent variables	
Number of working females in the age group (16–65)	Continuous
Number of working males in the age group (16–39)	Continuous
Number of working males in the age group (40–65)	Continuous
Total household asset value (Rs)	Continuous
Indebtedness	Categorical
0 (base category)	Indebtedness less than mean indebtedness (less than Rs 6000)
1	Rest others
HoH age	Categorical
0 (base category)	Age of HoH in the age group 16–39 years
1	Rest others
Caste category	Categorical
1 (base category)	Schedule caste and schedule tribe households*
2	Extremely backward class (EBC)/Backward Class-1 (BC-1) households
3	Backward Class-2 (BC-2) households
4	Other households

Source: PARI survey data, * LML households had just 2 ST households, so they are merged with SC households

In the village, the female labourers worked predominantly in two avenues: agricultural labour and on-farm family labour. It had a limited presence in non-agricultural works and work migration. So, a household with extra female labour in possession preferred to go for cultivation. Similarly, male workers in the age group of 40–65 are less likely to be preferred over young male workers for hired labour activities. So, households would prefer cultivation to utilise the labour of male workers aged 40–65 years. Variable the age of HoH also shows that if HoH is in the relatively less mobile age bracket, it would prefer going for cultivation.

6.3 Variables Influence Shift of Households from Only Labour (Base Category) to Labour + Migration + Cultivation (Category Four)

The variables that significantly influenced a household's shift from the only labour (base) category to the category all three (Labour + Migration + Cultivation) are the

Table 8 *P*-values of factors influencing the choices of livelihood strategies: results of multinomial logistic regression (Base category is 'Only labour')

Variables/diversification category	II	III	IV
Working female	0.514	(+)0.008*	0.382
Working male (16–39)	(+)0.02**	0.082	(+)0.015**
Working male (40–65)	(+)0.001*	(+)0*	(+)0.003*
Total asset value	0.81	0.11	(+)0.015**
<i>Caste code</i>			
2	0.508	(+)0*	0.448
3	(–)0.002*	(+)0*	0.872
4	0.472	(+)0*	0.517
Indebtedness code	(+)0.036**	0.232	0.656
HoH age code	0.144	(+)0.002*	0.363
Constant	0.404	0	0
Number of observations	114	49	72

Source: PARI survey data, * and ** significant at 1% and 5% level of significance, respectively. Parenthesis shows signs of the relationship. For a detailed result table, see Appendix 1

number of male working members (16–39), the number of male working members (40–65) and the total asset value of the household. All three variables influence positively.

As the number of male working members increases, the household's total mobile workforce increases. So, the households are in a position to choose cultivation as well as migration. The household asset value, for the first time, is a significant influence variable. It shows that households with better asset positions are more likely to diversify to more avenues.

7 Discussion and Conclusion

The village study raises some interesting observations on the livelihood strategies of landless labour households. With the choice of a particular livelihood strategy, household income was improved, particularly which includes migration. The question raised here was why some households could not diversify and some households could diversify but could not migrate.

The first choice was between households who only entered the labour market and some members entering the local labour market and some migrating. The mean income of households is higher in households with migration when compared to those without migrations. The per capita income is also higher for households with migration. The size and composition of the household's labour endowment played the most crucial role in the determination of livelihood strategies. The variable which influences the choice is the presence of male workers. The male working members (16–39) are an aspirational group and want to migrate to make themselves

better off. This group was not looking into employment possibilities in the village economy, and 98 per cent of them had engaged in migration (currently migrant or had a migration history). Here, one entry barrier to the choice to migrate is family size, specifically male workers in the age group of 16–39. A second variable that influences choice is the indebtedness of the households. This variable may be co-determined, and households with a higher proportion of indebtedness may induce migration.

In the case of the choice between households entering only the local labour market and members entering the local labour market and tenancy market, the mean income per household is not statistically significant between these choices. However, the coefficient of variation decreases with the added choice of cultivation. The variable that explains the difference in choice is the number of female workers in the household. As female members increase, households are more likely to lease in land. One potential reason could be cultural patterns in the village. There seems to be a cultural taboo for women to migrate, but they can enter the local labour market and may prefer to self-cultivate. The other variables are the number of male workers in the household in the age group of 40–65 years and the age of the head of the household. As the age of the workers increases, they might be less and less aspirational and prefer to stay in the village.

Households that have members in all occupations have significantly higher income when compared to the base level households. The probability that a household will choose this option significantly depends on the number of male working members and the assets owned by the household. Here, the added variable, in addition to labour endowment, is the value of the asset of the household. Those households who have assets are able to finance the migration and also advance the money for cultivation. So, a household's asset position may be an important constraining feature for this diversification.

Landless labour households do have choices to make in terms of occupation diversification. With specific choices, mean income does increase, but there looks to be entry barriers to these choices. The composition of labour endowment, debt and asset position significantly influences the choices. One important result is that if the aspirations of the young labourers are met with migrations, they will convert themselves into permanent migrants. However, if that does not take place, households will look for survival strategies in the village economy and the pattern of temporary migration may continue.

Appendix 1

See Table 9.

Table 9 Factors influencing the choices of livelihood strategies: results of multinomial logistic regression

				Number of observations	=	157
				Wald chi2 (27)	=	831.29
				Prob> chi2	=	0
Log pseudolikeli- hood	=	− 133.27		Pseudo R2	=	0.2996
Diversification category	Coefficient	Robust Std. err	Z	p> z	[95% conf. interval]	
1	Base outcome					
2						
Working female	− 2.8812	0.4308	− 0.65	0.514	− 1.1257	0.5633
Working male (16–39)	2.3201	0.9957	2.33	0.02**	0.36853	4.2717
Working male (40–65)	2.6921	0.84684	3.18	0.001*	1.032415	4.351965
Total asset value	1.06E−06	4.41E−06	0.24	0.81	− 7.57E−16	9.70E−06
Caste code						
2	− 3,986,545	0.602009	− 0.66	0.508	− 1.57857	0.781262
3	− 2.40162	0.78448	− 3.06	0.002*	− 3.93173	− 0.86407
4	− 0.97752	1.352946	− 0.72	0.472	− 3.62425	1.679193
Indebtedness code	1.403466	0.669231	2.1	0.036**	0.091799	2.715134
HoH age code	− 1.14079	0.780227	− 1.46	0.144	− 2.67001	0.388423
Constant	− 0.98117	1.184382	− 0.83	0.404	−3.30946	1.333229
3						
Working female	2.016937	0.758009	2.66	0.008*	0.531267	3.502608
Working male (16–39)	− 3.03963	1.746441	− 1.74	0.082	− 6.4626	0.383324
Working male (40–65)	3.826082	1.097755	3.49	0*	1.674521	5.977642
Total asset value	7.81E−06	4.95E−06	1.58	0.11	− 1.86E−06	− 0.00002
Caste code						
2	14.81633	0.817751	18.12	0*	13.21357	16.4191
3	14.34716	1.01632	14.12	0*	12.35521	16.33911
4	16.92929	1.913158	8.85	0*	13.17957	20.67901
Indebtedness code	− 1.22319	1.023883	− 1.19	0.232	− 3.22997	0.785756
HoH age code	− 5.85175	1.908994	3.07	0.002*	− 9.59321	− 2.1103
Constant	− 15.8714	1.57379	− 10.08	0	− 18.9560	− 12.7868
4						
Working female	0.412504	0.47178	0.87	0.382	− 0.51216	1.337176
Working male (16–39)	2.457918	1.009851	2.43	0.015**	0.478647	4.437189
Working male (40–65)	2.833258	0.951094	2.98	0.003*	0.969149	4.697367
Total asset value	1.08E−05	4.45E−06	2.44	0.015**	2.12E−06	1.96E−05
Caste code						
2	0.654142	0.862595	0.76	0.448	− 1.03651	2.344797
3	− 1.48026	0.915442	− 0.16	0.872	− 1.94225	1.646207
4	0.974122	1.502731	0.65	0.517	− 1.97117	3.91942
1. Indebtedness code	0.362744	0.815264	0.44	0.656	− 1.23514	1.960631
2. HoH age code	− 0.76850	0.845195	− 0.91	0.363	− 2.42505	0.888044
Constant	− 4.8643	1.328172	− 3.66	0	− 7.46747	− 2.26113

Source: PARI survey data, * and ** significant at 1% and 5% per cent level of significance, respectively

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Declarations

Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

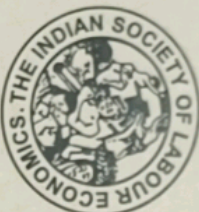
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