Income Diversification and Inequality in Mountainous Regions: A Descriptive Study of Sherani (Pakistan)

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Abstract

Income diversification serves as a buffer against shocks, whereas income inequality hinders the equitable distribution of resources. These two phenomena are not examined among the dwellers of the mountains in Baluchistan. Thus, the objective of this study is to empirically analyse income diversification and inequality in Sherani, a district that lies within the Sulaiman Mountain range. Using a structured questionnaire, primary data were collected from 160 households through in-person interviews. To analyse income diversification, the Simpson Diversity Index is calculated. For measuring inequality among farm and non-farm sources of income, the Gini Coefficient, Percentile Ratios, the Generalised Entropy Index, and the Atkinson Index are computed. The results reveal that, on average, the annual contribution of foreign remittances and agriculture to a household's income is 46% and 27%, respectively. The level of diversification stands at 0.48, which is moderate. The results further indicate that the Gini Coefficient is 0.49 for farm income and 0.31 for non-farm income, showing considerably higher inequality in the former. The government should give special attention to the households' diversification efforts to increase their income and reduce inequality.

Keywords: Agricultural Income, Baluchistan, Gini Coefficient, Income Diversification, Income Inequality, Sulaiman Mountains, Pakistan.

Introduction

The population of mountainous communities exceeds one billion globally, with 65% residing in developing countries (Food & Agriculture Organisation, 2020). These areas have harsh topographies, and the people living there are poverty-stricken, lacking access to education, healthcare, sanitation, and relying on agricultural revenues (Romeo et al., 2015). However, such regions are rich in natural resources, including forests, rangelands, minerals, water, and biodiversity. These resources serve as the foundation for a variety of economic endeavours, such as ecotourism and environmental protection (United Nations Environment Programme, 2012). Studies have highlighted the importance of mountain economies in supporting mountainous communities, encouraging innovation, and preserving cultural heritage. By producing high-value crops and livestock, mountainous regions make significant contributions to global food security. For mountainous communities, farming is a core economic activity despite the unique challenges posed by mountainous geographies and climates (Huber et al., 2015).

Income diversification has a transformative effect on the earnings of households in rural mountainous areas. In the face of adversity, livelihood diversification in these areas is crucial for smallholder farmers and low-income inhabitants (Barrett et al., 2001; Ijaz et al., 2022). It becomes essential when one source of income falls short of fulfilling the needs of mountainous

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communities. Spatio-temporal effects also force these communities to adopt diversification strategies. To address uncertainties and ensure survival, mountain dwellers often employ three main strategies, including migration, diversification of income, and intensification of agriculture (Reardon et al., 2001; Das & Ganesh-Kumar, 2019; Ijaz et al., 2022). In mountainous regions, income diversification provides a breathing space for earners, as they often engage in multiple activities ranging from livestock raising to crops and trades (Ellis, 1998). In mountains, communities generate income from either farm-related activities or off-farm (non-farm) activities, or from a combination of both. Farm income is primarily derived from selling crops, livestock, and their products. In contrast, non-farm income encompasses wage labour, casual work, petty trade, remittances, charcoal, timber, grass, crafts, and other similar activities (Carswell, 2002). Hence, diversification enables households to extract income from different sources.

In mountainous regions, income disparity is yet another malaise which renders many poor. Across the globe, countries are committed to end poverty by 2030, which is the first goal of the Sustainable Development Goals. Pakistan also needs to achieve the targets of this goal (Rasul & Karki, 2024). The scenario becomes stark when discussing inequality among mountainous communities. However, several studies have linked its reduction to diversification in income (Batool & Jamil, 2019; Javed et al., 2015; Olawuyi & Olawuyi, 2022; Mathebula et al., 2017; Awotide et al., 2012). These studies reveal that the more diversified an individual's income is beyond a single source, the more likely it is that resources are distributed equally. Javed et al. (2015) found that diversification reduces poverty by generating additional sources of income. He further posited that equitable access to education, capital, and land for the poor and wealthy alike reduces disparity. Bezu (2021) emphasises the importance of non-farm rural activities, which, in the author's view, can reduce poverty and promote economic growth. Studies also warn that access to resources, education, market connections and loan availability to the wealthier only leave the rest poor because the low-resourced households have a harder time finding non-farm employment or entrepreneurial opportunities (Batool & Jamil, 2019; Javed et al., 2015; Adepoju and Oyewole, 2014; Iqbal et al., 2018).

In a total of fourteen of the highest peaks globally, Pakistan boasts five that exceed 8,000 meters. Geographically, approximately 60% of Pakistan is mountainous, and around 40 million people reside in these mountains (Ijaz et al., 2022). Generally, a large proportion of the country's population lives in poverty. Under the new poverty threshold introduced by the World Bank, the number of people living below the poverty line in Pakistan is 44.7% (Amin, 2025). The mountainous communities are hard hit by poverty. They receive little to no support from governments, and the incidence of multidimensional poverty among them is 31%; in particular, for the mountainous people of Baluchistan, this rate rises to 63% (Rasul & Karki, 2024). The changing spatio-temporal effects have rendered mountainous communities vulnerable, and their incomes from agriculture are in marked decline. The 2022 heatwaves, which resulted in wildfires in parts of Pakistan, including the Sherani pine forest, followed by floods that washed away the livelihoods of millions across the country, are cases in point. The wildfire cost over 0.8 million trees in the Sherani pine forest located in the Sulaiman Mountains (International Union for Conservation of Nature, 2022).

Baluchistan covers 44% of Pakistan's area, 80% of which can be classified as inter-mountainous. The remaining 20% comprises both the coastal plain and the floodplain. Its well-known mountain ranges include Toba Kakar, Murdar, Zarghoon, Chiltan, Kirthar, Chagai, and Sulaiman Takht. A total of 69.02% of the province's population is rural (Pakistan Bureau of Statistics, 2023). Notwithstanding the province's importance in terms of its natural resources and the need for the upliftment of its poor, no study exists that reports income structures, diversification in incomes, and, importantly, the state of inequality in its entirely rural, mountainous regions. Therefore, Sherani is selected for this study, which is one of the rural and

mountainous districts of Baluchistan. This district lacks a city and is home to one of the country's most extensive pine forests, located in the Koh-e-Sulaiman range, which generates a substantial amount of revenue (Youlin Magazine, 2022; Tariq et al., 2023). The specific objective of this study is to ascertain the streams of income, the extent of income diversification, and income inequality among the farm and non-farm sources of households in Sherani. It also aims to invite appropriate policy interventions from the government to support diversification efforts and ensure a fair distribution of resources among households.

Review of Studies on Income Diversification and Inequality

The studies demonstrate the importance of diversification and its role in reducing inequality in rural mountainous regions (Ijaz et al., 2022; Kadigi, 2021; Mathebula et al., 2017; Adepoju & Oyewole, 2014; El Benni & Finger, 2013; Awotide et al., 2012).

Ijaz et al. (2022) examined the livelihood practices and diversification strategies in the Galiyat region, Pakistan. They found that agriculture was the mainstay of the households, in addition to off-farm activities. It was further revealed that tourism and climate change were key factors in survival and opportunity-led diversification. Increases and decreases in migration inspired by diversification were also observed. The study concluded that tourism was a primary diversification strategy; therefore, public and private sector interventions were encouraged to help people establish businesses and innovation strategies for survival.

Kadigi (2021) investigated the nature and determinants of income inequality in Uluguru Mountains, Tanzania, and found that inequality was prevalent. He also revealed that crop production and timber were primary sources of income and contributors to a decrease in inequality. His analysis further revealed that off-farm income decreases inequality for farmers near their homesteads, female-headed households, those without access to extension services, and those in community-based financial institutions. The study recommended diversification and tailor-made training and financing for less-resourced farmers, enabling them to expand their portfolios and combat inequality.

Mathebula et al. (2017) examined income diversification in three of the poorest provinces in South Africa: The Eastern Cape, Limpopo, and KwaZulu-Natal. Using the Shannon Diversity Index, the study revealed that households in urban formal and traditional areas diversified income streams to a greater extent than those in rural formal and informal settlements. Households with varied income diversification in the province require policy intervention to enhance their income.

Adepoju and Oyewole (2014) investigated rural livelihood strategies and their role in overall households' income inequality in Akinyele, Oyo state. The findings showed that nearly half of the respondents espoused a combination strategy of farm and non-farm activities, while 14.3% and 40% adopted only farm and non-farm strategies, respectively. The highest inequality was among non-farming households, while the lowest was in farming households. Factors negatively influencing farming choices were household size and land ownership, while age had a positive effect on the adoption of the non-farm strategy. The study recommended the provision of improved access to land and the provision of technology which can encourage ageing households to engage in agricultural activities.

El Benni and Finger (2013) assessed income inequality in Swiss agriculture across the valley, hill, and mountain areas for the period 1990-2009. They aimed at analysing the impacts of agricultural policy reform on inequality. Their results indicate that income inequality remained stable, but inequality within the farm sector increased. The study's Gini elasticities revealed that households' income inequality was reduced by off-farm generated income and direct payments, but was increased by market income. The study recommended that regional requirements should be considered in policy formulation.

Awotide et al. (2012) conducted a study in rural Nigeria to examine the impact of income diversification on income inequality. Using the Foster-Greer Thorbecke (FGT) method to measure poverty, the study revealed that participants in Non-Farm Wage Employment (NFWE) were better off than those who relied solely on Farm Related Employment (FRE). The study concluded that to reduce poverty, policymakers should focus on income diversification for smallholder farmers, as well as ensuring access to land and promoting gender equity in access to productive resources.

Mountainous regions of Pakistan, especially Baluchistan, lack in studies that empirically measure the extent of income diversification and inequality. Therefore, this paper fills that gap and complements the existing literature by providing insights from a completely rural mountainous district, Sherani.

Methodology

Description of the Study Area

This study was conducted in Sherani District, which is home to only two tribes, the Harifal and the Sherani, locally known as Marandai. Sherani covers an area of 2,710 square kilometres, and the total population of the district is 191,687, with a population density of 44.47 persons per square kilometre (Pakistan Bureau of Statistics, 2023). The district lies within the Sulaiman Mountains, the highest point of which is 3,487 meters. Major livelihood activities include farm and non-farm sectors, such as forestry, vegetation, cropping, cottage industries, petty trade, and remittances. The karez system is the primary source of irrigation, and larger tracts of land are commonly rainfed. November to March are frosty months, with monsoon rainfalls occurring from July to September, followed by winter rainfall and snowfall seasons.

Sample Size and Techniques of Data Analysis

Primary data were collected from households using a two-stage sampling technique. The first stage was the random selection of villages from the district. Based on the proportional size of the population of the tribes, six villages were selected from the Harifal Tribe and ten from the Sherani. Ten farmers were selected from each village under convenience sampling in the second stage. Finally, in-person interviews were conducted by using a structured questionnaire to collect data from a total of 160 farmers.

Analytical tools are employed to measure income diversification and income inequality for the sample population. Simpson Index of Diversity (SID) is computed for the assessment of diversification. The Gini Coefficient, Percentile Ratios, the Generalised Entropy Index (GE) and the Atkinson Index are used to measure income inequality between farm and non-farm sources of income. These indices satisfy the Dalton principles of using good indices for the distribution of income.

Extent of Income Diversification

The Simpson Index of Diversity is used to determine the degree of income diversification. The reason to prefer SID over other approaches is that it takes into consideration the number of income sources and how evenly the income is distributed among those sources (Agyeman et al., 2014; Adem and Tesafa, 2020). The following is the general formula of SID.

$$SID = 1 - \sum_{=1}^{k} pi^2$$

Where k is the number of income sources, pi is the proportion of income from the ith source, and $i = 1, 2, 3, \ldots . n$. The range of SID is zero when there is no diversification, and it is one when the extent of diversification is high. Hence, the SID formula becomes;

$$SID = 1 - \left\{\left(\frac{AGRI}{TI}\right)^2 + \left(\frac{GOVJI}{TI}\right)^2 + \left(\frac{PSI}{TI}\right)^2 + \left(\frac{REM}{TI}\right)^2 + \left(\frac{COTI}{TI}\right)^2 + \left(\frac{PR}{TI}\right)^2\right\}$$

Where,

AGRI	=	Agriculture income
GOVJI	=	Government job income
PSI	=	Private sector income
REM	=	remittances
COTI	=	Cottage industry income
PR	=	Property rent
TI	=	Total income of a household from all sources

Measures of Income Inequality

While Gini Coefficient is a commonly used tool to asses income inequality, it is not sensitive to where the inequality occurs in the distribution of income. Therefore, this study also uses the Generalized Entropy Index, Percentile Ratios and the Atkinson Index to draw comparison between the richest and the poorest households. These are cardinal measures for computing income inequality, and they are computed to ascertain the status of inequality among the households in Sherani.

The Generalized Entropy Index is a family of indices that measure income inequality in a population. The value of GE is equal to zero when there is perfect equality in the population, however, values greater than zero represent increasing levels of inequality. Hence, the formula for GE is given as;

$$GE(\alpha) = \begin{cases} \frac{1}{N\alpha(\alpha-1)}\sum_{i=1}^{N}\left[\left(\frac{yi}{y}\right)^{\alpha} - 1\right], \alpha \neq 0,1, \\ \frac{1}{N}\sum_{i=1}^{N}\frac{yi}{y}\log\frac{yi}{y}, \quad \alpha = 1, \\ -\frac{1}{N}\sum_{i=1}^{N}\log\frac{yi}{y}, \quad \alpha = 0. \end{cases}$$

Where *N* is the number of households, *yi* is the income for household *i*, and α is the parameter that regulates the weight given to the distance between incomes at different parts of the income distribution. The index is sensitive to large income for large α and small income for small α. The Atkinson Index[3], like GE, is also a family of indices which is derived from GE under the restriction $\epsilon = 1 - \alpha$ which is given by:

$$A = 1 - [\epsilon(\epsilon - 1)GE(\alpha) + 1]\text{^}\frac{1}{1-\epsilon}, \quad \text{for } \epsilon \neq 1$$

$$A = 1 - e^{-GE(\alpha)}, \quad \text{for } \epsilon = 1$$

Where GE (α) is the generalized entropy index at parameter α while ϵ ($inequality\ aversion$) determines the weight given to lower-income households. GE has inequality metrics as special

[3] *Developed by Anthony Barnes Atkinson, the Index is a measure of income or wealth inequality and specifically to determine end of the distribution that contributes most to the observed inequality.*

cases, including GE (-1) as poverty-focused, GE (0) as Theil L Index, GE (1) as Theil T Index, and GE (2) as half the squared coefficient of variation. Among the common inequality metrics, the Gini Coefficient[4] is also computed separately for farm and non-farm sectors. Using a Stata command 'ineqdeco', the indices for the above-mentioned measures are generated. Percentile ratios are simply comparing different values of the income at different percentiles i.e., 90th to the 10th percentile for assessing inequality.

Results and Discussion

The descriptive statistics give significant insights into the economic makeup of the households in Sherani. It is, however, important to first understand family patterns in the district. Since both the tribes in the area thoroughly subscribe to Pashtun traditions where joint family system is an age-old norm, therefore, their family size is typically large, to the tune of forty members per household. Hence, Table 1 presents the sources of income and their contribution to households' income.

Table 1: Sources of Household-Income[5] in Sherani

Income Sources	Mean (PKR)	Std. Dev.	Min (PKR)	Max (PKR)	Share of Total Income (%)
Remittances	985.78	603.97	0	2860	46
Agriculture Income	574.87	757.88	0	3460	27
Government Job Income	200.44	408.85	0	3000	9.4
Property Rent	183.19	247.72	0	1050	8.6
Private Sector Income	170.26	249.32	0	1180	8
Cottage Industry Income	26.84	42.87	0	250	1.3

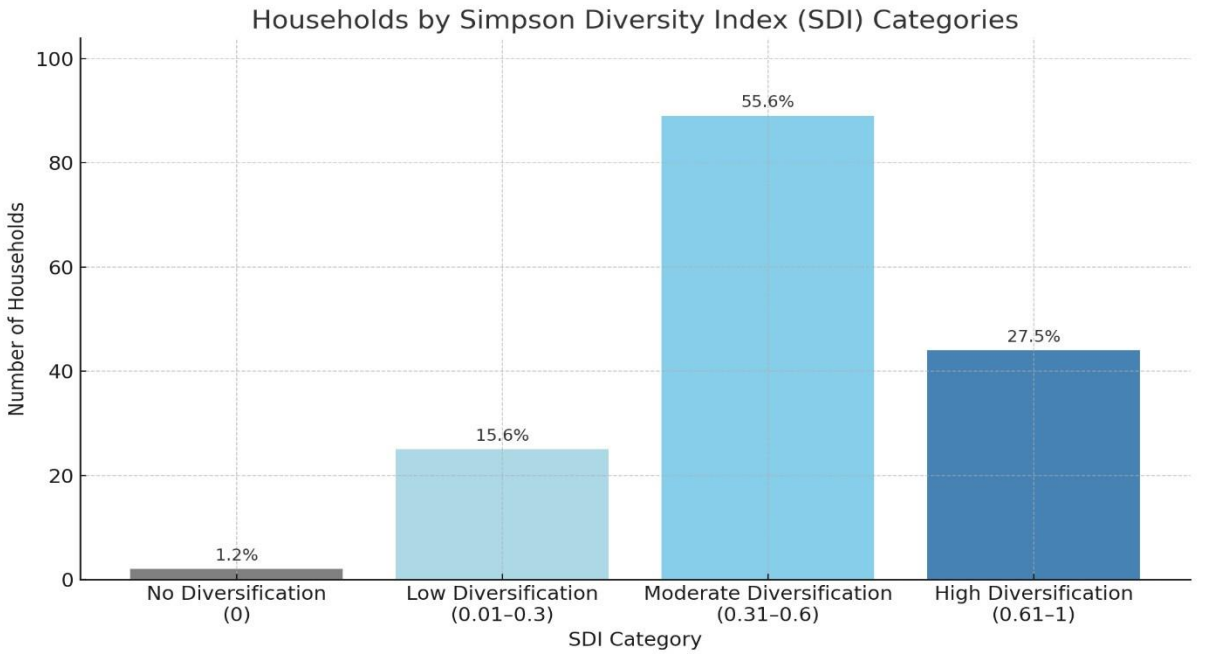
Households in the study area earn from six sources including remittances, agriculture, government job, rent of property, private sector and cottage industry. However, for most of the households, agriculture is a primary source of income. It is observed from the data that some of the households extract income from only one or two sources, and there are others who earn from as many as all six sources. Based on Table 1, annual average income from remittances is US$3,483 which is the largest contributor to a household's income. Although an important source of income and is extracted within the boundaries of Sherani, agricultural income is the second biggest stream with an average $2,031 annual contribution, followed by government job ($708), rent income ($647), private sector income ($602) and cottage industry income ($95). By looking at these statistics, it can be conveyed that the high mean value and standard deviation of remittances highlight the unequal distribution of this source of income. This is due to differences in the length of time and amount of financial support received from family members who work overseas. Income sources such as cottage industry have lower variability and smaller mean value, suggesting it plays a relatively small part in households' income. From Table 2, the status of income diversification for the households is depicted.

[4] *Gini Coefficient was developed by an Italian Statistician and Sociologist Corrado Gini in 1912. It is the statistical dispersion that depicts income inequality, wealth or the consumption inequality within a nation or some social group.*

Table 2: Level of Income Diversification (SID) in Sherani	
Mean SDI	0.48
Standard Deviation	0.18
Minimum	0.00
Maximum	0.75

The mean Simpson Index of Diversification for this study is 0.48 which falls within the medium range of income diversification when compared with the diversification categories of Dev et al. (2016) i.e., 0 to 0.3 (low), 0.31 to 0.6 (medium) and 0.61 to 1 (high). The number of households with their respective levels of diversification are shown in Figure 1. For instance, out of a total of 160 households, there were only 1.25% households who did not diversify their income, and their index is zero. 15.6% households have diversification index between 0.01 and 0.3 which is deemed as low diversification. For 55.6% households, the index is between 0.31 and 0.6 which exhibits a medium level of diversification and conveys that the households from this category earn income from a balanced mix of sources. Lastly, 27.5% households have their index between 0.61 and 0.75 which shows a high level of diversification. Also, the cumulative SID from Table 2 nearly matches the finding of Babatunde and Qaim (2009) who observed SID at 0.479 in Nigeria. However, the value of SID for the study area seems more diversified when compared with Adem and Tesafa (2020) who found 0.24 in Ethiopia, and Dev et al. (2016) with SID value of 0.25 in Bangladesh. It can be interpreted that households in Sherani derive income from multiple sources. Nonetheless, the standard deviation is high and suggests variations. This means, some households rely on fewer sources of income, and some have diversified their incomes to a moderately high degree (SID = 0.75). The rationale to substantiate this conclusion is that a comparatively well-to-do households could easily diversify their incomes (Reardon et al., 1992). Adem and Tesafa (2020) and Harishankar et al. (2022) found that education, membership in farmer producer organizations, proximity to agricultural industry, landholding size, access to electricity and credit utilization positively influence income diversification. Therefore, it can be said that not only do better-off households have access to the attainment of education which gets them government and private sectors jobs, but they also have easy access to overseas employment.

Figure 1: Households by SDI categories



Comparison of Farm and Non-Farm Income Inequality in Sherani

The following tables depict the level of inequality in Sherani. In particular, Table 3 depicts the overall level of inequality among the households, based on their incomes from farm and non-farm sources. In Table 4, a detailed decomposition of inequality is done using Generalized Entropy Indices. These indices identify which part of the income distribution, such as poor or rich, contributes more to income inequality. Similarly, Table 5 reports the Atkinson Index of Inequality which measures the proportion of total income that would need to be redistributed to achieve perfect equality. It accounts for different levels of inequality aversion (ϵ), where a high value of (ϵ) highlights concern for income inequality among the poor. Since the Gini coefficient may not distinguish between two income distributions, and is sensitive to inequalities in the middle of income spectrum, therefore, the Atkinson Index proves handy in such situation.

Table 3: Gini Coefficient and Percentile Ratios for Farm and Non-farm Income Sources Among Households in Sherani

Measure	Farm Income	Non-farm Income
Gini Coefficient	0.49	0.31
p90/p10	15.59	6.14
p90/p50	3.52	1.80
p10/p50	0.23	0.29
p75/p25	5.50	2.13

The findings in Table 3 imply that overall inequality in farm sector prevails over the non-farm one. The Gini Coefficient value (0.49) for farm income indicates a high level of inequality in farm sector when compared with the value 0.31 of non-farm sector in the district. This is consistent with the findings of Azam (2016) who found farm income in rural India as the biggest component increasing inequality. One reason for this level of inequality is variation in size of landholding among households in the study area. From the literature studied and the

area observed in Sherani, it is evident that the Harifal Tribe's belt is completely mountainous, and landholdings are not only small in size but they are also in fragments. Fragmented landholding results in higher costs, deficiencies and lower yields (Zhou et al., 2024; Nguyen et al., 1996; Rahman & Rahman, 2009). Karez-fed farming system, harsh topography, floods prone fields are other reasons that render vulnerable households disadvantageous, especially those who dwell in Shin Ghar (green mountain) and Qaise Ghrona (mountains of Qaise). This view is further supported by percentile ratios. For example, the p90/p10 ratio depicts that the richest 10% earn 15.59 times more than the poorest 10% from farm sector. This disparity is however lower at 6.14 for non-farm income. The upper-middle income earners (p75/p25) earn 5.5 times more in farm income and 2.13 times more from non-farm sector than the lower-middle income ones. This disparity shrinks to 3.52 for farm income and 1.8 for non-farm income when earnings of the top 10% to the median earners are compared. The bottom 10% earn only 0.23 or 23% that of median earners in farm income, and 0.29 or 29% of the same from non-farm sources. So, it is evident that there exists a wide gap of income distribution between the top and the bottom 10 percent earners in both farm and non-farm income sources. Although income disparity is of concerning level in both the sectors, it is more pronounced in farm sector.

Table 4: Generalized Entropy Measure of Inequality for Farm and Non-farm Income sources Among the Households in Sherani

GE Index	Farm Income	Non-farm Income
GE (-1)	3.23	0.91
GE (0)	0.54	0.24
GE (1)	0.39	0.16
GE (2)	0.43	0.15

Labelled as family of income-inequality measures, the Generalized Entropy Index incorporates a sensitivity parameter (α) which varies the weight assigned to inequalities in differing parts of the income spectrum. The more positive the value of the sensitivity parameter, the more the GE (α) is sensitive to inequalities at the top of the income distribution (De Maio, 2007). Table 4 presents GE Index for both farm and non-farm sources of income. The GE (-1) value of 3.23 shows severe inequality among farm income earners when compared with non-farm (0.91) ones. It indicates extreme deprivation among poor households in farm sector. With the increase in α to 0,1 and 2, the GE index becomes more sensitive to income distribution at the top and less sensitive to lower end of income distribution. For instance, GE (0) depicts the level of overall inequality which stands at 0.5 for farm and 0.2 for non-farm income earners. Here too, income is more unequally distributed among farm income earners. Likewise, the value of Theil T Index for farm sector is 0.39, twice that of non-farm income (0.16) which reinforces greater disparity in the agricultural income of the households. The low GE (1) value for non-farm income complies with the decomposition analysis of Adams et al. (1995) who had concluded that non-farm income sources contribute to reduction in inequality. The GE (2) also confirms that concentration of income in farm-based wealthiest households is more evident in comparison to non-farm earners.

Table 5: Atkinson Inequality for Farm and Non-farm Income Sources Among Households in Sherani

Atkinson Index	Farm Income	Non-farm Income
Atkinson (A (0.5))	0.20	0.09
Atkinson (A (1))	0.41	0.21
Atkinson (A (2))	0.87	0.65

The Atkinson family of indices are derived from a set of assumptions about society's social welfare function (Jenkins, 2017). These indices, which take into account the social welfare losses from inequality, are computed for varying levels. Similar to the Generalised Entropy Indices, the sensitivity parameter (ϵ) for the Atkinson Index ranges between 0 (when the researcher is indifferent about the nature of income distribution) and $\propto$, for which the lowest group in the income distribution is of concern (De Maio, 2007). The higher the value of ϵ, the more sensitive the Atkinson index becomes to inequalities at the bottom of the income distribution. To Atkinson, it was important to be concerned with measuring different parts of an income, which the Gini Coefficient, he deemed, was unable to address. Therefore, he wrote in his text 'The Economics of Inequality' (p.47) that in the absence of introducing social judgements, inequality cannot be measured. For example, at $\epsilon = 0.5$ which depicts moderate inequality aversion, the value of farm income is 0.20, and that of non-farm income is 0.09. The 0.20 value for farm income means that the households could achieve the same level of social welfare with 1 - 0.20 = 80% of their farm income, and likewise for the value of non-farm income. As ϵ increases to 1 and 2 which shows stronger concern for inequality among the poor with low incomes, the values for farm income are 0.41 and 0.87, and those for non-farm income are 0.21 and 0.65. The results of the Atkinson Inequality Index are consistent with the findings of Bhatta et al. (2007), who empirically proved the prevalence of low inequality in farm-related endeavours when compared with those without non-farm means of income. It is important to note from Table 5 that farm income is yet again more unequally distributed than non-farm income, indicating that households at the bottom of the income distribution are disproportionately disadvantaged.

Conclusion

The sole purpose of this descriptive study is to investigate the extent of income diversification and income inequality among the households in Sherani. The results show that households rely on a mix of income sources, including foreign remittances, agriculture, government jobs, private sector jobs, cottage industries and rental income. Among these streams of income, remittances and agriculture are the largest ones. Although the majority of households could not diversify their incomes beyond a few sources, the mean Simpson Index of Diversification is 0.48, which is moderate. The substantial individual-level variation in diversification may be due to a lack of access to education, infrastructure, connectivity, and credit facilities.

Furthermore, the study's findings reveal a markedly worrisome income inequality between farm and non-farm income sources in the district. The indices of the Gini Coefficient, the Generalised Entropy, and the Atkinson point to the prevalence of high-income inequality in the farm sector compared to the non-farm sector in Sherani. It can be inferred from the results that income from non-farm sources is fairly distributed among the district's residents.

In light of the findings of this study, the following recommendations are made. Cottage industries usually flourish in rural areas, and on average, their contribution to a household's income in the study area is scant, i.e., 1.3%. Suppose the government provides microcredits and platforms for marketing to the women and landless households. In that case, they will be able to diversify and increase their income. Since farm income shows high inequality – Gini Coefficient 0.49, GE (-1) 3.23 and Atkinson (2) 0.87, way more than the indices from nonfarm sources, the government needs to design targeted subsidies to support smallholder farmers (households) to increase their income and reduce inequality. As low inequality is evidenced from all indices in non-farm sources when compared with farm income sources, the government should focus on providing education facilities, rural skill development programs, and enabling affordable migration channels. By doing so, the diversification efforts of the households can be broadened with many more avenues of income.

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