# How Unstable the Sources of Livelihood Are? Analysis Based on Periodic Labour Force Survey Data (2017-18)

Arup Mitra
Professor
Faculty of Economics, South Asian University
Akbar Bhawan, Chanakyapuri
New Delhi 110021, INDIA
Email: arupmitra@sau.int

Guru Prakash Singh
Assistant Professor in Economics,
Government Commerce College,
Sabarkantha, Gujarat, INDIA
Email: guruprakashsingh79@gmail.com

and

Puneet Kumar Shrivastav
State Coordinator,
Micro Finance Association of Uttar Pradesh (UPMA),
Lucknow. U.P., INDIA
Email: puneetshrivastav1@gmail.com


Working Paper Number: SAUFE-WP-2020-008

http://www.sau.int/fe-wp/wp008.pdf

FACULTY OF ECONOMICS
**SOUTH ASIAN UNIVERSITY**
NEW DELHI
July, 2020

# How Unstable the Sources of Livelihood Are?

# Analysis Based on Periodic Labour Force Survey Data (2017-18)

Arup Mitra[1], Guru Prakash Singh[2] and Puneet Kumar Shrivastav[3]

**Abstract**

This paper based on the data from annual labour force survey reflects on the lack of sustainable sources of livelihood and the phenomenon of multiple activities pursued simultaneously. A thorough analysis of the quarterly data suggests that in the rural areas workers largely dependent on agriculture are rather compelled to shift to different other activities in the off-seasons. The nature or status of employment also varies, particularly in the urban areas. The occupational choice model estimated based on the quarterly data is indicative of changes in the marginal effect for workers of a given caste or an individual with a certain educational attainment. On the whole, the lower castes and workers with less educational attainments are more susceptible to changing probability of joining a particular activity. On the other hand, vulnerability seems to be the cause of multi-job strategy adopted by the households as poor human capital formation and social inequalities raise the probability. The policy implications of the study are two-fold. First, sustainable livelihood creation, particularly through the revival of the agriculture sector, is an important consideration. Secondly the rural non-farm sector and the urban informal sector will have to become more productive so as to reduce the burden of pursuing multiple activities in an attempt to secure consumption.

[1] Professor, Institute of Economic Growth & Dean**,** Faculty of Economics, South Asian University, New Delhi. Email: arup@iegindia.org
[2] Assistant Professor in Economics, Government Commerce College, Sabarkantha, Gujarat. Email: guruprakashsingh79@gmail.com
[3] State Coordinator, Micro Finance Association of Uttar Pradesh (UPMA), Lucknow. U.P. Email: puneetshrivastav1@gmail.com

## 1. Perspective

The lack of sustainable sources of livelihood has become a significant phenomenon both in the rural and urban areas. Secondly a single source of livelihood is often not adequate to meet the minimum requirements, compelling workers to access more than one activity at a given point in time. This paper proposes to reflect on these two aspects. Based on the Annual Labour Force Survey Data it begins by examining the employment structure of the rural population over different quarters in order to assess if the share of a particular activity in the total workforce varies considerably within a given year. While employment structure in terms of different industry divisions may not be changing much in the urban context, the type of employment measured in terms of self-employment, regular wage employment and casual wage employment may be varying across quarters in the urban setup. Such patterns we try to decipher through descriptive statistics as well as econometric analysis based on household/individual data. The determinants of employment in terms of caste and education can unravel if certain caste categories or population without educational attainments are more prone than others to adopt certain employment types/categories and if that association tends to vary across quarters. The issue of inadequacy of income from one source is examined on the basis of a binomial logit model distinguishing those who have one source of employment from those who have more than one at a time. In terms of caste, educational and other characteristics who is more likely to adopt multiple sources of livelihood can then be ascertained. The present section reflects on studies which bring out issues related to sources of livelihood and diversification that households might have been compelled to adopt.

Livelihood deserves special attention particularly in a country like India with huge supplies of labour relative to demand featured with the huge population. Livelihood comprises people, their capabilities and their means of living, including food, income and assets. Livelihood opportunities are the economic activities in which the individuals are engaged in for earnings and achieving sustainable living conditions. In the rural areas particularly, the climatic conditions have reduced the supplies of water significantly, forcing many to withdraw from agriculture after completing the cultivation of one seasonal crop. Hardships involved in agricultural activities in the face of migration of the younger population from the villages have compelled the elderly to look for alternative avenues after the monsoon crop. The rise in agricultural production accompanied by a decline in prices has been reducing farmers income which in turn has set alternative pathways for livelihood creation round the year. If profitable opportunities exist to take recourse to diversification the strife is beneficial but at times people are rather pushed to get absorbed in residual activities characterized by low productivity. On the other hand, the rural non-farm sector has not emerged as a vibrant or dynamic component offering productive activities to the rural population. The urban spill-over to the rural hinterland or the petty services emerging in the rural space as an alternative to the farm sector employment do not hold avenues for upward mobility. Similarly, when the urban informal sector does not offer comparative advantages for the production of certain goods and services or it does not emerge with strong and productive linkages with the formal sector, low productivity activities are prevalent which may prompt shifting from one occupation to another. Also some of the productive activities in the urban space are highly seasonal and thus, the urban job seekers may have to look for petty jobs for survival in the other

seasons. Even some of the informal sector activities thriving on the demand from the formal sector encounter fluctuations and thus, livelihood issues become challenging.

In the context of multiple sources of livelihood it has been increasingly felt in regions characterized by static agriculture that paucity of earnings compels many to access more than one sources of livelihood at a time. Vetter (2013) interprets livelihood diversification as a risk-management strategy adopted by the rural poor. Diversification within a livelihood source and diversification between livelihood sources have been identified as a strategy associated with more resilient livelihood trajectories (Sallu et. al. 2010) and the benefits are seen both in terms of cash and non-cash income. The secondary resources on communal land which are usually called as 'hidden capital' (Cousins, 1999) are utilised by the low income households in order to augment the household income. Hence, some of the rural activities like agriculture per se are not able to solve the problems of rural poverty unless these additional sources are exploited.

Foster (2011) tried to examine if agricultural productivity growth is sufficient to create good jobs in the rural areas or combining different sectors of the rural economy may generate better outcome. Data collected from the ARIS-REDS panel surveys (1969, 1982, 1999, and 2006) of rural India suggested that agriculture is not the only source of earnings as half of the earnings came from non-farm sector in rural areas in developing countries. Some reasonable degree of mixing between working in small-scale services and working in agriculture seems plausible. Further, Unni, (1996) examined the economic rationale for holding single or multiple jobs based on a primary survey data. The polychotomous logit model suggests that higher value of land and other assets encourage diversification into a second activity, except at very high value of land, among the self-employed ones. A large proportion of the individuals in rural India did undertake more than one economic activity. Such diversification could occur due to seasonality of work or uncertainties and fluctuating incomes from a single agricultural or non-agricultural activity.

The focus of the Periodic Labour Force Survey (2017-2018) data used in this study is primarily on two aspects. The first is to measure the dynamics in labour force participation and employment status in the short time interval of three months for the urban areas only as per the Current Weekly Status (CWS). Secondly, for both rural and urban areas, the annual estimates of all important parameters are generated both on usual status and CWS basis. The quarterly distribution of the samples reveals that approximately 25 per cent have been surveyed in all four quarters both in the rural and urban areas.

## 2. Broad Patterns

The employment structure varies not only across rural and urban areas but also between gender in a given region (Table 1). While in the rural space the percentage of female workers engaged in agriculture is substantially larger than their male counterpart, in the urban areas both manufacturing and construction unravel significant gender differences. Across different quarters it is noted that the share of agriculture which is indeed a source of livelihood to a very large per centage of the rural workers tends to decline in the third and fourth

quarters compared to the first and second. Some of the workers are likely to shift to the construction and services sector in the agricultural off-season (Table 1). Possibly the casual workers comprising around one third of the agricultural employment are subjected to such shifts as the self-employed workers who comprise a large percentage of the total work force in agriculture (Table 2) may pursue minor cultivation subsequent to the harvest of major crop. A relatively higher per centage of scheduled caste workers being present in the construction sector (Table 3) is possibly indicative of the fact that they are the ones who are subjected to employment fluctuations. As many of the scheduled castes in the rural set up are landless, they are compelled to join the casual labour market in the construction sector.

On the other hand, in the urban context the trade-offs are pertinent between construction and services activities: in the monsoon months when activities in construction decline somewhat, the workers possibly shift to the services sector (Table 1). Some of the casual workers in the construction sector comprising most of the total employment in this sector (Table 2) possibly shift to self-employment category in the services sector as it poses no entry barrier. On the other hand, some other construction workers might be returning to the rural areas during the slack season. Caste-wise the scheduled caste and scheduled tribe workers might be subjected to such fluctuations as their presence in the urban construction sector is relatively high (Table 3).

**Table 1: Broad Economic Sector-wise Share of Employment across Quarters for 2017-18 (in %) PS+SS**

| | Rural India | | | | | |
|---|---|---|---|---|---|---|
| **Sectoral Composition** | **Q1** | **Q2** | **Q3** | **Q4** | **Total** | |
| **Agriculture & allied** | 61.29 | 61.06 | 57.92 | 57.21 | 59.4 | |
| **Manufacturing** | 7.43 | 8.03 | 8.06 | 7.59 | 7.78 | |
| **Construction** | 11.51 | 11.15 | 12.71 | 13.76 | 12.27 | |
| **Services sector & others** | 19.77 | 19.77 | 21.31 | 21.44 | 20.56 | |

| | | | | | |
|---|---|---|---|---|---|
| | **Urban India** | | | | |
| **Agriculture & allied** | 6.12 | 7.00 | 5.19 | 6.71 | 6.14 |
| **Manufacturing** | 22.05 | 22 | 24.24 | 23.38 | 22.97 |
| **Construction** | 9.97 | 9.61 | 10.73 | 10.38 | 10.17 |
| **Services sector & others** | 61.86 | 61.64 | 59.84 | 59.53 | 60.72 |

Source: PLFS, 2017-18. **Note:** Q1 = First Quarter (July -Sept 2017); Q2 = Second Quarter (Oct-Dec 2017); Q3= Third Quarter (Jan-March 2018); Fourth Quarter (April- June 2018).

**Table 2: Share of Employment by its Type across Broad Economic sectors for 2017-18 (in %) PS+SS**

| | **Rural India** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Casual worker** | | | **Regular/salaried** | | | **Self-employed** | | |
| | **M** | **F** | **P** | **M** | **F** | **P** | **M** | **F** | **P** |
| **Agriculture & allied** | 26.85 | 41.58 | 30.89 | 1.16 | 1.54 | 1.27 | 71.99 | 56.88 | 67.84 |
| **Manufacturing** | 24.36 | 16.69 | 22.55 | 37.52 | 12.87 | 31.69 | 38.13 | 70.44 | 45.76 |
| **Construction** | 79.46 | 89.78 | 80.33 | 3.13 | 1.26 | 2.97 | 17.41 | 8.97 | 16.7 |
| **Services sector & others** | 7.76 | 6.21 | 7.52 | 40.74 | 62.31 | 44.07 | 51.51 | 31.48 | 48.41 |
| **Total** | **29.93** | **36.61** | **31.42** | **13.35** | **11.34** | **12.91** | **56.72** | **52.05** | **55.68** |
| | **Urban India** | | | | | | | | |
| **Agriculture & allied** | 24.36 | 47.07 | 30.79 | 5.65 | 2.9 | 4.88 | 69.99 | 50.03 | 64.34 |
| **Manufacturing** | 11.6 | 14.32 | 12.17 | 55.94 | 27.79 | 50.08 | 32.46 | 57.88 | 37.75 |
| **Construction** | 67.88 | 84.95 | 69.2 | 12.99 | 9.54 | 12.73 | 19.12 | 5.51 | 18.07 |
| **Services sector & others** | 5.42 | 3.38 | 5.00 | 51.25 | 74.28 | 55.94 | 43.33 | 22.34 | 39.06 |
| **Total** | **15.16** | **13.05** | **14.75** | **45.38** | **54.33** | **47.14** | **39.46** | **32.62** | **38.12** |

Source: PLFS, 2017-18. **Note:** M= Male; F= Female; P= Person.

**Table 3: Share of Employment in Broad Economic Sector by Social Group for 2017-18 (in %) PS+SS**

| Social Group /Employment Activity | Rural India | | | | |
|---|---|---|---|---|---|
| | **Agriculture & allied** | **Manufacturing** | **Construction** | **Services sector & others** | **Total** |
| **ST** | 73.57 | 3.17 | 11.38 | 11.88 | 100 |
| **SC** | 54.98 | 7.61 | 19.77 | 17.64 | 100 |
| **OBC** | 57.73 | 8.99 | 11.09 | 22.18 | 100 |
| **Others** | 58.18 | 8.46 | 7.75 | 25.62 | 100 |
| **Total** | **59.4** | **7.78** | **12.27** | **20.56** | **100** |
| | **Urban India** | | | | |
| **ST** | 11.79 | 15.98 | 15.54 | 56.69 | 100 |
| **SC** | 5.95 | 21.06 | 16.42 | 56.57 | 100 |
| **OBC** | 7.83 | 24.22 | 10.84 | 57.1 | 100 |
| **Others** | 3.92 | 23.03 | 6.56 | 66.48 | 100 |
| **Total** | **6.14** | **er22.97** | **10.17** | **60.72** | **100** |

Source: PLFS, 2017-18**. Note:** ST= Schedule Tribes, SC= Schedule Caste, OBC = Other Backward Caste, Others = General Caste.

## 3. Econometric Analysis

In this section we propose to assess if different caste categories or individuals with different educational attainments are likely to join various activities with varying probabilities after controlling for certain individual or household specific variables. This we then try to examine for different quarters. The differences, if any, in the results may then indicate the categories of population or workers who are likely to shift activities from time to time.

We have estimated a multinomial logit equation with different activities and alternately, nature of activities as various categories while not being in labour force and unemployment are common in both the functions. In the total sample (both rural and urban combined) it is distinct that the rural population is less likely to be outside the labour force or remain unemployed compared to their urban counterparts (Table 4). Further, the rural workers probability to join the manufacturing and services is lower while they are more likely to join the agriculture and construction activities. Scheduled tribes, scheduled castes and OBCs are more

likely to join both construction and services compared to the general category. While all the three categories are more likely to join the labour market than the general category they are more likely to remain unemployed. However, in agriculture except the scheduled castes the other two categories show a higher probability compared to the general category. The land distribution policy being favourable to the scheduled tribe population is possibly indicative of this fact. On the other hand the scheduled castes being the landless class their vulnerability is reflected in a lower probability. As the general category believes in share cropping the probability is less. On the other hand, as regards manufacturing the scheduled castes and OBCs show a higher probability while the scheduled tribes a lower probability in comparison to the general category.

Taking graduates and above as the reference category it is observed that the individuals with lower educational endowments (except the diploma holders) are less likely to remain unemployed. On the other hand, all the categories with less human capital formation are more likely to join agriculture and construction in comparison to the graduates and above. Corresponding to services all the three categories except the diploma holders show a lower probability while in the case of manufacturing those with primary level education are more likely to join though the illiterates and those with secondary level education are less likely to join this sector.

Turning to the nature of employment it is noted that the rural areas are likely to have more of casual and self-employment compared to the urban areas (Table 5). The scheduled tribes, scheduled castes and OBCs are more likely to join the labour market, more likely to remain unemployed and more likely to pick up casual employment than the general category workers. Similarly, they are more likely to be in the regular wage employment possibly because of the reservation policy. For self-employment the scheduled castes are at a disadvantageous position as they lack the minimum asset base. Taking the graduates and above as the comparison category the illiterates those with primary and secondary level education are less likely to remain unemployed. Similarly, they show a lower probability of joining self-employment or regular wage employment; rather they are more likely to be in casual wage employment.

**Table 4: Multinomial Logistic Estimates for determining the Employment Outcome in India for 2017-18**

**(Dependent Variable =Employment Outcome; Base Category= not in labour force; N = 433,339)**

**Marginal Effects**

| Explanatory Variables | Model (1) dy/dx | Model (2) dy/dx | Model (3) dy/dx | Model (4) dy/dx | Model (5) dy/dx | Model (6) dy/dx |
|---|---|---|---|---|---|---|
| | Not in L F | Unemployed | Emp. in Ag. | Emp. in Manu. | Emp. in | Emp. in Services |

| | | | | | Construction | |
|---|---|---|---|---|---|---|
| **Male** | -0.398*** | 0.00908*** | 0.114*** | 0.0652*** | 0.0604*** | 0.149*** |
| | (0.00213) | (0.000380) | (0.00128) | (0.00102) | (0.00105) | (0.00154) |
| **Rural** | -0.0428*** | -0.00144*** | 0.0803*** | -0.0144*** | 0.00137*** | -0.0231*** |
| | (0.00130) | (0.000151) | (0.000893) | (0.000425) | (0.000174) | (0.000580) |
| **ST** | -0.0232*** | 0.00176*** | 0.0173*** | -0.00857*** | 0.00465*** | 0.00806*** |
| | (0.00196) | (0.000290) | (0.000991) | (0.000510) | (0.000432) | (0.000947) |
| **SC** | -0.0266*** | 0.00273*** | -0.00291*** | 0.00405*** | 0.0133*** | 0.00947*** |
| | (0.00175) | (0.000280) | (0.000671) | (0.000562) | (0.000544) | (0.000827) |
| **OBC** | -0.0144*** | 0.00111*** | 0.000981* | 0.00452*** | 0.00390*** | 0.00393*** |
| | (0.00121) | (0.000171) | (0.000575) | (0.000386) | (0.000250) | (0.000550) |
| **Hindu** | -0.00468*** | -0.00149*** | 0.00516*** | 0.00284*** | 0.00105*** | -0.00288*** |
| | (0.00163) | (0.000246) | (0.000707) | (0.000575) | (0.000277) | (0.000797) |
| **Muslim** | 0.00416* | -0.000131 | -0.0163*** | 0.00756*** | 0.00286*** | 0.00189* |
| | (0.00213) | (0.000268) | (0.000762) | (0.000926) | (0.000453) | (0.00101) |
| **Illiterate** | 0.0237*** | -0.00981*** | 0.0255*** | -0.00524*** | 0.0118*** | -0.0460*** |
| | (0.00241) | (0.000408) | (0.00162) | (0.000592) | (0.000802) | (0.000673) |
| **Up to Primary** | 0.0141*** | -0.00961*** | 0.0198*** | 0.00161** | 0.0118*** | -0.0377*** |
| | (0.00233) | (0.000417) | (0.00147) | (0.000652) | (0.000755) | (0.000658) |
| **Up to Higher secondary** | 0.0349*** | -0.00980*** | 0.00714*** | -0.000790 | 0.00515*** | -0.0366*** |
| | (0.00195) | (0.000429) | (0.00111) | (0.000532) | (0.000448) | (0.000760) |
| **Diploma** | -0.0672*** | 0.000950** | 0.00698* | 0.0322*** | 0.0261*** | 0.00103 |
| | (0.00755) | (0.000404) | (0.00361) | (0.00299) | (0.00281) | (0.00184) |
| **Married** | 0.114*** | 0.00596*** | -0.0423*** | -0.0195*** | -0.0114*** | -0.0469*** |
| | (0.00300) | (0.000807) | (0.00141) | (0.00103) | (0.000602) | (0.00147) |
| **Unmarried** | 0.0644*** | -0.00477*** | -0.00966*** | -0.0110*** | -0.00617*** | -0.0328*** |
| | (0.00217) | (0.000688) | (0.000926) | (0.000806) | (0.000461) | (0.00111) |
| **Age** | -0.0507*** | 0.00318*** | 0.0146*** | 0.00854*** | 0.00459*** | 0.0198*** |
| | (0.000244) | (8.83e-05) | (0.000140) | (9.99e-05) | (7.58e-05) | (0.000162) |
| **Age Square** | 0.000610*** | -4.63e-05*** | -0.000166*** | -0.000104*** | -5.69e-05*** | -0.000236*** |
| | (2.97e-06) | (1.16e-06) | (1.62e-06) | (1.23e-06) | (9.46e-07) | (1.96e-06) |
| **Household size** | 0.00339*** | 0.000125*** | -0.000772*** | -0.000741*** | -0.000698*** | -0.00131*** |
| | (0.000237) | (3.17e-05) | (0.000108) | (7.79e-05) | (4.38e-05) | (0.000113) |

| | | | | | | |
|---|---|---|---|---|---|---|
| **MPCE** | 1.17e-05***<br>(3.57e-07) | -7.01e-07***<br>(5.32e-08) | -1.00e-05***<br>(2.44e-07) | -3.35e-07***<br>(1.01e-07) | -1.50e-06***<br>(8.10e-08) | 8.66e-07***<br>(1.29e-07) |

**Log likelihood = -318373.42; Pseudo R2 = 0.3815**

**Base category for explanatory variables:** Gender = Female; Sector = Urban; Social Category= General; Religion = Other Religion; Education = Graduation & Above; Marital Status = Other Marital Status, **Continuous Variables** = Age, Age Square, Household Size, MPCE.

**Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1**

Source: PLFS, 2017-18.

**Table 5: Multinomial Logistic Estimates for determining the Employment Type in India 2017-18**
**(Dependent Variable = Type of Employment; Base Category= not in labour force; N = 433,339)**
**Marginal Effects**

| **Variables** | **Model (1 )**<br>**dy/dx**<br>**Not in Labour Force** | **Model (2)**<br>**dy/dx**<br>**Unemployed** | **Model (3)**<br>**dy/dx**<br>**Self-Employed** | **Model (4)**<br>**dy/dx**<br>**Regular/Salaried** | **Model (5)**<br>**dy/dx**<br>**Casual Workers** |
|---|---|---|---|---|---|
| **Male** | -0.0421***<br>(0.00123) | -0.000888***<br>(0.000144) | 0.0119***<br>(0.000368) | -0.0157***<br>(0.000450) | 0.0469***<br>(0.000842) |
| **Rural** | -0.433***<br>(0.00210) | 0.00809***<br>(0.000343) | 0.0863***<br>(0.00112) | 0.0825***<br>(0.00110) | 0.256***<br>(0.00183) |
| **ST** | -0.0413***<br>(0.00233) | 0.00183***<br>(0.000288) | 0.0145***<br>(0.000853) | 0.00920***<br>(0.000764) | 0.0157***<br>(0.00149) |
| **SC** | -0.0239***<br>(0.00196) | 0.00251***<br>(0.000270) | 0.0301***<br>(0.000969) | 0.00901***<br>(0.000648) | -0.0177***<br>(0.00106) |
| **OBC** | -0.0170***<br>(0.00139) | 0.000980***<br>(0.000167) | 0.0117***<br>(0.000500) | 0.00185***<br>(0.000410) | 0.00244***<br>(0.000923) |
| **Hindu** | -0.0104***<br>(0.00183) | -0.00145***<br>(0.000241) | 0.00380***<br>(0.000519) | -0.00116**<br>(0.000577) | 0.00925***<br>(0.00124) |
| **Muslim** | 0.00241<br>(0.00242) | -0.000447*<br>(0.000255) | 0.00315***<br>(0.000798) | -0.00480***<br>(0.000654) | -0.000308<br>(0.00167) |

| | | | | | |
|---|---|---|---|---|---|
| **Illiterate** | -0.0150*** | -0.00961*** | 0.0728*** | -0.0346*** | -0.0136*** |
| | (0.00381) | (0.000400) | (0.00322) | (0.000554) | (0.00149) |
| **Up to Primary** | -0.0124*** | -0.00953*** | 0.0611*** | -0.0295*** | -0.00966*** |
| | (0.00343) | (0.000412) | (0.00274) | (0.000525) | (0.00150) |
| **Up to Higher secondary** | 0.0242*** | -0.00973*** | 0.0284*** | -0.0283*** | -0.0146*** |
| | (0.00240) | (0.000425) | (0.00140) | (0.000592) | (0.00138) |
| **Diploma** | -0.0801*** | 0.000730* | 0.0532*** | 0.00675*** | 0.0195*** |
| | (0.00930) | (0.000384) | (0.00658) | (0.00147) | (0.00467) |
| **Married** | 0.127*** | 0.00599*** | -0.0287*** | -0.0284*** | -0.0762*** |
| | (0.00334) | (0.000800) | (0.00103) | (0.00109) | (0.00231) |
| **Unmarried** | 0.0669*** | -0.00481*** | -0.0159*** | -0.0240*** | -0.0222*** |
| | (0.00242) | (0.000682) | (0.000712) | (0.000884) | (0.00166) |
| **Age** | -0.0574*** | 0.00307*** | 0.0101*** | 0.0134*** | 0.0308*** |
| | (0.000248) | (8.47e-05) | (0.000110) | (0.000131) | (0.000184) |
| **Age Square** | 0.000684*** | -4.49e-05*** | -0.000124*** | -0.000162*** | -0.000353*** |
| | (3.00e-06) | (1.12e-06) | (1.35e-06) | (1.61e-06) | (2.18e-06) |
| **Household size** | 0.00347*** | 0.000126*** | -0.00302*** | -0.00142*** | 0.000840*** |
| | (0.000270) | (3.14e-05) | (9.02e-05) | (8.92e-05) | (0.000181) |
| **MPCE** | 1.41e-05*** | -6.55e-07*** | -9.04e-06*** | 1.24e-06*** | -5.61e-06*** |
| | (4.07e-07) | (5.20e-08) | (1.94e-07) | (9.15e-08) | (2.86e-07) |

**Log likelihood = -301078.61; Pseudo R2 = 0.3762**

**Base category for explanatory variables:** Gender = Female; Sector = Urban; Social Category= General; Religion = Other Religion; Education = Graduation & Above; Marital Status = Other Marital Status; **Continuous Variables** = Age, Age Square, Household Size, MPCE.

**Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1**

Source: PLFS, 2017-18.

From the quarterly data the occupational choice model has been estimated for each of the four quarters (Appendix Tables A1-A4). Based on the marginal effects, their signs and the significance the summary table has been prepared (Table 6), which indicates that taking the general category of population as the comparison group the other three categories show by and large a similar behaviour across different quarters. In other words if a particular social category is more likely to join a specific sector than the general category the same tendency

is observed across all the quarters with minor variations. Similarly workers with a given educational attainment behave by and large the same way taking the graduates and above as the comparison category. However, what is more interesting to observe that the magnitudes of the marginal effects vary across quarters, implying that the probability of joining a particular sector may be more for a given social category than the comparison group but the extent of difference does not remain the same over the seasons. This may be taken as an evidence against the presence of sustainable sources of livelihood for all the categories of workers. Some of the groups are vulnerable and the adversity they face is more than that of others. For example, while the illiterate workers are more likely to join the agriculture in comparison to the graduates and above the likelihood of being in the agriculture sector varies across quarters as the magnitude of the marginal effect varies though the sign remains the same.

The scheduled tribes and scheduled caste population are more likely than the general category to remain unemployed across all the four quarters. While the scheduled tribes have a greater probability of joining the agriculture sector the scheduled caste are less likely to do so across all the seasons. Scheduled castes and OBCs are more likely to join the manufacturing sector. When it comes to construction and services in the rural areas all the three categories show a greater marginal effect in comparison to the general category of population. Similarly with lower levels of education the comparison group being graduates and above the probability to remain unemployed declines in all the four quarters. They are also more likely to join the agriculture and construction sectors across all the four quarters. However, as mentioned above the differences in differences are noteworthy, indicating that a particular category becomes more prone to joining or not joining a sector in a season vis a vis another season.

**Table 6: Summary Table from Quarterly Results Given in the Appendix: Rural Areas**

| **Explanatory Var** | **Employment Outcomes** | | | | |
|---|---|---|---|---|---|
| | **Unemployed** | **Employed in Ag.** | **Employed in Manufacturing** | **Employed in Construction** | **Employed in Services** |
| **ST** | +, +,+,x | +,+,+,+ | -,-,-,- | +,+,+,+ | +,+,+,+ |
| **SC** | +,+,+,+ | -,-,-,- | +,+,+,+ | +,+,+,+ | +,+,+,+ |
| **OBC** | -,+,+,+ | -,-,x,x | +,+,+,+ | +,+,+,+ | +,+,+,+ |
| **Illiterate** | -,-,-,- | +,+,+,+ | -,-,-,- | +,+,+,+ | -,-,-,- |
| **Primary** | -,-,-,- | +,+,+,+ | +,+,+,x | +,+,+,+ | -,-,-,- |
| **Secondary** | -,-,-,- | +,-,+,x | +,+,+,x | +,+,+,+ | -,-,-,- |

**Note: Signs of the marginal effects are listed across different quarters. 'x' denotes statistical insignificance.**

Similarly, in the case of urban areas scheduled tribes, scheduled castes and OBCs are more likely to remain unemployed and join regular

or casual wage employment in comparison to the general caste category (Table 7). While OBCs may join self-employment to a higher extent the other two categories are expected to have a lower probability than the general category. On the other hand, the illiterates, primary and secondary education are less likely to be unemployed, remain self-employed, or join regular wage employment while they are more likely to join casual employment than the general category. While these patterns are by and large same across quarters the magnitudes of the marginal effects change from season to season.

On the whole, it may be argued that while a particular caste category or an individual with a certain level of educational attainment is prone to a particular labour market status or joining a specific sector or a particular type of employment, their proneness or vulnerability tends to vary across quarters within a year. Such variations are indicative of the lack of sustainable livelihood sources over a period of one year. In the rural areas such variations are demonstrated across sectors of employment though the variations within a given sector could not be captured. Hypothetically if the intra-sector variations could be captured, the unsustainability must have been widely evident. On the other hand, in the urban context we laid focus on the nature of employment which may be changing across caste gropus or human capital wise over the seasons.

**Table 7: Summary Table from Quarterly Results: Urban Areas**

| Explanatory Variable | **Employment Outcomes** | | | |
|---|---|---|---|---|
| | **Unemployed** | **Self-employed** | **Regular/ Salaried** | **Casual workers** |
| **ST** | +,+,+,x | -,-,x,x | +,+,+,+ | +,+,+,+ |
| **SC** | +,+,+,+ | x,x,-,- | +,+,+,+ | +,+,+,+ |
| **OBC** | x,+,+,+ | +,+,+,+ | +,+,+,+ | +,+,+,+ |
| **Illiterate** | -,-,-,- | -,-,-,- | -,-,-,- | +,+,+,+ |
| **Primary** | -,-,-,- | -,-,-,x | -,-,-,- | +,+,+,+ |
| **Secondary** | -,-,-,- | -,-,-,- | -,-,-,- | +,+,+,+ |
| | | | | |

**Note: Signs of the marginal effects are listed across different quarters. 'x' denotes statistical insignificance.**
**Detailed tables on quarterly data from the appendix have been removed for want of space.**

## Multiple Activities

Now we move on to the other aspect of employment inadequacy by reflecting on the phenomenon of multiple activities pursued simultaneously. It may be noted that many individuals who have been pursuing as a principal status worker are also engaged in activities in subsidiary capacity[4].

From the data for all-India (Table 8 and Table 9) as well as rural India (tables not presented) it is evident that among those engaged in multiple activities and working in the agriculture sector as principal status worker nearly half of them are engaged in the construction sector simultaneously as a subsidiary worker. On the other hand, among those engaged in nonagricultural activities a large majority are also pursuing activities in the agriculture sector on a subsidiary status. While agriculture is not gainful for almost half of the multi-job holders engaged in this sector and pursuing on full time basis, for a very large percentage of the non-farm sector workers particularly in the rural areas, agricultural activities had to be pursued on part time basis to augment the household earnings and sustain consumption. Hence, the rural non-farm activities do not appear to constitute a vibrant economy while agriculture is not able to offer sustainable livelihood to at least half of the multi-job holders engaged in this sector.

**Table 8: Sector wise distribution of persons engaged in Multiple Activities, All India, Annual 2017-18 (in %)**

| | Subsidiary Status | | | | |
|---|---|---|---|---|---|
| **Principal Status** | **Agriculture & allied** | **Manufacturing** | **Construction** | **Services sector & others** | **Total** |
| **Agriculture & allied** | 44.75 | 3.62 | 41.66 | 9.97 | 100.00 |
| **Manufacturing** | 71.80 | 5.52 | 7.63 | 15.05 | 100.00 |
| **Construction** | 86.55 | 1.71 | 4.85 | 6.89 | 100.00 |
| **Services sector & others** | 73.08 | 4.36 | 4.67 | 17.89 | 100.00 |
| **Total** | 57.70 | 3.62 | 27.33 | 11.35 | 100.00 |

**Source**: PLFS, 2017-18

[4] This analysis is, however, not based on all workers, rather a subset of workers with multiple activities.

**Table 9: Sector wise distribution of persons engaged in Multiple Activities, All India, Quarterly (2017-18) (in %)**

| | Subsidiary Status | | | | |
|---|---|---|---|---|---|
| **Principal Status** | **Agriculture & allied** | **Manufacturing** | **Construction** | **Services sector & others** | **Total** |
| | | | **Q1 (July –September, 2017)** | | |
| **Agriculture & allied** | 49.33 | 3.94 | 37.56 | 9.17 | 100.00 |
| **Manufacturing** | 63.67 | 7.63 | 5.52 | 23.18 | 100.00 |
| **Construction** | 87.44 | 1.04 | 3.01 | 8.51 | 100.00 |
| **Services sector & others** | 73.03 | 4.25 | 2.46 | 20.26 | 100.00 |
| **Total** | 60.03 | 3.81 | 24.15 | 12.01 | 100.00 |
| | | | **Q2 (October–December, 2017)** | | |
| **Agriculture & allied** | 46.98 | 3.71 | 39.96 | 9.36 | 100.00 |
| **Manufacturing** | 76.08 | 4.67 | 4.58 | 14.67 | 100.00 |
| **Construction** | 88.38 | 1.39 | 4.42 | 5.80 | 100.00 |
| **Services sector & others** | 72.40 | 3.73 | 5.62 | 18.24 | 100.00 |
| **Total** | 58.17 | 3.51 | 27.30 | 11.02 | 100.00 |
| | | | **Q3 (January – March, 2018)** | | |
| **Agriculture & allied** | 39.51 | 2.61 | 44.96 | 12.92 | 100.00 |
| **Manufacturing** | 76.73 | 6.28 | 4.51 | 12.48 | 100.00 |
| **Construction** | 83.15 | 0.91 | 9.26 | 6.68 | 100.00 |
| **Services sector & others** | 71.33 | 4.92 | 7.18 | 16.57 | 100.00 |
| **Total** | 54.51 | 3.09 | 29.77 | 12.64 | 100.00 |
| | | | **Q4 (April –June, 2018)** | | |
| **Agriculture & allied** | 42.09 | 4.22 | 45.15 | 8.54 | 100.00 |
| **Manufacturing** | 69.39 | 3.18 | 16.93 | 10.50 | 100.00 |
| **Construction** | 87.28 | 3.26 | 3.04 | 6.41 | 100.00 |
| **Services sector & others** | 75.75 | 4.73 | 3.43 | 16.09 | 100.00 |

| | | | | | |
|---|---|---|---|---|---|
| **Total** | 57.89 | 4.08 | 28.34 | 9.69 | 100.00 |

**Source**: PLFS, 2017-18

**Binomial Logistic Estimates**

In a binomial logit framework (1 for those who pursue more than one activity and 0 otherwise) we try to identify the determinants of multiple activity adoption[5]. The findings from Table 10 confirm that the scheduled tribes and scheduled castes are more likely than the general category workers to adopt multiple activities. The rural areas are more prone to this phenomenon compared to the urban areas. Workers with lower levels of educational attainment are seen to pursue multiple activities more aggressively. With age though the probability tends to rise after a certain threshold limit it declines. Between the sexes the males are more likely to pursue greater number of activities than the females. This is not surprising in a society with males being the bread earners. Both the married and the unmarried are less likely to be engaged in more number of activities compared to the 'others' the category which includes widows and divorcees. With rising consumption the probability of adopting multiple activities declines implying that adoption of multiple activities is a household level strategy pursued to smooth consumption. By and large similar results are obtained when the estimation is carried out for the rural areas separately. For the urban areas many of the variables remain insignificant. For example the education specific dummies are mostly insignificant implying that those with lower educational attainments are not likely to pursue more number of activities in comparison to those who have acquired higher levels of education. In the urban context the opportunity to pursue more number of activities can be highly limited and thus the phenomenon of multiple activities do not seem to vary across individuals with different levels of human capital formation.

**Table 10: Logistic Estimates: Determinants of Multiple Activities for Rural, Urban and All India**

**Dep Var: Multiple Activities represented by 1; observation 9930 and Base Category not in multiple jobs represented by 0; observation 423409**

| **Explanatory Variables** | **All India dy/dx** | **Rural India dy/dx** | **Urban India dy/dx** |
|---|---|---|---|

[5] those who have more than one job versus the rest (workers with single activity, population not in labour force and unemployed).

| | | | |
|---|---|---|---|
| **Rural** | 0.00928*** | - | - |
| | (0.000254) | - | - |
| **Male** | 0.00752*** | 0.0158*** | 0.00305*** |
| | (0.000227) | (0.000481) | (0.000246) |
| **ST** | 0.00290*** | 0.00610*** | -0.000410 |
| | (0.000273) | (0.000586) | (0.000258) |
| **SC** | 0.000709*** | 0.00101** | 0.000821*** |
| | (0.000200) | (0.000444) | (0.000243) |
| **OBC** | -0.000363** | -0.00152*** | 0.000614*** |
| | (0.000154) | (0.000357) | (0.000152) |
| **Hindu** | 0.00393*** | 0.00863*** | 0.000589*** |
| | (0.000193) | (0.000418) | (0.000225) |
| **Muslim** | 0.00489*** | 0.0117*** | 0.000143 |
| | (0.000516) | (0.00125) | (0.000318) |
| **Illiterate** | 0.00152*** | 0.00388*** | 0.000242 |
| | (0.000325) | (0.000798) | (0.000256) |
| **Up to Primary** | 0.00177*** | 0.00446*** | 0.000289 |
| | (0.000320) | (0.000802) | (0.000231) |
| **Up to Higher Secondary** | 0.000750*** | 0.00227*** | -1.14e-05 |
| | (0.000256) | (0.000657) | (0.000170) |
| **Diploma** | 0.00440*** | 0.0101*** | 0.00115** |
| | (0.00101) | (0.00266) | (0.000567) |
| **Married** | -0.00404*** | -0.00847*** | -0.00168*** |
| | (0.000393) | (0.000898) | (0.000385) |
| **Unmarried** | -0.000572** | -0.000971 | -0.000611** |
| | (0.000285) | (0.000654) | (0.000280) |
| **Age** | 0.00147*** | 0.00316*** | 0.000500*** |
| | (3.05e-05) | (6.06e-05) | (2.67e-05) |
| **Age square** | -1.73e-05*** | -3.74e-05*** | -5.78e-06*** |
| | (3.66e-07) | (7.36e-07) | (3.16e-07) |
| **HH size** | -0.000254*** | -0.000516*** | -0.000131*** |
| | (3.15e-05) | (7.20e-05) | (3.24e-05) |
| **MPCE** | -7.86e-07*** | -1.85e-06*** | -2.23e-07*** |

| | | | |
|---|---|---|---|
| | (6.36e-08) | (1.65e-07) | (4.10e-08) |
| **N** | **433,339** | **246,809** | **186,530** |
| **Log Likelihood** | **-37946.47** | **-31843.719** | **-6050.7969** |
| **Pseudo R2** | **0.1979** | **0.1623** | **0.1161** |

**Base category for explanatory variables: Sector = Urban; Gender = Female; Social Category= General; Religion = Other Religion; Education = Graduation & Above; Marital Status = Other Marital Status; Continuous Variables = Age, Age Square, Household Size, MPCE**

**Standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1**

## 4. Conclusion

This study based on the data from annual labour force survey - which comprises quarterly information as well - reflects on the lack of sustainable sources of livelihood and the phenomenon of multiple activities pursued simultaneously. The variations in the share of activities across different quarters are indicative of fluctuations in the labour demand given the supplies. In the rural areas workers largely dependent on agriculture are rather compelled to shift to different other activities as cultivation in the rainfed areas becomes increasingly difficult after the monsoon months. The nature or status of employment also varies, particularly in the urban areas as workers shift from casual wage employment to self-employment and vice versa. The occupational choice model estimated based on the quarterly data is indicative of changes in the marginal effect of a given variable. In other words, for a given caste or an individual with a certain educational attainment the probability of joining a particular activity or nature of employment changes from quarter to quarter. These are indicative of job market adjustment manifested in terms of responses to changing labour demand conditions across seasons. Such diversification in livelihood sources are not always profitable; rather in many occasions such strategies are adopted under compulsion to smooth the consumption over the year. In general the lower castes and the ones with less educational attainments are more susceptible than the general category workers or those with higher educational levels to changing probability of joining a particular activity. On the other hand, though the number of individuals pursuing multiple activities is not large in relation to the total number of workers, vulnerability seems to be the cause of multi-job strategy adopted by the households. With a rise in consumption expenditure the probability to join more than one activity declines. Among the workers pursuing multiple activities and those engaged in agriculture, construction activities are seen to provide a major source of income augmenting possibility. On the other hand, those engaged in the rural non-farm sector are often seen to depend on the agriculture sector as subsidiary workers. On the whole, vulnerability seems to be

the cause of multi-job strategy adopted by the households as poor human capital formation and social inequalities raise the probability. The policy implications of the study are two-fold. First, sustainable livelihood creation particularly through the revival of the agriculture sector is an important consideration. Second, the rural non-farm sector and the urban informal sector will have to become more productive so as to reduce the burden of pursuing multiple activities in an attempt to secure consumption. From the supply side, better human capital formation may improve the accessibility to sustainable livelihood creation.

## Appendix

### Multinomial Logistic Estimates for determining the Employment Outcome in Rural India

### (Dependent Variable =Employment Outcome including those not in labour force)

**Table A1: For Quarter 1 (July2017-Sep 2017); N = 62,248)**

| Variables | Model (1) dy/dx Not in L F | Model (2) dy/dx Unemployed | Model (3) dy/dx Emp. in Ag. | Model (4) dy/dx Emp. in Manu. | Model (5) dy/dx Emp. in Construction | Model (6) dy/dx Emp. in Services |
|---|---|---|---|---|---|---|
| **Male** | -0.460*** | 0.00579*** | 0.292*** | 0.0340*** | 0.0575*** | 0.0703*** |
| | (0.00578) | (0.000768) | (0.00507) | (0.00189) | (0.00257) | (0.00265) |
| **ST** | -0.0568*** | 0.000640 | 0.0509*** | -0.00553*** | 0.00249** | 0.00827*** |
| | (0.00662) | (0.000503) | (0.00535) | (0.000851) | (0.00111) | (0.00148) |
| **SC** | -0.0132** | 0.00112** | -0.0117*** | 0.00492*** | 0.0145*** | 0.00447*** |
| | (0.00540) | (0.000503) | (0.00381) | (0.00109) | (0.00155) | (0.00122) |
| **OBC** | -0.00248 | -0.000131 | -0.00559* | 0.00354*** | 0.00319*** | 0.00148* |
| | (0.00433) | (0.000362) | (0.00335) | (0.000773) | (0.000790) | (0.000895) |
| **Hindu** | -0.0179*** | -0.00185*** | 0.0163*** | -0.000220 | 0.00209** | 0.00154 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | (0.00518) | (0.000552) | (0.00402) | (0.000977) | (0.000831) | (0.00108) |
| **Muslim** | 0.0338*** | -0.000482 | -0.0412*** | 0.000803 | 0.00295** | 0.00413** |
| | (0.00641) | (0.000528) | (0.00448) | (0.00128) | (0.00144) | (0.00174) |
| **Illiterate** | -0.0239** | -0.00710*** | 0.0503*** | -0.00295** | 0.0166*** | -0.0330*** |
| | (0.0106) | (0.000981) | (0.00881) | (0.00127) | (0.00320) | (0.00148) |
| **Up to Primary** | -0.0278*** | -0.00779*** | 0.0394*** | 0.00198 | 0.0178*** | -0.0236*** |
| | (0.0104) | (0.00105) | (0.00845) | (0.00150) | (0.00328) | (0.00122) |
| **Up to Higher secondary** | -0.00795 | -0.00713*** | 0.0205*** | 0.00280** | 0.0109*** | -0.0191*** |
| | (0.00891) | (0.000969) | (0.00716) | (0.00134) | (0.00215) | (0.00133) |
| **Diploma** | -0.0975*** | 0.00237** | 0.00975 | 0.0387*** | 0.0409*** | 0.00571 |
| | (0.0314) | (0.00113) | (0.0208) | (0.0101) | (0.0132) | (0.00364) |
| **Married** | 0.177*** | 0.00712*** | -0.128*** | -0.0114*** | -0.0146*** | -0.0300*** |
| | (0.0101) | (0.00243) | (0.00775) | (0.00188) | (0.00185) | (0.00256) |
| **Unmarried** | 0.0572*** | -0.00287* | -0.0253*** | -0.00577*** | -0.00659*** | -0.0167*** |
| | (0.00701) | (0.00174) | (0.00527) | (0.00147) | (0.00136) | (0.00182) |
| **Age** | -0.0600*** | 0.00241*** | 0.0383*** | 0.00462*** | 0.00525*** | 0.00947*** |
| | (0.000701) | (0.000209) | (0.000546) | (0.000188) | (0.000202) | (0.000276) |
| **Age Square** | 0.000709*** | -3.58e-05*** | -0.000439*** | -5.66e-05*** | -6.52e-05*** | -0.000113*** |
| | (8.45e-06) | (2.75e-06) | (6.44e-06) | (2.32e-06) | (2.53e-06) | (3.33e-06) |
| **Household size** | 0.00384*** | 0.000207*** | -0.00235*** | -0.000233* | -0.00107*** | -0.000394** |
| | (0.000766) | (6.59e-05) | (0.000595) | (0.000130) | (0.000141) | (0.000164) |
| **MPCE** | 2.36e-05*** | -4.52e-07*** | -2.56e-05*** | 1.09e-06*** | -1.49e-06*** | 2.80e-06*** |
| | (1.79e-06) | (1.54e-07) | (1.52e-06) | (2.45e-07) | (3.12e-07) | (3.03e-07) |
| | | **Log likelihood =** | **-45873.479;** | **PseudoR$^2$ = 0.3569** | | |

**Table A2: For Quarter 2 (Oct 2017- Dec 2017); N = 62,334)**

| Variables | Model (1) dy/dx Not in LF | Model (2) dy/dx Unemployed | Model (3) dy/dx Emp. in Ag. | Model (4) dy/dx Emp. in Manu. | Model (5) dy/dx Emp. in Construction | Model (6) dy/dx Emp. in Services |
|---|---|---|---|---|---|---|
| **Male** | -0.472*** | 0.00381*** | 0.299*** | 0.0406*** | 0.0586*** | 0.0705*** |
| | (0.00581) | (0.000619) | (0.00509) | (0.00206) | (0.00263) | (0.00265) |
| **ST** | -0.0578*** | 0.000748** | 0.0496*** | -0.00465*** | 0.00634*** | 0.00576*** |
| | (0.00674) | (0.000360) | (0.00545) | (0.00113) | (0.00121) | (0.00139) |
| **SC** | -0.0111** | 0.00140*** | -0.0148*** | 0.00394*** | 0.0167*** | 0.00381*** |
| | (0.00564) | (0.000407) | (0.00396) | (0.00132) | (0.00165) | (0.00125) |
| **OBC** | -0.00218 | 0.000672** | -0.00932*** | 0.00381*** | 0.00421*** | 0.00281*** |
| | (0.00449) | (0.000262) | (0.00348) | (0.000965) | (0.000749) | (0.000930) |
| **Hindu** | -0.0355*** | -0.000431 | 0.0344*** | 0.000304 | 0.00298*** | -0.00176 |
| | (0.00520) | (0.000300) | (0.00395) | (0.00127) | (0.000702) | (0.00119) |
| **Muslim** | 0.0149** | 0.000451 | -0.0374*** | 0.00796*** | 0.00962*** | 0.00450** |
| | (0.00754) | (0.000415) | (0.00509) | (0.00226) | (0.00189) | (0.00179) |
| **Illiterate** | 0.0228** | -0.00572*** | 0.0193** | -0.00621*** | 0.00874*** | -0.0390*** |
| | (0.0103) | (0.000935) | (0.00843) | (0.00164) | (0.00225) | (0.00170) |
| **Up to Primary** | 0.0108 | -0.00470*** | 0.00970 | 0.000696 | 0.0117*** | -0.0282*** |
| | (0.0101) | (0.000787) | (0.00816) | (0.00189) | (0.00253) | (0.00135) |
| **Up to Higher secondary** | 0.0303*** | -0.00466*** | -0.00820 | 0.000464 | 0.00742*** | -0.0253*** |
| | (0.00932) | (0.000776) | (0.00741) | (0.00174) | (0.00179) | (0.00153) |
| **Diploma** | -0.0331 | -0.000729* | -0.00578 | 0.0158** | 0.0285*** | -0.00461* |
| | (0.0264) | (0.000408) | (0.0184) | (0.00706) | (0.00948) | (0.00238) |
| **Married** | 0.188*** | 0.00279** | -0.128*** | -0.0180*** | -0.0143*** | -0.0311*** |
| | (0.0102) | (0.00129) | (0.00795) | (0.00254) | (0.00173) | (0.00261) |
| **Unmarried** | 0.0643*** | -0.00201* | -0.0301*** | -0.00806*** | -0.00741*** | -0.0167*** |
| | (0.00717) | (0.00111) | (0.00547) | (0.00188) | (0.00127) | (0.00183) |
| **Age** | -0.0618*** | 0.00167*** | 0.0402*** | 0.00560*** | 0.00473*** | 0.00958*** |
| | (0.000672) | (0.000194) | (0.000557) | (0.000200) | (0.000194) | (0.000276) |
| **Age Square** | 0.000730*** | -2.61e-05*** | -0.000460*** | -6.99e-05*** | -5.91e-05*** | -0.000114*** |

| | | | | | | |
|---|---|---|---|---|---|---|
| | (8.13e-06) | (2.79e-06) | (6.59e-06) | (2.52e-06) | (2.44e-06) | (3.34e-06) |
| **Household size** | 0.00374*** | 2.37e-05 | -0.00165** | -0.000340* | -0.000859*** | -0.000917*** |
| | (0.000837) | (4.30e-05) | (0.000655) | (0.000176) | (0.000125) | (0.000182) |
| **MPCE** | 2.04e-05*** | -3.01e-07*** | -2.19e-05*** | 8.14e-07** | -1.79e-06*** | 2.76e-06*** |
| | (1.89e-06) | (1.06e-07) | (1.59e-06) | (3.53e-07) | (2.98e-07) | (3.23e-07) |
| **Log likelihood = -46569.917;** | | | **Pseudo R2 =** | **0.3547** | | |

**Table A3: For Quarter 3 (Jan 2018- March 2018); N = 61,091**

| **Variables** | **Model (1) dy/dx Not in L F** | **Model (2) dy/dx Unemployed** | **Model (3) dy/dx Emp. in Ag.** | **Model (4) dy/dx Emp. in Manu.** | **Model (5) dy/dx Emp. in Construction** | **Model (6) dy/dx Emp. in Services** |
|---|---|---|---|---|---|---|
| **Male** | -0.456*** | 0.00327*** | 0.276*** | 0.0370*** | 0.0650*** | 0.0748*** |
| | (0.00580) | (0.000585) | (0.00502) | (0.00196) | (0.00279) | (0.00280) |
| **ST** | -0.0336*** | 0.000157 | 0.0272*** | -0.000726 | 0.00534*** | 0.00166 |
| | (0.00593) | (0.000248) | (0.00458) | (0.00127) | (0.00120) | (0.00119) |
| **SC** | -0.0131** | 0.000490* | -0.0138*** | 0.00734*** | 0.0167*** | 0.00237** |
| | (0.00540) | (0.000267) | (0.00358) | (0.00154) | (0.00169) | (0.00118) |
| **OBC** | -0.00956** | 0.000447** | -0.00464 | 0.00738*** | 0.00460*** | 0.00178** |
| | (0.00423) | (0.000206) | (0.00315) | (0.00107) | (0.000806) | (0.000891) |
| **Hindu** | -0.0199*** | -0.00108*** | 0.0209*** | 0.000233 | 0.00255*** | -0.00274** |
| | (0.00510) | (0.000327) | (0.00376) | (0.00123) | (0.000808) | (0.00119) |
| **Muslim** | 0.00685 | -0.000701*** | -0.0251*** | 0.00786*** | 0.00929*** | 0.00179 |
| | (0.00700) | (0.000257) | (0.00467) | (0.00215) | (0.00186) | (0.00153) |
| **Illiterate** | -0.0203* | -0.00381*** | 0.0435*** | -0.00535*** | 0.0184*** | -0.0325*** |
| | (0.0106) | (0.000700) | (0.00853) | (0.00158) | (0.00356) | (0.00149) |
| **Up to Primary** | -0.0289*** | -0.00347*** | 0.0359*** | 0.000745 | 0.0203*** | -0.0246*** |

| | | | | | | |
|---|---|---|---|---|---|---|
| | (0.0105) | (0.000648) | (0.00820) | (0.00183) | (0.00371) | (0.00126) |
| **Up to Higher** | -0.0100 | -0.00349*** | 0.0176** | 0.00227 | 0.0142*** | -0.0205*** |
| **secondary** | (0.00899) | (0.000644) | (0.00698) | (0.00171) | (0.00249) | (0.00140) |
| **Diploma** | -0.132*** | 0.00147** | 0.0156 | 0.0605*** | 0.0521*** | 0.00219 |
| | (0.0372) | (0.000691) | (0.0219) | (0.0151) | (0.0168) | (0.00345) |
| **Married** | 0.185*** | 0.00695** | -0.131*** | -0.0152*** | -0.0170*** | -0.0288*** |
| | (0.0103) | (0.00330) | (0.00761) | (0.00229) | (0.00193) | (0.00257) |
| **Unmarried** | 0.0758*** | 0.00163 | -0.0400*** | -0.0106*** | -0.00966*** | -0.0171*** |
| | (0.00691) | (0.00174) | (0.00500) | (0.00178) | (0.00142) | (0.00187) |
| **Age** | -0.0588*** | 0.00139*** | 0.0363*** | 0.00576*** | 0.00544*** | 0.00991*** |
| | (0.000661) | (0.000185) | (0.000532) | (0.000208) | (0.000211) | (0.000289) |
| **Age Square** | 0.000695*** | -2.18e-05*** | -0.000418*** | -6.97e-05*** | -6.78e-05*** | -0.000117*** |
| | (8.02e-06) | (2.67e-06) | (6.31e-06) | (2.57e-06) | (2.65e-06) | (3.48e-06) |
| **Household size** | 0.00207** | 6.18e-05 | -0.00173*** | 0.000149 | -0.000592*** | 3.34e-05 |
| | (0.000832) | (3.79e-05) | (0.000633) | (0.000178) | (0.000137) | (0.000181) |
| **MPCE** | 1.77e-05*** | -4.01e-07*** | -1.91e-05*** | 7.86e-07** | -1.84e-06*** | 2.85e-06*** |
| | (1.75e-06) | (1.04e-07) | (1.42e-06) | (3.45e-07) | (3.16e-07) | (3.23e-07) |
| **Log likelihood = -45345.135; Pseudo R2 = 0.3545** | | | | | | |

**Table A4: For Quarter 4 (April 2018- June 2018); N = 61,136)**

| **Variables** | **Model (1) dy/dx Not in L F** | **Model (2) dy/dx Unemployed** | **Model (3) dy/dx Emp. in Ag.** | **Model (4) dy/dx Emp. in Manu.** | **Model (5) dy/dx Emp. in Construction** | **Model (6) dy/dx Emp. in Services** |
|---|---|---|---|---|---|---|
| **Male** | -0.433*** | 0.00464*** | 0.260*** | 0.0335*** | 0.0658*** | 0.0694*** |
| | (0.00576) | (0.000732) | (0.00495) | (0.00186) | (0.00281) | (0.00266) |
| **ST** | -0.0341*** | 0.000931** | 0.0266*** | -0.00550*** | 0.00512*** | 0.00696*** |

| | | | | | | |
|---|---|---|---|---|---|---|
| | (0.00597) | (0.000437) | (0.00458) | (0.00104) | (0.00122) | (0.00138) |
| **SC** | -0.0236*** | 0.00134*** | -0.00608* | 0.00477*** | 0.0182*** | 0.00536*** |
| | (0.00534) | (0.000439) | (0.00356) | (0.00129) | (0.00174) | (0.00122) |
| **OBC** | -0.0105** | 0.000471 | -0.00332 | 0.00505*** | 0.00411*** | 0.00423*** |
| | (0.00412) | (0.000287) | (0.00307) | (0.000937) | (0.000798) | (0.000881) |
| **Hindu** | -0.00489 | 0.000209 | 0.00446 | 3.11e-05 | 0.00247*** | -0.00228** |
| | (0.00507) | (0.000321) | (0.00381) | (0.00123) | (0.000795) | (0.00111) |
| **Muslim** | -0.00395 | 0.000793 | -0.0297*** | 0.0111*** | 0.0123*** | 0.00950*** |
| | (0.00724) | (0.000541) | (0.00429) | (0.00250) | (0.00217) | (0.00194) |
| **Illiterate** | -0.00877 | -0.00572*** | 0.0332*** | -0.00445*** | 0.0157*** | -0.0300*** |
| | (0.00980) | (0.000927) | (0.00778) | (0.00150) | (0.00308) | (0.00140) |
| **Up to Primary** | -0.00914 | -0.00553*** | 0.0194*** | 0.000295 | 0.0189*** | -0.0239*** |
| | (0.00952) | (0.000905) | (0.00726) | (0.00168) | (0.00333) | (0.00122) |
| **Up to Higher secondary** | 0.00827 | -0.00564*** | 0.00698 | 0.000987 | 0.00994*** | -0.0205*** |
| | (0.00835) | (0.000916) | (0.00642) | (0.00155) | (0.00206) | (0.00135) |
| **Diploma** | -0.115*** | 0.00149* | 0.0163 | 0.0372*** | 0.0538*** | 0.00672* |
| | (0.0346) | (0.000839) | (0.0215) | (0.0112) | (0.0166) | (0.00386) |
| **Married** | 0.132*** | 0.00201* | -0.0916*** | -0.0103*** | -0.0141*** | -0.0176*** |
| | (0.00921) | (0.00122) | (0.00704) | (0.00214) | (0.00179) | (0.00215) |
| **Unmarried** | 0.0331*** | -0.00307** | -0.00733 | -0.00529*** | -0.00716*** | -0.0103*** |
| | (0.00658) | (0.00120) | (0.00487) | (0.00171) | (0.00134) | (0.00170) |
| **Age** | -0.0588*** | 0.00177*** | 0.0362*** | 0.00554*** | 0.00551*** | 0.00975*** |
| | (0.000670) | (0.000196) | (0.000541) | (0.000209) | (0.000214) | (0.000293) |
| **Age Square** | 0.000696*** | -2.71e-05*** | -0.000417*** | -6.84e-05*** | -6.88e-05*** | -0.000115*** |
| | (8.14e-06) | (2.72e-06) | (6.42e-06) | (2.61e-06) | (2.69e-06) | (3.52e-06) |
| **Household size** | 0.00369*** | 4.33e-05 | -0.00179*** | -0.000728*** | -0.000765*** | -0.000449*** |
| | (0.000804) | (5.27e-05) | (0.000604) | (0.000189) | (0.000141) | (0.000174) |
| **MPCE** | 1.71e-05*** | -1.99e-07* | -1.91e-05*** | 1.14e-06*** | -1.52e-06*** | 2.52e-06*** |
| | (1.66e-06) | (1.08e-07) | (1.34e-06) | (3.12e-07) | (3.04e-07) | (2.99e-07) |
| **Log likelihood = -44939.6; Pseudo R2 = 0.3569** | | | | | | |

**Note for Table A1 to Table A4:**
**Base category for explanatory variables: Gender = Female; Social Category= General; Religion = Other Religion; Education = Graduation & Above; Marital Status = Other Marital Status, Continuous Variables = Age, Age Square, Household Size, MPCE. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1**

**References**


Cousins, B. (1999). 'Invisible capital: The contribution of communal rangelands to rural livelihoods in South Africa', 16(2) 299-318

Ellis (2007) Ellis, F. (1998). 'Household strategies and rural livelihood diversification', *The Journal of Development Studies*, 35(1) 1-38.

Foster, A. D. (2011). *Creating Good Employment Opportunities for the Rural Sector.* ADB Economics Working Paper Series No. 271.

Sallu, SM, Twyman, C and Stringer, LC (2010). 'Resilient or vulnerable livelihoods? Assessing livelihood dynamics and trajectories in rural Botswana', 15 (4). http://www.ecologyandsociety.org/vol15/iss4/art3/. ISSN 1708-3087

Unni, J. (1996). Occupational Choice and Multiple Job Holding in Rural Gujarat. *Indian Economic Review*, 31(2) 157-183.

Vetter, Susanne (2013), Development and sustainable management of rangeland commons – aligning policy with the realities of South Africa's rural landscape , *African Journal of Range & Forage Science*, 30:1-2, 1-9.