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PREVALENCE AND DETERMINANTS OF INTERGENERATIONAL MÉTIERS MOBILITY OF THE LABOURERS OF ASSAM TEA GARDENS

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Abstract

The study aims to explore the intergenerational métiers mobility pattern of Assam tea garden labourers. Simultaneously, the current study unfolds the various factors responsible for this phenomenon. This predominantly empirical study utilises the Transition matrices and Multinomial Logistic Regression on 251 household-level primary data to explore the objectives. The empirical results disclose that horizontal motility is more prominent than vertical motility among the tea garden labourers of Assam. Various social-economic-demographic factors, like years of education, annual household expenditures, sex, and the number of dependents influence the vertical motility among the labourers of Assam tea gardens. The study also offer suitable policy prescriptions.
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Keywords: Tea Garden Labourer, Occupational Mobility, Transition Matrices, Multinomial Logistic Regression, Assam.

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Introduction

The International Labour Office (2003) defines Occupational Labour Mobility as "the ease with which workers can switch career fields to find gainful employment or meet labour needs." The social mobility pattern of an individual is predominantly determined by occupation (Piketty, 1995). With the changing times, many occupations have been upgraded as well as downgraded depending upon the structure of the society and change in the mindset of people. Such change in occupational structure has also affected the rates and patterns of social mobility between generations.

The sustainability of the production process is ensured by the redistribution of resources across heterogeneous units of production (Schumpeter, 1931). The divergences of wealth across countries are best explained by the shift of labour out from one particular sector to another. Thus, it is crucial to understand the forces behind the process of structural changes in the occupational pattern of a particular community. The occupational mobility can be of different types, viz. Intergenerational Occupational Mobility, Intra-generational Occupational Mobility and Horizontal and Vertical Occupational Mobility (Mishra, et al., 2011). A low degree of Intergenerational Occupational Mobility indicates that the inherent occupational characteristics of one generation are weakly transmitted to subsequent generations (Reddy, et al., 2014). Checchi (1996) examined the relationship between education and its impact on Intergenerational Occupational Mobility and concluded that educational attainment was responsible for almost half of the observed immobility. Education is one of the important determinants of occupational mobility (Duncan & Hodge, 1963). On the contrary, autonomy and training are particularly important for immobility (Hout, 1984). Family cohesion is also antithetical to occupational mobility (Litwak, 1960). Human capital formation is associated with occupation and occupational mobility interconnected with wage inequality (Kambourov & Manovskii, 2009). The occupational mobility curve is found to be U-shaped and occupational mobility is applicable for both low and high-wage earners (Groes et al., 2015). In the case of immigrant labour, it is found that 50 per cent of immigrants experience downgrading (Akresh, 2018). Thus, the existing studies evidence that family cohesion, autonomy and training, etc., are responsible for immobility. On the contrary, education is an encouraging factor for occupational mobility.

It has been observed that despite more than 150 years of engagement, the tea industry is suffering from excess labourers, and subsequently, it has sometimes failed to provide proper employment. Their money wage rate did not fulfil the provision of the Minimum Wage Act of 1948 (Bhowmik, 2011). It is noteworthy that occupational mobility among tea garden labourers is rare in literature. There exists a research gap, which needs to be addressed. The occupational mobility or occupational stagnation among tea garden labourers calls for urgent research attention as the studies in this field are limited. This backdrop motivated us to explore the twin objectives of making an attempt to discuss the occupational mobility pattern of Assam's tea garden labourers and to unfold the various factors responsible for this phenomenon.

Conceptual Framework

Social mobility can be studied using one of two approaches. First, you can look at an individual's career to find out how well he/she rises or falls in social life. This is commonly referred to as an intergenerational transition. Alternatively, you can look at how often children choose the same career as their parents or grandparents. An intergenerational transfer is a transfer between generations, and occupational mobility is a general term for intergenerational mobility. To analyse job mobility, people are asked to list the jobs they have practised throughout their careers. Blau and Duncan (1978) found that the factors like level of education, the nature of the first job, and the occupation of the father had a significant

impact on their likelihood of climbing the career ladder.

Variety of Motion: People may pass through one or more hierarchies on their way up and down the social scale. The term "reach" describes the social distance bridged in this way. It could be a short-term change, or it could be a social distancing move. Significant gliding (up and down) through multiple layers is also possible. This is an example of extended mobility. Intergenerational occupational mobility of tea plantation workers in Assam and their determinants are the sole focus of our study.

Occupational Mobility Measurement: Two methods are used to measure intergenerational mobility. One is estimating the income elasticity of offspring to parents' income and the other is estimating Markov chains. Mobility is expressed as the probability that offspring will be better or worse off than their parents. Prais (1955a, 1955b) was the first to use the Markov chain theory to measure social mobility. Kemeny and Snell (1960, 1962) and Feller (1968) used Markov chains to predict inter and intergenerational social mobility, making empirically important contributions. Our study also examined the intergenerational migration of tea plantation workers in Assam using the Markov chain theory.

Methods

This section discusses the data sources and the relevant methodology used to address the objectives of the study.

Data: Both primary and secondary data are utilised and the secondary data was compiled from Handbook for Assam Tea Association, Economic Survey of Assam, and the official website of the Tea Board of India and the Government of Assam. However, the exploration of the said objective is mainly performed based on the novel data set that has specially been collected for the study.

Sample Design: The main objectives of the study are investigated based on the novel data set that had especially been collected for exploring the said objectives from the field survey. The "multistage-purposive-random sampling technique" is practised in the study. The study area - Assam - is selected purposively as Assam is one of the leading tea belts of India. The tea industry of Assam contributes to 25 per cent of the State's Domestic Product (Census, 2011). Based on the highest percentage of the tea labour community population (31.12 per cent) among other communities, Sonitpur and Biswanath districts were selected for the primary survey (District Census, 2011). It is noteworthy that in the year 2015, Sonitpur district was bifurcated into two districts, viz. Sonitpur and Biswanath. Table 1 presents detailed descriptions of the tea gardens of these two districts.

Table 1

Profile of Subdivisions and Tea Gardens

Sub-division profile			Tea garden profile					
District	**Sub-division**	**Tea gardens**	**Large (>500 Hector)**		**Medium(250-500 hector)**		**Small (< 250 hectors)**	
Sonitpur	Tezpur	39	Biswanath Chariali	Tezpur	Biswanath Chariali	Tezpur	Biswanath Chariali	Tezpur
	Dhekiajul	14						
Biswanath	BiswanathChariali	15	9	18	5	16	1	5
	Gohpur	12						

Source: District Circle office, Sonitpur, and Office of Assam Chah Mazdoor Sangha, Sonitpur.

Out of two sub-divisions, we have selected Tezpur sub-division from Sonitpur district and Biswanath Chariali from Biswanath district purposively based on the concentration of the highest number of tea gardens. Based on the area under tea in hectors tea gardens, the selected sub-divisions are classified, viz. large, medium and small (see Table 1 for details). We have selected two tea gardens from each category for field survey purposively based on the highest and lowest number of labourers. Accordingly, altogether six tea gardens are visited. Finally, by using the random number table, the households are selected for the personal interview. The household numbers are determined by Krejcie and Morgan formula (1970). Table 2 presents the descriptions of the samples.

Table 2

Tea Garden-Wise Population and Sample

Tea garden categories	Sub-division	Tea garden name	Labourer (total)	Household (total)	Sample size
Large	Tezpur	Phulbari	3250	1100	55
	BiswanathChariali	Monabarie	3463	1230	62
Medium	Tezpur	Tezpore and Gogra T.E.	2650	1015	51
	BiswanathChariali	Mijikajan T.E.	2584	1098	55
Small	Tezpur	Poruwa T.E.	700	325	16
	BiswanathChariali	Nilpur T.E.	453	243	12
Total			**13100**	**5100**	**251**

Source: Authors' own specification based on primary data.

Methodology

Occupational Mobility: The investigation of intergenerational occupational mobility is facilitated by the utilisation of the Transition matrices. The pioneering authority of this methodology was attributed to Prais, (1995), who applied the Markov Chain Theory to measure occupational mobility. The equation-1 presents an Inter-generational Matrix.

$$b_{lk} = \frac{\sum A_{lk}}{\sum A_k} \quad (1)$$

Where $\sum A_{lk}$ = total number of labourers who are in the l^{th} occupation whose parents were in the occupation *k*

$\sum A_k$ = the total number of labourers whose parents were in occupation *k*.

b_{lk} = the outflow from parents' occupation to their children's occupation or transitional probabilities from parents' occupation to their children's occupation.

The diagonal element of $\{b_{lk}\}, \forall l = k$ represents the proportion of workers who have followed the same occupation as their parents. Thus, $\{1-b_{lk}\}, \forall l = k$ can be used as a measure of occupational mobility among the sons and daughters of parents who were in the occupation *k*.

Multinomial Logistic Regression Model: The Multinomial Logistic Regression model is utilised for the exploration of the second objective. When the unordered responses involve more than two outcomes, the best econometric tool for analysis is the multinomial logit- an extension of the logit model (Wooldridge, 2010).

The dependent variable, that is, mainly six different categories of occupation chosen by the children of tea garden labourers is unordered multinomial. Consequently, Multinomial Logistic Regression Model will be the best strategy to pinpoint the social, economic and demographic determinants of the occupational mobility of tea garden labourers in Assam, India. The reference category is the one with the maximum frequency.

Following Maity and Sinha (2021), we consider "*y* is a random variable which assumes values {*0,1,2, ….., J*}, where J is a positive integer and *x* is the set of conditioning variables". For example, if *y* denotes "current occupation of the sons and/or daughters of the tea garden labourers of Assam, India", *x* can include information about age, sex, years of schooling, number of dependents and household size, etc.

In multinomial logit regression, we were interested in how ceteris paribus changes in the elements of *x* affect the response probabilities, $P(y = j/x)$,*j = 0,1,2,……., J.* As the sum of the probabilities is equal to unity, the $P(y = 0/x)$ can be obtained only when probabilities of *j = 1,2,……., J* are determined. The conditioning variable *x* is a *1XK* vector and the first element is '1'. The response probabilities of the multinomial logit model are given as follows:

$$P(y = j/x) = \exp(x\beta_j) \Big/ \left[1 + \sum_{h=1}^{J} \exp(x\beta_h)\right] \qquad (2)$$

Where, β_j is *KX1*, *j= 1,2,.....,J*. As the sum of the response probabilities must be equal to unity, thus,

$$P(y = 0/x) = 1 \Big/ \left[1 + \sum_{h=1}^{J} \exp(x\beta_h)\right] \qquad (3)$$

The determination of the partial effects of this model is complicated. For continuous x_k the partial effect can be presented as follows:

$$\frac{\partial P(y = j/x)}{\partial x_k} = P(y = j/x)\left\{\beta_{jk} - \left[\sum_{h=1}^{J} \beta_{hk} \exp(x\beta_h)\right] \Big/ g(x\beta)\right\} \qquad (4)$$

Where $ß_{hk}$ is the k^{th} element of $ß_h$ and $g(x\beta) = 1 + \sum_{h=1}^{J} \exp(x\beta_h)$

(Wooldridge, (2010) and Maity and Sinha, (2021)).

It is worth noting that marginal effects need not have the same sign $ß_{jk}$. In fact, marginal effects are the most effective ways through which the effects of variables in nonlinear models can be made more intuitively meaningful (Cameron & Trivedi, 2010, pp. 343). The marginal effects can be estimated two ways, viz. either at means or at levels. Many researchers' perception is that not just the means but all the information should be utilised to obtain a superior estimate. Thus, they underpin the computation of Average Marginal Effects (AMEs) rather than Marginal Effects at the Means (MEMs) (Bartus, 2005; Cameron & Trivedi, 2010). The statistical package Stata-14 is used in the current paper for calculating Average Marginal Effects **(**Maity & Sinha, 2021).

Variables

Occupational Mobility: The study has taken three important variables to explore occupational mobility, viz. total number of workers in a particular occupation, nature of occupation and mobility of occupation. Table 3 presents detailed descriptions of the variables.

Table 3

Variables Related to Occupational Mobility Index

Variable	Description	Supported by earlier studies	Data Source
Workers	Number of workers in a particular occupation	Mishra et al., 2011	Primary Survey
Occupation	Occupations of the tea garden workers are categorised into daily rated, agricultural, clerical, factory workers, etc.	Chakravarty, (2013)	Primary Survey
Mobility	It refers to change from one occupation to another.	Checchi, (1996)	Primary Survey

Source: Authors' own specifications based on earlier studies.

The variable total number of workers in a particular occupation is included to apprehend the total value of workers who are working in a particular occupation. Following Buragohain (2018), the nature of the occupation is categorised based on the higher to the lower wage rate into six categories as follows:

1. Clerical workers in Tea
2. Factory workers in Tea
3. Business Holders
4. Agricultural Labour
5. Daily Rated Tea Labour
6. Non-Farm Casual Labour

Multinomial Logistic Regression- dependent and predictors:

The variables with detailed descriptions are presented in Table 4.

Table 4

Description of Variables of the Multinomial Logistic Regression Model

Variable	Descriptions	Modalities			
Dependent Variables					
			Frequency		
		Current occupation	Frequency	Percentage	Cumulative Frequency
Current occupation of son/ daughter	Parents were in Tea gardens but their son/daughter did not consider tea garden job lucrative and they shifted to agricultural, daily rated labour, non-farm casual workers and so on.	1 = Agricultural labourer	37	14.73	14.74
		2 = Daily rated workers	59	23.51	38.24
		3 = Non-farm casual workers	57	22.71	60.95
		4 = Business holders	34	13.55	74.5
		5 = Factory workers	33	13.15	59.37
		6 = Clerical workers	31	12.35	100.00
Independent Variables					
Household size (x_1)	Total members of the household of the concerned respondent.	Quantitative			
Annual expenditure of the household (x_2)	All costs, expenses and outgoings incurred by concerned household members.	Quantitative			
Age (x_3)	The age of the concerned respondent	Quantitative			
Sex (x_4)	The sex of the respondent.	1 = Female			
		0 = Male			
Years of schooling (x_5)	Numbers of completed years spend in the school ambience.	Quantitative			
Number of dependents (x_6)	The total number of people dependent on the respondent.	Quantitative			

Source: Authors' own specification based on primary data.

A close perusal of the table reveals that the dependent variable is the current occupation of the children of former tea garden labourers. It is noteworthy that the dependent variable is not binary but rather multinomial, labelled as, 1,2,..,6 indicating six different occupations chosen by the children of current and/or former tea garden labourers. Moreover, since the next generation has chosen occupations outside the tea garden, the dependent variable is indicating vertical occupational mobility. The empirical analysis is facilitated by involving six predictors.

Results

The empirical results related to the mentioned objectives are presented in this section.

Intergenerational Occupational Mobility: The results related to intergenerational occupational mobility within the tea garden are presented in Table 5.

Table 5

Matrix of Intergenerational Occupational Mobility within the Tea Garden

	Different occupations for Son/Daughter					
Parents employed in different occupations within tea garden	**Agricultural labour O1**	**Daily rated labourer O2**	**Non-farm labourer O3**	**Business O4**	**Factory O5**	**Clerical O6**
	0.36	0.14	0.07	0.21	0.21	0
	0.54	**0.14**	0.09	0.12	0.00	0.11
	0.64	0.13	**0.38**	0.00	0.00	0.06
	0.13	0.13	0.38	**0.00**	0.00	0.25
	0.57	0	0	0.43	0.00	0
	0	0.25	0.13	0.5	0	0.00

Source: Authors' own specification based on primary data.

Table 5 discloses that among parents who are engaged as agricultural labourers within tea gardens, there is 36 per cent probability that their children will follow the same occupation and secondly there is 21 per cent probability that their children will choose an occupation like factory workers and will do different business activities. Among the children of daily rated workers within the tea garden, 14 per cent will follow the same occupation and the rest 86 per cent (0.54+0.09+0.12+ 0.00+0.11*100) will follow different occupations other than parents' occupation. For the parents who are working as non-farm labourers, business holders, factory workers and clerical workers within tea gardens, vertical mobility is stronger among their children. However, we cannot nullify the possibility of horizontal mobility among their children within the tea garden. Therefore, the study found that both horizontal and vertical mobility is associated with tea garden workers in the study area but vertical mobility is more intense than horizontal mobility.

Intergenerational Occupational Mobility outside Tea Garden: The study also examines the intergenerational occupational mobility among the workers who are currently working outside the tea garden to find out a more vivid picture of the occupational distribution of parents and their children. For this, the same methodology, viz., Transition Matrix is utilised. But in this case, data for occupational distribution is collected from those parents whose children are working outside the tea garden. Table 6 divulges that 38 per cent of their children are engaged as factory workers outside the tea garden which is found to be the highest followed by business holders (36 per cent), clerical workers (36 per cent) and non-farm casual labourers (29 per cent), respectively. Table 6 also reveals that the concentration of horizontal mobility is also minimal outside the tea garden, which can be seen by the diagonal elements presented in the table. So, vertical mobility is stronger than horizontal occupational mobility outside the tea garden.

Table 6

Intergenerational Occupational Mobility Matrix outside Tea Garden

	Different occupations for son/daughter					
	Agricultural Labour O1	**Daily Rated O2**	**Non-Farm Casual Labourer O3**	**Business O4**	**Factory Workers O5**	**Clerical Workers O6**
Parents employed in Tea garden	0.24	0.21	0.05	0.05	**0.38**	0.12
	0.05	0.00	0.27	**0.36**	0.00	**0.36**
	0.15	0.21	0.17	0.08	0.33	0.06
	0.24	0.05	**0.29**	0.05	0.29	0.10
	0.23	0.10	0.17	0.13	0.10	0.27
	0.15	0.04	0.07	0.30	0.11	0.33

Source: Authors' own specification based on primary data.

The estimated results demonstrate that Assam tea garden labourers are not constricted for jobs related to tea gardens only. Vertical occupational mobility is present among the workers within and outside the tea garden.

Analysis of Multinomial Logistic Regression Results: We consider the daily rated workers as the base outcome since it becomes the most frequent occupation (see Table 1). The exploration of the factors responsible for the vertical mobility of

the occupation for Assam tea garden labourers is facilitated by considering predictors. Thus, we have estimated five models corresponding to five predictor variables, viz. Model-I: Agricultural labourer, Model-II: Non-farm casual workers, Model -III: Business holders, Model-IV: Factory workers, and Model-V: Clerical workers.

Table 7 presents the result of the multinomial logistic regression. The statistical significant value of the Likelihood Ratio Chi-squares of 474.42 and the high value of McFadden's pseudo-R-squared (0.5434) indicate that the model is well-specified.

Table 7

Multinomial Logistic Regression Result

		Number of observations	=	249
Model Summary	Multinomial logistic regression	LR chi2(44)	=	474.42
	Log-likelihood = -199.28	Prob> chi2	=	0.0000
		Pseudo R2	=	0.5434

Parameter Estimates

Current occupation	Independent variables	Coefficient	S.E	z	P>|z|	dy/dx	S.E	z	P>|z|
Model-I: Agricultural labourer	Household size	-0.494	0.428	-1.150	0.249	-0.100***	0.024	-4.167	0.000
	Annual expenditure of the household	-9.6E-05***	2.40E-05	-3.99	0.000	-6.85E-06***	1.39E-06	-4.928	0.000
	Age	0.012	0.027	0.440	0.657	0.001	0.002	0.500	0.728
	Sex	-0.374	0.546	-0.680	0.494	-0.006	1.144	-0.005	0.996
	Years of schooling	0.045	0.105	0.430	0.670	0.012	0.259	0.046	0.963
	Number of dependents	-5.699***	1.883	-3.03	0.002	-0.069***	0.025	-2.760	0.005
	Constant	0.044	0.399	0.110	0.912	---	---	---	---
Model-II: Non-farm casual workers	Household size	2.439***	0.453	5.380	0.000	0.126***	0.028	4.460	0.000
	Annual expenditure of the household	3.99E-06	9.47E-06	0.42	0.674	1.97E-06***	6.66E-07	2.96	0.003
	Age	-6.019***	1.780	-3.380	0.001	-0.005***	0.003	-1.820	0.069
	Sex	0.582	0.502	1.160	0.246	0.185	0.320	0.580	0.563
	Years of schooling	0.111	0.095	1.180	0.239	-0.019	0.072	-0.260	0.796
	Number of dependents	2.326***	0.425	5.470	0.000	0.103***	0.027	3.760	0.000
	Constant	-0.031	0.027	-1.130	0.260	---	---	---	---
Model-III: Business holders	Household size	0.026	0.027	0.990	0.322	2.983***	0.603	4.940	0.000
	Annual expenditure of the household	9.47E-07***	4.33E-07	2.19	0.029	-1.42E-06	9.61E-06	-0.15	0.882
	Age	-0.002	0.003	-0.650	0.515	0.017	0.033	0.510	0.610
	Sex	-0.112	7.358	-0.020	0.988	-2.676***	0.751	-3.560	0.000
	Years of schooling	-0.046	1.666	-0.030	0.978	0.518***	0.118	4.390	0.000
	Number of dependents	0.023	0.032	0.710	0.478	3.101***	0.608	-5.100	0.000
	Constant	-9.203***	2.289	-4.020	0.000	---	---	---	---

Contd...

		Number of observations	= 249
Model	Multinomial logistic regression	LR chi2(44)	= 474.42
Summary	Log-likelihood = -199.28	Prob> chi2	= 0.0000
		Pseudo R2	= 0.5434

Parameter Estimates

Current occupation	Independent variables	Coefficient	S.E	z	P>|z|	dy/dx	S.E	z	P>|z|
Model-IV: Factory workers	Household size	0.107***	0.020	5.450	0.000	5.023***	0.786	6.390	0.000
	Annual expenditure of the household	7.19E-07	4.66E-07	1.54	0.123	-4.08E-06	1.01E-05	-0.4	0.686
	Age	-0.004	0.004	-0.960	0.335	0.038	0.045	0.840	0.403
	Sex	0.034	12.636	0.000	0.998	-2.753***	0.961	-2.870	0.004
	Years of schooling	-0.063	2.860	-0.020	0.983	1.057***	0.176	6.020	0.000
	Number of dependents	0.077***	0.028	2.750	0.006	5.005***	0.782	-6.400	0.000
	Constant	-19.977***	3.406	-5.870	0.000	---	---	---	---
Model-V: Clerical workers	Household size	5.959***	1.545	3.860	0.000	0.016*	0.009	1.720	0.086
	Annual expenditure of the household	2.05E-04*	1.23E-04	-1.68	0.094	1.40E-06**	5.88E-07	-2.38	0.018
	Age	1.442	0.949	1.520	0.129	0.010*	0.005	1.920	0.055
	Sex	24.600	3267.690	-0.010	0.994	0.157	23.043	-0.010	0.995
	Years of schooling	25.184	739.707	0.030	0.973	5.216***	0.172	30.326	0.000
	Number of dependents	12.638**	5.668	2.230	0.026	0.063**	0.029	2.160	0.031
	Constant	-321.191	8876.628	-0.040	0.971				

Source: Authors' own calculation based on primary data.

Note: Current occupation = Daily rated workers is the base outcome

*** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level

The empirical interpretation is facilitated by the computation of the partial effects, as in equation (4). The absence of multicollinearity is confirmed in Table A.1 in the appendix. We will precede our discussion by considering one model at-a-time. First, we consider Model-I.

Model-I: Agricultural Labourer

The marginal effects of the independent variables, household size, annual expenditure of the household and number of dependents are found to be statistically significant. The estimated marginal effect of household size on the occupation of an agricultural labourer is negative (-0.100). This indicates that a unit increase in the household size would result in a decrease in the likelihood of choosing the occupation of the agricultural labourer by 10 per cent when other things remain unchanged. The result indicates that with the growing household size, an agricultural labourer is a less preferred occupation than daily-rated workers under ceteris paribus. Simultaneously, the average marginal effect of another continuous conditioning predictor, the annual expenditure of the household on the occupation of an agricultural labourer is negative (-6.85E-06). Hence, the probability of choosing an agricultural labourer as an occupation is, on average, -6.85E-04 per cent approximately lower for the children of former and current tea garden labourers under ceteris paribus. This result predicts that a 1 per cent increase in the number of

dependents the children of former and current tea garden labourers decreases the possibility to choose agricultural labourer as occupation by approximately 7 percentage points under ceteris paribus.

Model-II: Non-farm Casual Worker

The marginal effects of the variables, viz. household size, annual expenditure of the household, age and number of dependents become statistically apparent.

The sign of the estimated partial effect of the continuous predictor household size on 'non-farm casual worker' as the occupational choice of the children of former and current tea garden labourers is positive (0.126). It signifies that the probability of choosing non-farm casual workers as their occupation for them is, on average, about 12.6 per cent higher when other things remain unchanged. The partial effect of the continuous independent variable annual expenditure of the household is very low (1.97E-06), which indicates that the likelihood of choosing non-farm casual workers as the occupation is 1.97E-06 per cent higher with escalated household expenditures. Besides, the average marginal effect of the discrete predictor age on choosing non-farm casual workers as the occupation is -0.005, which indicates the probability of choosing non-farm casual workers as the occupation is, on average, approximately 0.5 per cent lower for the children of former and current tea garden labourers with growing age keeping other things constant. Again, the average marginal impact of another continuous independent variable, the number of dependents is positive (0.103). This estimate predicts that with an increasing number of dependents, the children of former and current tea garden labourers have 10.3 per cent more probabilities to choose non-farm casual workers as their occupation. We continue our analysis with Model-III.

Model-III: Business Holder

For the discrete predictor 'sex', the estimated marginal effect is negative, -2.676, signifying that females have 267.6 per cent lower probabilities to select business as their occupation than male counterparts under ceteris paribus. The continuous independent variable household size predicts that with increasing household size, the next generation of former and current tea garden labourers has a higher likelihood (298.3%) of choosing business as their occupation. The partial effect of the last continuous predictor, the number of dependents envisages that the increase in the number of dependents enhances the probability by 310.1 percentage points to select business as their occupation under ceteris paribus.

Model-IV: Factory Worker

The partial effects of the predictors, viz. household size, number of dependents, years of schooling and sex become statistically apparent.

Here sex is the only discrete predictor; the effect of this discrete predictor on the current occupation is negative, stipulating that females have 275.3 per cent lower probabilities to choose 'factory worker' as their occupation than their male counterparts. Moreover, the continuous predictors which acquire significant marginal effects on the choice of 'factory worker' as the occupation of the next-generation former and current tea garden workers are- household size, years of schooling and the number of dependents. The marginal effects of the first two continuous predictors are positive while the last one has a negative impact. The estimated marginal effects for these continuous predictors divulge that the likelihood of choosing factory workers as the next-generation occupation for the former and current tea garden workers are 502.3 per cent, 105.7 per cent higher with expanded family size and higher education respectively under ceteris-paribus. On the contrary, the increase in the number of dependents escalates the probability by 500.5 per cent for them to choose factory workers as their occupation. The possible reasons for such results are presented in the discussion section.

Model-V: Clerical Worker

As reflected by the estimated t-statistics the statistically meaningful predictors, in this case, are -household size, annual expenditure of the household, age, years of education and the number of dependents. The marginal effects of all the predictors, except the number of dependents, have a positive influence on the likelihood of selecting this occupation. The marginal effect of the continuous predictor 'age' envisages that the probability of selecting 'clerical worker' as the occupation for the next generation of the former and current tea garden labourers increases by 1 percentage point with growing age under ceteris paribus. Albeit the estimated marginal effect is smaller in value but it is unconditionally true. The marginal effects of the continuous predictor 'years of education' prognosticate that with more education the likelihood of choosing 'clerical workers' as their occupation enhances by 521.6 per cent. A similar result is obtained for the next continuous predictor, viz. 'household size.' The estimated result envisions that the probability of choosing 'clerical worker' as their occupation escalated by 1.6 percentage points with inflating household size. The next two continuous variables affecting occupational choice 'clerical worker' are annual expenditures of the household and the number of dependents. The marginal effects of these continuous variables dissolve that the probabilities for choosing 'clerical worker' as their occupation are 1.40E-06 percentage and 6.3 percentage points more, respectively, with an increase in annual household expenditures and the number of dependents under the ceteris paribus.

Discussion

After observing intergenerational occupational mobility among the tea garden workers, it can be concluded that occupational mobility is a dominant phenomenon among the tea workers and their future generation.

The estimated (marginal effect) result suggests that the conditioning demographic variable 'household size' significantly influences the occupational choice of the next generation of former and/or current tea garden labourers. The marginal effect of this demographic variable is positive for all occupational choices except for 'agricultural labourers.' In the case of the agricultural labourer, it is negatively related, indicating with the larger family size the next generation of the former and current tea garden labourer prefers less to select this occupation. This result is supported by the next economic predictor included in the analysis, the 'annual expenditure of the household.' We find the marginal effect of this continuous predictor is statistically significant and positive for Model-II and Model-V and it is negatively significant for Model-I. This indicates that it is negatively influencing the occupational choice of 'agricultural labourer.' This result supports our earlier finding related to the continuous predictor of 'household size.' This may be because of the reason that the backward and seasonal nature of Indian agriculture fails to guarantee lucrative income scope for them (Tongia, 2019). Perhaps, they consider this occupation only in absence of any other occupational opportunity. The demographic variable 'age' has a significant impact on the occupational choice of the next-generation former and current tea garden labourer for Model-II and Model-V only. The estimated predictor of the conditioning demographic variable 'age' predicts that the choice of the occupations 'factory worker' is negatively and 'clerical worker' is positively related to 'age'. The regression analysis involves only one discrete predictor, viz. 'sex.' The partial effect of this discrete predictor is negative in the sign for Model-I, Model-III and Model-IV. On the contrary, it is positively influencing the occupation choice for non-farm casual workers and clerical workers. However, the influence of the predictor 'sex' is significant only in Model-III and Model-IV. It is noteworthy that the tea garden labour force is largely dominated by female workers. The patent fact is that women are less willing to have a business or to join as factory workers. Conversely, women prefer to have a

clerical job and thus we get the partial effect that comes with a positive sign in Model-V, although the result is not statistically significant. Moreover, unskilled and less educated women find job openings in the non-farm sector as casual workers, and thus we get a positive sign corresponding to the partial effect in Model-II also (Caballé, 2016).

As expected for the continuous predictor 'years of schooling', the marginal effect is statistically meaningful for Model-II, Model-IV and Model-V. One of the fundamental components of human capital and/or skill is education (Lucas, 1988; Romer, 1989; Romer, 1990). Thus, 'years of education' are directly related to skill and consequently, it has a positive influence on the occupational choice of 'business', 'factory worker' and 'clerical job' (Checchi, 1996). The marginal effect of the predictor 'number of dependents' is statistically meaningful in all models. The estimated value of the partial effect of 'number of dependents' is positive in Model-I only. This indicates that with a growing number of dependents, the likelihood of the respondents choosing jobs other than agricultural labourer escalates (Labour force survey, 2018).

Conclusion and Policy Implication

The status of the plantation sector and tea labour community has changed significantly over the last decades because of certain government policies and schemes like the provision of pre and post-matric scholarships, financial help and coaching classes for higher studies and competitive exams, grants to women SHGs, various awareness programme on child/human trafficking/legal awareness, etc. Because of these changes experienced by the tea labourer community, vertical mobility of labourers among the newer generation has been observed. These changes escalated the likelihood of occupational mobility among the tea labour community. Consequently, we can expect an intense occupational mobility among the next generation of former and current tea garden labourers. The socio-economic and spatial characteristics strongly influence the decision of the workers regarding the 'choices' for occupational mobility (Mishra et al., 2011). Accordingly, it is the responsibility of the Central and State governments to implement a proper scheme for this vulnerable section to help them get more job opportunities. Simultaneously, they should also be encouraged to diversify their occupations to reduce the risk of job loss in the worst case of closed tea gardens. Concomitantly, it is also the responsibility of the tea garden management to provide a proper standard of living for the tea garden labourer households having proper health and hygiene facilities and to ensure education for their children within the tea garden. Based on our empirical findings, we suggest the following policy prescriptions.

Policy Prescription

Firstly, observing the positive implication of education, emphasis should be given for educating their children by arranging incentives suchlike mid-day-meal, scholarships, providing school stationeries, etc. Secondly, based on the realisation of the fact that tea garden employment is women-centric, measures such as providing safety, security, equal wages, good working environment and good transportation facilities can encourage female employees of tea gardens to switch to new vocations. Empirical results show women lag behind their male counterparts to establish and run a business. We strongly recommend introducing SHGs-led microfinance, especially for tea garden female workers, as studies indicate that SHGs-led microfinance is a successful model for women entrepreneurship in Assam (Maity & Sarani, 2017; Maity, 2019). Tea gardens in India are recognised for proving greater real wages to its labourers in the form of rationing, cooking fuel, primal healthcare facilities, education for their children, etc. Unfortunately, Indian tea gardens are currently facing severe demand crisis in the international arena (Laskar & Thappa, 2015); as a result, closing of tea gardens has become a common phenomenon in Assam. Under such adverse circumstances, creation of more diverse job opportunities for the next generation of former and current tea garden labourers will be a promising move.

Appendix

Table A.1

Correlation among the predictors

	x1	x2	x3	x4	x5	x6
x1	1					
x2	0.166	1				
x3	0.112	0.005	1			
x4	-0.113	-0.120	-0.104	1		
x5	-0.020	0.137	-0.077	-0.392	1	
x6	0.454	0.101	0.061	0.019	-0.174	1

Source: Authors' own calculation based on primary data.

Author's Contributions:

Shrabanti Maity: Conceived the study, participated in its design and coordination, performed the statistical analyses, and drafted the manuscript.

Dipshikha Buragohain: Helped in data compilation and participated in the design and helped to draft and revised the manuscript. All authors read and approved the final manuscript.

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