

## Significance of Occupational Diversity in Bridging the Gap Between Rural Urban Income Gradients

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### Abstract

Urbanisation is not simply concerned about increasing magnitude of residents or stretching the geographies, rather about comprehensive change from rural to urban settings in terms of social systems and economic ecosystems. Farm land turning into real estate property, airports, bus stations, sky scrapers, bypass roads and industrial parks is observed. Against this backdrop, the current study is an attempt to know the impact of urbanization on occupational diversity and income of farmers in the north of Bengaluru city, whose outskirts are on the anvil of being mending into urban. Survey Stratification Index (SSI) was used to segment the study area into three gradients viz., urban, transition and rural for better examination. Herfindahl Index (HI) is used to assess the occupational diversity. The results revealed that the diversification in livelihoods run in parallel with the level of urbanisation. Higher occupational diversity was noticed in urban area (0.22) followed by transition (0.23) and rural (0.26) areas. The respondents derived income from various sources like farm, off-farm and non-farm activities. The total annual income of household was higher in urban area (Rs. 7,61,267) followed by transition (Rs. 7,10,411) and rural (Rs. 5,84,598) areas. Nevertheless, dependency on agriculture was seen across gradients, the urbanising segment started deriving incomes largely from off-farm and non-farm activities. In addition, even within the purview of agriculture, the urban and transition farmers shifted towards cultivating high value and low volume commercial crops, having high demand in urban areas. Agriculture Labours have started to work at establishments in city, owned small business and enterprises, and rental business to expanding urban populace. Overall, urbanisation and occupational diversity positively impacted agrarian households in increasing the wealth/income through diversification of agriculture and accelerated growth of non-agricultural activities. However, its impact is varying across gradients. The study concludes that there is a strong need for creating awareness among households about production and occupational diversity and to develop sustainable farming systems for both rural and urban areas, integrating both agriculture and allied activities so that the farmers income can be doubled and livelihood security of farming community can be best assured in long run.

**Keywords:** Urbanization; Livelihood; Occupational Diversity and Rural-Urban Interface

### Introduction

“In urbanisation, you think big because you are thinking decades ahead”.

As the human civilisation is traversing through phases beginning from a hunter and gatherer to the present-day artificial intelligence era, it has been running parallel to the level of urbanisation. Broadly/Predominantly, urbanisation is a population shift from rural to urban areas and therefore resulting in a corresponding decrease in the proportion of people living in rural areas, and the ways in which societies adapt to this change. Presently, one-third of the Indian population lives in urban areas. Further, this magnitude would raise upto two-fifths by 2036 and the Indian urban would get its twin by 2050 according to a projection made by the National Commission on Population: UN-World Urbanisation Prospects- 2018.

Counterpart to the urban is the rural, whose populace are at the focal point of this play. According to the Census 2011, two-thirds of the Indians live in rural areas of which 70 per cent are still clinging on farming for their livelihood and among this set, nearly nine-tenths are marginal and small landholders: a land on which they depend on being a prime source of their indelible misery. Though this is the prominent backdrop behind the rural-urban migration, there are multitude of push and pull factors. Push factors which drive the farmers out of villages include rural-urban income divide for the same amount of labour supplied wherein urban worker gets more wage compare to rural agricultural worker in rural area. Farming being done in consonance with the nature, is always been and would ever be at the cusp of the vagaries of nature- a good crop load on the field for a year may turn blank within a day of incessant shower. Socio-cultural factors that are prevalent in rural sphere have also contributed to this scenario. In urban areas, everyone is treated equally irrespective of the cultural factors providing the arena for individualism thereby promoting self-interest and self-decision-making capacity. On the other hand, there are pull factors too which attract the farmers towards the cities: Industrialization and development of quaternary sector have attracted the farmers towards the low skilled jobs- a farmer finds it more satisfying and cheerful to be dressed up in an uniform and stand inside an air conditioned room than dehydrating in the field beneath the scorching sun. People need penny when there is requirement for day-to-day expenditure but farmer finds it only fewer times in a year when they market their produce. This gap is rightly filled when a migrant farmer, who is now a labourer in a city unfailingly receives income at the end of every month. Another alluring or demonstration factor is that when a farmer finds another farmer, who migrated to nearby city and got socially transformed from traditional to modern urban domain, it nudges the mental setup of the farmer in rural domain to aspire more from the cities.

At this juncture, as one flips the coin, there could be two outcomes as in this phenomenon of Anthropocene. As a grim: less skilled labour demand at lower wages, will further make one's position at the lower strata of the pyramid firmer, leading to being locked up in the vicious cycles of poverty. Food is inseparable, but a fallow land back home, will press the food scarcity accelerator down for all due to ever growing non-farm labourers at the cities and ever-dwindling farmers and land under cultivation in the rural domain. Unplanned urban developments have led to the dichotomy between low waged poor urban and high salaried rich urban people. Heat islands is a contemporary phenomenon where urban areas will be warmer than their surrounding areas due to human activities have contributed to the human-induced climate change- Anthropocene. As an upbeat: shifting from farm to non-farm activities is one of the strategies recommended by the Committee on Doubling the Farmers' Income. Urban areas contribute three-fourths of the GDP, so this domain is a strong economic base for any economy. Higher levels of literacy and education, better health, longer life expectancy, greater access to social services and enhanced opportunities for cultural and political participation through easier access to facilities and information.

To this end, both the consequences are inevitable, but all the stakeholders must come in unison to pare the negatives and heed more to the positive impacts so that the SDGs, more specifically SDG-11 (sustainable cities and communities) and SDG-2 (no hunger) are met and they have blessed over the other SDGs, to be attained by 2030, leaving no one behind.

### Methodology

The study was carried out in the rural-urban interface of the north of Bengaluru in Karnataka, India, one of the fastest growing cities in Asia. North transect of Bengaluru was further divided into three layers namely rural, transition (peri-urban) and urban gradients. The distinction of the transect into rural, transition (peri-urban) and urban gradients was made in commensurate with the survey stratification index [1] developed by considering the percentage of built-up area and its linear distance from the city centre. The building of the State Legislature, Vidhana Soudha was used as the reference point to measure the distance, as it is considered as the central and focal point of the city. Up to about 20 to 25 km away from the city center building density was strongly correlated to distance (the closer to the city, the higher the percentage of built-up area). Beyond that, however, the two parameters were negatively correlated. The area beyond 25 km from the city check this centre is selected for the study. The villages were selected randomly across all the three gradients. The random sampling method was adopted for the selection of farm households. The sample frame consisted of 240 farm households represented by 80 each from the rural, transition (peri-urban) and urban gradients. In order to address the objectives of the study, data was obtained from the selected farm households using well-structured and pre-tested schedule through personal interview. The information is elicited from the respondents included family size, educational level, asset position, land holdings and cropping pattern. Further, the data on the different occupations, sources of income and other required information was collected in congruence with the objectives of the study.

### Analytical tools

#### Herfindahl index (HI)

To assess the occupational diversification, Herfindahl index was used. It is the sum of square of the proportion of number of respondents under each activity to the total activities and is given by the equation:

$$HI = \sum_{i=1}^N P_i^2$$

Where,  $P_i$  represents proportion of numbers of respondents under each activity to the total activities. The Herfindahl index takes the value of one when there is specialization and approaches zero when there is diversification.

### Sources of income

Important concepts and definitions used are explained below:

- I. **Farm income:** Gross income generated from the crops grown and livestock rearing during 2014 and 2019 was collected on recall basis hence suffers from memory recall bias. Nevertheless, efforts were taken to reduce the bias during data collection. However, the income pertaining to 2019 do not suffer much from the memory recall bias. Further an attempt was made to bring actual gross income by the farmers during 2014 to current prices of 2019 using inflation rate to account for inflationary effects. There was not much difference in the rate of inflation in the economy between 2014 (4.9%) and 2019 (4.54%) implying that, there was no much change in the value of money between these two periods. Hence, the actual gross incomes corresponding to 2014 and 2019 are compared.
- II. **Non-farm Income:** Income generated from non-agricultural activities like, non-agricultural labour, business, salaried jobs, rental income, income from petty shops etc., was considered.
- III. **Off-farm income:** Income generated by the households working as agriculture labourers in other farmers' fields and income from trading of agricultural produce was considered.

### Results and Discussion

#### Occupational diversification by farmers

Occupational diversity across the rural urban interface in northern Bengaluru was analyzed to know the effect of diversification on farm household's income (Table 1). In total, there are ten different predominant activities followed in the study area. Agriculture is the

predominant activity in the study area and it is clear from the study that all the sample respondents across the rural-urban interface are involved in farming. Apart from the agriculture, animal husbandry is the second major occupation across all the regions. Private job holders constitute a considerable share across all the regions as there are vast employment opportunities in private sector as the study area is a hub of many industries/companies.

With respect to the percentage of households involving in different activities, all the sample respondents are involved in agriculture. Percentage of households involved in animal husbandry are more in rural areas followed by transition and urban areas. The number of households involved in private job activities are more in urban areas (51.25%) followed by rural (46.25%) and transition (45%) areas. The activities apart from agriculture, animal husbandry and private job are agricultural labour, trading of agricultural produce, non-agricultural labour, business, petty shop and government job. It is quite clear that the percentage of households involved in agricultural labour are more in rural areas and the percentage of non-agricultural labour are more in urban areas compared to the other two regions because of the fact that the opportunities for agricultural labour are more in rural areas whereas opportunities for non-agricultural labour are more in urban areas. Percentage of households involved in business are more in urban areas (17.50%) followed by transition (12.50%) and rural areas (11.25%). Similar pattern was observed in the rental income renting buildings and machines i.e. 21.25 per cent in urban area, 13.75 per cent transition area and 11.25 per cent in rural area.

Particulars	Rural (n = 80)		Transition (n = 80)		Urban (n = 80)	
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
Agriculture	80	100.00	80	100.00	80	100.00
Animal husbandry	55	68.75	47	58.75	43	53.75
Agricultural labour	6	7.50	5	6.25	3	3.75
Trading of Agricultural produce	4	5.00	4	5.00	3	3.75
Non-agricultural labour	3	3.75	5	6.25	3	3.75
Business	9	11.25	10	12.50	14	17.50
Government job	6	7.50	3	3.75	3	3.75
Private job	37	46.25	36	45.00	41	51.25
Petty shop	8	10.00	8	10.00	12	15.00
Rental income from buildings and machinery	9	11.25	11	13.75	17	21.25

**Table 1:** Occupational diversification among farmers across rural urban interface.

Herfindahl Index of occupational diversity in rural, transition and urban areas is 0.26, 0.23 and 0.22, respectively indicating that, the urban areas are more occupationally diverse in nature compared to the other two regions i.e. transition and rural areas, as Herfindahl Index value was approaching zero, it indicated the high occupational diversity. Herfindahl Index value is very low for urban area (0.22) representing the existence of high degree of occupational diversification in urban areas due to the well accepted fact that high urbanization leads to high industrialization and availability of different employment opportunities (Table 2). Hence the hypothesis that the occupational diversity is more in urban area compared to transition and rural areas is accepted.

Sl. No.	Gradients	Herfindahl Index
1	Rural	0.26
2	Transition	0.23
3	Urban	0.22

**Table 2:** Occupational diversification by farmers using Herfindahl index.

Note: Herfindahl Index: Value ranges from 0 to 1, value approaching zero indicates diversification.

**Farm income of households across the rural urban interface**

Source wise farm income across the rural urban interface was estimated to know the contribution of different crops/enterprises (Table 3). The contribution of cereals in total farm income is more in rural (₹ 32,731) and transition (₹ 14,763) followed by urban (₹ 11,589) areas. The share of pulses in total farm income is highest in rural areas (1.37%) followed by transition (0.07%) and urban areas (0.13%). With respect to the share of different crops/enterprises in the total rural farm income, livestock constituted the largest share (28.39%) followed by vegetables (20.54%) and flower crops (14.31%) because of the fact that livestock provides year-round income and the area under vegetable crops and flower crops has increased over the years as floriculture is gaining more importance in recent years.

In the transition area, of the total farm income, around 89 per cent of the income is from the fruit crops, livestock, vegetables and flower crops and remaining 11 per cent is contributed by the income from perennials, cereals and pulses.

Sources	(₹ /annum/farm)					
	Rural (n = 80)	Per cent	Transition (n = 80)	Per cent	Urban (n = 80)	Per cent
Cereals	32,731	8.16	14,763	3.76	11,589	3.22
Pulses	5,496	1.37	263	0.07	469	0.13
Vegetables	82,356	20.54	59,330	15.10	91,888	25.51
Flower crops	57,350	14.31	59,900	15.25	8,388	2.33
Fruit crops	54,700	13.64	1,61,900	41.21	2,00,375	55.64
Perennials	54,438	13.58	28,578	7.27	7,288	2.02
Livestock	1,13,812	28.39	68,142	17.34	40,164	11.15
Total farm income	4,00,883	100.00	3,92,874	100.00	3,60,159	100.00

**Table 3:** Source wise farm income of farm households across rural urban interface (Period: 2018-19).

In the urban area, the share of fruit crops is highest in the total farm income and constituted around 55.64 per cent of the total income due to the fact that there exists a good marketing opportunity for fruits in Bengaluru urban region and higher returns per rupee of expenditure. The second major contributor to farm income is vegetables (25.51%) as there is higher demand for the vegetable products and efficient vegetable supply chain.

**Off-farm income of farm households across the rural urban interface**

The share of agricultural labour and non-agricultural labour in off-farm income of the sample respondents across the rural urban interface in north Bengaluru is presented in table 4. It is clear from the study that the share of agricultural produce trading is more in rural

(51.58%) and urban (64.84%) areas compared to the share of agricultural labour, whereas, in transition area the share of agricultural labour (53.83%) is more compared to the trading of agriculture produce (46.17%). Income from the agricultural labour is more in transition (53.83%) followed by rural (48.42%) and urban (35.16%) areas.

						(₹/annum/ farm)
Sources	Rural (n = 80)	Percent	Transition (n = 80)	Percent	Urban (n = 80)	Percent
Agricultural labour and	8,975	48.42	14,063	53.83	8,000	35.16
Trading of Agricultural produce	9,563	51.58	12,063	46.17	14,750	64.84
Total off- farm income	18,538	100.00	26,125	100.00	22,750	100.00

**Table 4:** Source wise off-farm income of farms across rural urban interface (Period: 2018-19).

#### Non-farm income of farm households across the rural-urban interface

Source wise non-farm income across the rural-urban interface was computed to know the contribution of different activities in the total non-farm income (Table 5). There is no big difference in the contribution of non-agricultural labour across the rural-urban interface. However, it is more in case of rural areas (3.75%) compared to the urban and transition regions where it is 2.89 and 1.59 per cent, respectively. The largest contribution to the non-farm income in rural areas is from private jobs (53.09%) followed by business (15.95%) and government jobs (12.50%). Income from petty shop is only 5.46 per cent as there is less scope for petty shops in the rural areas. With respect to the transition and urban areas, private jobs constituted the highest share with a contribution of 62.91 and 53.3 per cent, respectively. Share of business (22.10%) is more in case of urban areas compared to rural (15.95%) and transition (14.45%) regions which might be due to the availability of vast opportunities for private jobs and existence of different businesses in urban areas.

						(in ₹/annum/ farm)
Sources	Rural (n = 80)	Percent	Transition (n = 80)	Percent	Urban (n = 80)	Per cent
Non-agricultural labour	6,188	3.75	8,438	2.89	6,000	1.59
Business	26,350	15.95	42,125	14.45	83,625	22.10
Government job	20,640	12.50	8,225	2.82	14,745	3.90
Private job	87,688	53.09	1,83,375	62.91	2,02,925	53.63
Petty shop	9,013	5.46	28,063	9.63	28,938	7.65
Rental income	15,300	9.26	21,250	7.29	42,125	11.13
Total non-farm income	1,65,178	100.00	2,91,475	100.00	3,78,358	100.00

**Table 5:** Source wise non-farm income of farm households across rural urban interface (Period: 2018-19).

### Total annual income of farm households across the rural urban interface

The contribution of farm, off-farm and non-farm income sources was computed to know the diversity and share of these components in the total income of farm households (Table 6). The share of farm, off-farm and non-farm income in total income of the rural farm households is 68.57, 3.17 and 28.65 per cent implying that three-fourth of the total income of the rural farm households is from farm source alone because majority of the farmers in rural areas depend on agriculture for their livelihood. The co-efficient of variation in income is also found highest in the farm income as there is wide diversity in agricultural crops grown in the region.

In the transition region, the share of farm income is the highest (55.29%) followed by non-farm income (41.03%) and off farm income (3.68%). Pratap, *et al.* [2] and Vatta, *et al.* [3] also reported that non-farm income sources contributed more than 40 per cent to the total household income. The coefficient of variation in transition area is more for farm income i.e. 87.84 per cent. The contribution of farm, off-farm and non-farm income in urban areas is 47.31 per cent, 2.99 per cent and 49.70 per cent, respectively indicating that, the non-farm income is the largest source of total income for urban households (Table 6). In urban areas, employees get stable income on a periodical basis (usually monthly) and this attracts youth and educated people from rural areas. Thus, lack of assured and stable income from farm business holds back the farmers from agriculture and thereby minimizes their dependence on agriculture. Dependence on agriculture is comparatively less among the households in urban and transition areas. The coefficient of variation is found to be high for farm income for all the regions and it is highest in urban areas (129.83%) indicating a wide variation in farm income across the urban households. These variations could be attributed to high degree of marginalization of agriculture because the variation in farmer's income is much higher than variation in other occupational groups. Sanjana [4] also reported that, the variation in income was very high in farm income among both less and more urbanized areas compared to income from organized sectors, self-employed and unorganized sectors.

Sources	(in ₹/annum/farm)					
	Rural (n = 80)	CV (%)	Transition (n = 80)	CV (%)	Urban (n = 80)	CV (%)
Farm income	4,00,883 (80) [68.57]	79.12	3,92,811 (80) [55.29]	87.84	3,60,159 (80) [47.31]	129.83
Off-farm income	18,538 (10) [3.17]	52.41	26,125 (9) [3.68]	48.27	22,750 (6) [2.99]	55.55
Non-farm income	1,65,178 (43) [28.25]	30.34	2,91,475 (53) [41.03]	33.11	3,78,358 (63) [49.70]	55.52
Total	5,84,598	80.56	7,10,411	73.90	7,61,267	95.19

**Table 6:** Source-wise total annual income of farm households across rural urban interface (Period: 2018-19).

Note: 1. CV-Coefficient of Variation.

2. Figures in round brackets indicate number of sample farmers.

3. Figures in square brackets represent percentage to total income.

The total income is higher in urban area (₹ 7,61,267) followed by transition (₹ 7,10, 411) and rural (₹ 5,84,598) areas, since the urban and transition farmers have higher occupational diversity i.e. they are involved in different activities along with the agriculture which fetched them higher returns. Hence, the hypothesis that occupational diversity has positive effect on household income across all the areas is accepted. Retna [5] also reported that, occupational diversity positively impacted agrarian households in increasing the wealth/



income through generation of productive employment through diversification of agriculture and accelerated growth of non-agricultural activities.

### Conclusion

Persistent low level of farmers' income can adversely affect the future of agriculture in the country. To secure the future of agriculture and to improve the livelihood of half of India's population, adequate attention needs to be given to improve the welfare of farmers and raise farm income. Introduction, adaption and acceptance of new enterprises as well as new and upcoming production technologies could potentially improve farmers' livelihood by increasing farm income. There is a need to identify enterprises/occupations that may suit to a range of environments and farmers' preferences. Occupational diversification provides better conditions for food security and enables farmers to grow surplus products for sale at market and thus help to obtain increased income to meet the other needs related to household well-being.

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