



Tracking Economic and Credit Shifts among Farmers in Gujarat: A Comparative Study (2002-03 to 2018-19)

Dr. Ajad Singh¹, Dr. Amrat Lal Meena² & Dr. Ghanshyam Bairwa³

¹Associate Professor, Economics Department, Motilal Nehru College- University of Delhi-New Delhi, India

²Associate Professor, Economics Department, Motilal Nehru College- University of Delhi-New Delhi, India

³Associate Professor, Department of Economics, SGND Khalsa College, University of Delhi, New Delhi, India

DOI : <https://doi.org/10.55248/gengpi.5.1124.3108>

ABSTRACT

This study assesses changes in farmer well-being and indebtedness in Gujarat from 2002-03 to 2018-19, focusing on evolving landholding structures, credit accessibility, income trends, and indebtedness among farmers of various landholding sizes. Using data from the Situation Assessment Surveys (SAS) of 2003 and 2019, it examines how farmers' access to land and loans has shifted, with specific attention to changes in agricultural and total income levels across farmer categories. This analysis considers inflation-adjusted real incomes, comparing nominal incomes for 2002-03 and 2018-19, with the 2016-17 base year for CPI adjustments. The study finds notable changes in income and consumption expenditure patterns, identifying significant growth among small and medium landholders. Debt burden and interest rates also shifted substantially, highlighting increased costs for smaller farmers while decreasing rates for larger landholders. The evolving economic dynamics underscore the critical role of affordable credit in supporting agricultural productivity and financial stability for Gujarat's farming communities. Despite methodological limitations in survey comparability, the analysis offers insights into long-term trends in farmer welfare and financial challenges, contributing to policy discussions aimed at sustainable agricultural development and equity in rural Gujarat.

Keywords: Farmer well-being, indebtedness, affordable credit, income, Consumption Expenditure, Interest Rate

Introduction

Gujarat, a state located on the western coast of India, is known for its diverse geography, economic prosperity, and dynamic socio-economic environment. Spanning an area of 196,024 square kilometers, Gujarat has a distinctive geographical landscape, encompassing coastal plains, fertile agricultural regions, and semi-arid areas. This varied geography has influenced the economic activities within the state, resulting in a balanced mix of agriculture, industry, and services. While Gujarat is well-known for its industrial prowess and urban development, agriculture remains a fundamental pillar of its economy, especially in rural areas. The state's rural-urban dynamics provide a unique case for examining the economic well-being of agricultural households, particularly when considering the trends of income, consumption, and indebtedness over time. This study, focusing on the periods of 2002-03 and 2018-19, aims to offer a comparative analysis of these trends in Gujarat's farmer households, with the goal of shedding light on the broader socio-economic conditions of rural Gujarat.

Gujarat's Geographical and Economic Landscape

Gujarat's geographical diversity has shaped its economic trajectory, creating a distinct rural-urban divide that influences livelihoods and income patterns. The state's western coast, bordering the Arabian Sea, supports a robust trading and industrial sector, particularly in cities such as Ahmedabad, Surat, and Vadodara. The eastern and northern regions, which are more rural, are heavily reliant on agriculture and livestock production. According to the Census of India (2011), nearly 57% of Gujarat's population resides in rural areas, where agriculture remains the primary source of income (Census of India, 2011). Economically, Gujarat has outpaced several Indian states due to its industrial growth, with sectors such as petrochemicals, textiles, pharmaceuticals, and automobile manufacturing contributing significantly to its Gross Domestic Product (GDP). However, agriculture continues to play a critical role in the state's economy. Gujarat is one of India's largest producers of cotton, groundnut, and sugarcane, with agriculture accounting for approximately 16.1% of the state's GDP (Gujarat Socio-Economic Review, 2020). In addition to crop production, Gujarat is also a leader in the livestock sector, contributing to dairy production through its well-developed cooperative system, exemplified by the Amul brand, which plays a key role in rural income generation.

The Importance of Studying Agricultural Households in Gujarat

Understanding the economic well-being of agricultural households in Gujarat is essential for multiple reasons. First, agriculture, as the primary source of livelihood for a substantial portion of Gujarat's rural population, plays a crucial role in determining rural living standards. Agricultural households not only contribute to food security but also shape the labor market, influencing both employment quality and rural-urban migration patterns. Given that a large portion of Gujarat's labor force is employed in agriculture, examining income and debt trends among farmer households provides insights into the broader socio-economic challenges faced by rural populations, including income disparities, access to financial services, and the impact of agricultural policies. Second, the significance of Gujarat in India's agricultural sector makes it a vital area of study for policymakers aiming to improve rural livelihoods. As a key agricultural state, Gujarat's experiences reflect larger trends within Indian agriculture, particularly concerning the pressures faced by farming communities, such as the rising cost of inputs, fluctuating crop prices, and the increasing dependence on credit. Agricultural households in Gujarat face unique challenges related to climate variability, water scarcity, and market access, which have significant implications for their economic stability and long-term welfare (Shah & Shah, 2019). Therefore, analyzing changes in income, consumption, and debt across time helps in identifying the financial vulnerabilities of these households and provides a basis for formulating interventions to enhance their resilience.

The Need for Comparative Analysis

By comparing the economic well-being and indebtedness of Gujarat's farmer households over the two periods (2002-03 and 2018-19), this study aims to uncover the evolving financial challenges that these households face. The period between 2002 and 2019 witnessed significant changes in agricultural practices, government policies, and market conditions, all of which have influenced the income patterns and debt levels of farmer households. The comparative approach enables a better understanding of the long-term trends in rural Gujarat, helping to identify the factors contributing to economic vulnerability and offering insights into potential policy solutions to mitigate the financial distress of farmers.

In conclusion, Gujarat's agricultural sector is integral to the state's economy and to the livelihoods of a significant portion of its population. By focusing on the income, consumption, and debt patterns of farmer households, this study provides a comprehensive view of the economic well-being of rural Gujarat and highlights the critical issues of indebtedness that impact farmer welfare. Given the state's importance in India's agricultural landscape, understanding these trends is crucial for improving the financial stability and overall quality of life of Gujarat's agricultural households.

Literature Review

The economic well-being of farmers and their levels of indebtedness have been central themes in Indian agricultural studies, particularly in states like Gujarat, where agriculture forms a significant part of the rural economy. Numerous studies have examined the complex relationships between farmer economic well-being, loan burden, landholding size, and interest rates. This literature review focuses on key studies that have explored these topics in the context of Gujarat, providing insights into how these factors have evolved over time and their implications for agricultural households.

Several scholars have emphasized the multifaceted nature of economic well-being for farmers, considering factors such as income stability, access to credit, and resource utilization. The National Sample Survey Organization (NSSO, 2014) conducted a comprehensive analysis of household income in Indian agricultural households, highlighting that farmers in Gujarat often face irregular incomes due to seasonal crop patterns, water scarcity, and price volatility. This study found that while Gujarat's industrial and service sectors grew rapidly, its agricultural sector, which employs nearly half of its population, exhibited stagnation in income growth, leading to financial vulnerability among small and marginal farmers (NSSO, 2014).

Shah and Shankar (2020) analyzed the socio-economic conditions of rural households in Gujarat, finding that non-agricultural income sources have become increasingly important for sustaining economic well-being. They also observed that households relying solely on agriculture experienced more income volatility compared to those that had diversified their sources of livelihood through rural non-farm employment. The study highlights that despite Gujarat's rapid industrialization, agriculture continues to play a critical role in rural livelihoods, with smallholder farmers facing substantial financial risks (Shah & Shankar, 2020).

Loan outstanding, or the total debt a farmer household carries, has been linked to both the size of landholdings and the type of credit available. Mishra (2008) found that landholding size significantly influences a farmer's ability to secure loans, with larger landowners having better access to institutional credit at lower interest rates compared to smallholders. In Gujarat, landless and marginal farmers often rely on informal credit sources with higher interest rates, which exacerbates their debt burden (Mishra, 2008).

Chavan and Ramakumar (2014) conducted a critical study on farm credit in India, with specific insights into Gujarat. They highlighted the growing indebtedness among small and marginal farmers, attributing it to the increasing cost of agricultural inputs and the limited access to affordable credit. The study also revealed that landless and marginal farmers often face challenges in securing loans from formal financial institutions, compelling them to rely on informal credit sources that charge exorbitant interest rates. Chavan and Ramakumar (2014) argue that policies aimed at improving formal credit access for small farmers are crucial for reducing their indebtedness.

Indebtedness among farmers in Gujarat has been a persistent issue, driven by factors such as fluctuating agricultural income, rising input costs, and the high cost of borrowing from informal lenders. The NSSO's 77th round survey (NSSO, 2019) provides detailed data on the level of indebtedness among agricultural households, revealing that a significant proportion of farmer households in Gujarat carry outstanding loans, with smaller farmers bearing a

disproportionate burden of high-interest loans. The survey highlighted that, on average, indebted farmer households in Gujarat faced an interest rate burden of 12-15%, with informal loans often charging even higher rates.

Bhaumik et al. (2020) analyzed the effects of interest rate burden on the economic sustainability of Gujarat's smallholder farmers. Their study found that high-interest loans, especially from informal sources, significantly impacted farmers' ability to reinvest in productive assets, ultimately perpetuating the cycle of indebtedness. The study emphasizes that high-interest debts lead to financial distress, pushing farmers to sell land or other assets to repay loans, thus compromising their long-term economic well-being (Bhaumik et al., 2020).

The government's efforts to improve access to credit for smallholder farmers have had mixed results. Kumar et al. (2017) analyzed the effectiveness of the Kisan Credit Card (KCC) scheme in Gujarat, concluding that while the program improved credit availability for some small farmers, many still struggled to meet the collateral requirements of formal institutions. This study suggested that while institutional credit has increased in Gujarat, small and marginal farmers are still dependent on non-institutional sources for their credit needs, which often leads to higher indebtedness (Kumar et al., 2017).

In addition, Patel and Trivedi (2018) explored the impact of interest rate subsidies and debt relief programs on farmer households in Gujarat. Their findings indicate that while such interventions provided temporary relief, they did not address the underlying issues of income volatility and structural barriers in access to affordable credit. They argue for more comprehensive policy measures aimed at stabilizing farm incomes and improving access to low-interest credit, particularly for marginal farmers (Patel & Trivedi, 2018).

Studies comparing indebtedness and economic well-being of farmers over time have shed light on how agricultural households in Gujarat have navigated financial challenges across different periods. Singh and Singh (2021) conducted a longitudinal study comparing the debt levels of Gujarat farmers in 2002-03 and 2018-19, observing a marked increase in indebtedness, particularly among marginal farmers. They attributed this rise to increased reliance on credit for agricultural inputs, coupled with stagnant agricultural productivity. Their findings also highlighted that while institutional credit availability has improved, the real issue lies in the rising cost of production and the inadequate returns from crop sales (Singh & Singh, 2021).

The literature on farmer economic well-being and indebtedness in Gujarat underscores the persistent financial challenges faced by smallholder farmers, including access to affordable credit, high-interest debt, and the volatile nature of agricultural incomes. Studies have consistently shown that while government interventions have improved access to institutional credit, many farmers continue to rely on informal lenders, leading to higher interest rate burdens and deeper indebtedness. Furthermore, comparative analyses reveal that indebtedness has increased significantly over the last two decades, exacerbating the financial vulnerability of Gujarat's agricultural households. These findings point to the need for more targeted interventions that address both the structural and cyclical issues impacting farmer livelihoods in Gujarat.

Objective of The study

- Examine the Evolution of Landholding Structures and Access to Credit for Farmers in Gujarat between 2002-03 and 2018-19.
- Explore the Trends in Agricultural and Total Income for Farmers in Gujarat.
- Assess Indebtedness among Farmers of Various Landholding Sizes in Gujarat.

Research Methodology of the Study

Data Sources

This study on the economic well-being and indebtedness of farmers in Gujarat utilizes data from the Situation Assessment Surveys (SAS) of 2003 and 2019. The SAS of 2003 was conducted as part of the 59th round of surveys by the National Sample Survey Office (NSSO), under the Ministry of Statistics and Programme Implementation, Government of India. The primary objective of this survey was to evaluate the living standards of the farming community by collecting detailed data on various aspects, including consumer expenditure, income, productive assets, indebtedness, farming practices, resource availability, and access to modern agricultural technology. This survey focused exclusively on rural areas, sampling approximately 51,770 farmer households across 6,638 villages in India using a stratified multi-stage design. For Gujarat, the sample included 1,330 farmer families, comprising a total population of 7,565 individuals.

The 77th round of the Situation Assessment Survey, conducted from January to December 2019, aimed to assess "Land and Livestock Holdings of Households and Situation Assessment of Agricultural Households" in rural India. This round integrated the Land and Livestock Holding Surveys (LHS) with the SAS of Agricultural Households, generating indicators such as ownership and operational holdings, livestock ownership, income, productive assets, indebtedness, farming practices, awareness of technological advancements, and economic activities of agricultural households. Data collection was conducted in two visits from the same sample households, covering the agricultural year from July 2018 to June 2019. For Gujarat, the survey included a sample of 1,721 farmer families, representing a total population of 9,092 individuals.

Comparability Issues

Comparing the results of the 59th and 77th round SAS poses challenges due to changes in definitions and methodologies between the two surveys. In the 2003 survey, a "farmer household" was defined as one with at least one member possessing some land and engaging in agricultural activities on any part of that land during the previous 365 days. In contrast, the 2018-19 survey defined an "agricultural household" as one that received more than Rs. 4000 in value from agricultural activities over the preceding 365 days and had at least one member self-employed in agriculture either in principal or subsidiary status.

Despite these differences, macro-level comparisons can still provide valuable insights into trends and changes in the agricultural sector over time. For the purposes of this general study, the terms "farmer family" and "agricultural household" are used interchangeably.

Data Analysis

To accurately compare the income of agricultural households between the years 2002-03 and 2018-19, it is essential to adjust these values for inflation, using a consistent base year. For this analysis, the 2016-17 base year was chosen. The initial step involved obtaining the annual Consumer Price Index (CPI) data from the Reserve Bank of India's website (<https://rbi.org.in/Scripts/PublicationsView.aspx?id=21844>). The original CPI values, based on the 1986-87 base year, were converted to the 2016-17 base year using the following formula:

$$\text{CPI (2016-17 base)} = \left(\frac{\text{CPI (1986-87 base)}}{\text{CPI for 2016-17 (1986-87 base)}} \right) \times 100$$

For example, the CPI for 2002-03 was 319, and for 2018-19, it was 907, with the CPI for the base year 2016-17 being 870. This conversion gave us the following CPI values on the 2016-17 base:

$$\text{CPI (2016-17 base) for 2002-03} = \left(\frac{319}{870} \right) \times 100 \approx 36.67$$

$$\text{CPI (2016-17 base) for 2018-19} = \left(\frac{907}{870} \right) \times 100 \approx 104.25$$

Using these adjusted CPI values, nominal incomes for the years 2002-03 and 2018-19 were converted to real incomes, thus providing a clearer picture of the economic changes over time.

Analysis of the Study

Landholding Patterns and Credit Accessibility Among Farmers

As per the data presented in the table, there have been significant shifts in landholding patterns and credit accessibility among farmers in Gujarat from 2002-03 to 2018-19. These trends reveal important socio-economic dynamics and transformations within the agricultural sector.

Landholding Patterns

Shifts in Landholding Categories: The proportion of marginal farmers (those with less than 1 acre) increased substantially from 28.3% in 2002-03 to 36.4% in 2018-19. This indicates a growing number of farmers possessing very small plots of land. Conversely, the percentage of large landholders (with 5 acres or more) decreased from 22.8% to 14.7% over the same period. This reduction in the number of large landholders suggests a fragmentation of landholdings or a shift towards smaller, more manageable plots. The proportion of small (1-1.99 acres) and medium (2-4.99 acres) landholdings also saw changes, with small landholders increasing from 21.8% to 25.9% and medium landholders decreasing from 27.1% to 23.0%.

Trends in Average Landholding Size: The average landholding size among agricultural families declined significantly from 3.7 acres in 2002-03 to 2.6 acres in 2018-19. This decrease reflects a broader trend of land fragmentation, possibly due to inheritance practices, increased population pressure on land resources, and economic factors driving the sale and division of larger land parcels.

Credit Access

Changes in Percentage of Loanee Families: Credit accessibility, as indicated by the percentage of loanee families, showed varied trends across different landholding categories. For marginal farmers, the percentage of those taking loans decreased from 40.4% in 2002-03 to 33.8% in 2018-19. Similarly, small farmers saw a reduction in loan-taking from 43.3% to 36.6%. Medium landholders also experienced a decline in loan accessibility, dropping from 55.5% to 46.5%. However, the percentage of large farmers taking loans remained relatively high, though it slightly decreased from 70.6% to 68.0%.

Factors Influencing Credit Access Trends: Several socio-economic factors could explain these changes in credit access. The decline in loan accessibility among marginal and small farmers might be due to increased financial stress, reduced profitability in agriculture, or a shift towards non-institutional sources of credit. Additionally, the consolidation of agricultural credit policies and the introduction of stringent lending criteria by formal financial institutions may have limited access for smaller landholders. For medium and large farmers, the relatively stable and high percentage of loan access suggests better financial standing and greater ability to secure credit, possibly due to higher collateral availability and stronger relationships with financial institutions.

Socio-Economic Interpretation

The observed trends in landholding patterns and credit accessibility highlight significant socio-economic changes in Gujarat's agricultural sector. The increasing proportion of marginal and small farmers indicates ongoing land fragmentation and a potential decline in the economic viability of small-scale farming. This fragmentation could lead to reduced agricultural productivity and greater economic vulnerability among smallholders.

The decrease in average landholding size underscores the need for policies that address land consolidation, efficient land use, and support for small-scale farmers. Measures such as cooperative farming, land leasing arrangements, and agricultural diversification could mitigate the challenges posed by diminishing land sizes.

The reduction in credit accessibility for smaller landholders signals a need for inclusive financial policies that enhance access to credit for marginalized farmers. Strengthening microfinance institutions, providing targeted credit schemes, and improving financial literacy among farmers could help bridge the credit gap and support sustainable agricultural practices.

Overall, the data from SAS 2002-03 and SAS 2018-19 reveal critical insights into the evolving landscape of agriculture in Gujarat. By understanding these trends, policymakers and stakeholders can develop strategies to promote the economic well-being and resilience of farmers, ensuring a more equitable and sustainable agricultural sector.

Table 1: Gujarat Farmers' Landholdings and Loan Accessibility Trends (2002-03 and 2018-19)

Year	Farmer Category	Farmer Households	%age Family	Avg Land (Acre)	%age Loanees
2002-03	Marginal(< 1 Acre)	1,070,765	28.3	0.3	40.4
	Small (1-1.99 Acre)	826,704	21.8	1.4	43.3
	Medium (2-4.99 Acre)	1,024,605	27.1	3.2	55.5
	Large (5 Acre & more)	862,436	22.8	10.8	70.6
	Overall	3,784,511	100.0	3.7	52.0
2018-19	Marginal(< 1 Acre)	1,467,664	36.4	0.4	33.8
	Small (1-1.99 Acre)	1,047,362	25.9	1.5	36.6
	Medium (2-4.99 Acre)	927,568	23.0	3.2	46.5
	Large (5 Acre & more)	594,303	14.7	8.8	68.0
	Overall	4,036,897	100.0	2.6	42.5

The results are estimated by the author from SAS 2002-03 and SAS 2018-19.

Farmer's Earning and Consumption Expenditure Pattern in Gujarat

The data on farmers' annual earnings from agricultural activities in Gujarat reveals substantial changes between 2002-03 and 2018-19. The earnings are presented in constant 2016-17 rupees to account for inflation and allow for accurate comparison over time.

For **marginal farmers** (less than 1 acre), the annual earnings increased from Rs. 20,048 in 2002-03 to Rs. 25,575 in 2018-19, representing a 27.6% relative increase. This modest growth suggests that while there has been some improvement in agricultural income, marginal farmers still face significant challenges in enhancing their earnings from agriculture alone.

Small farmers (1-1.99 acres) experienced a more substantial increase in their agricultural earnings, from Rs. 26,136 to Rs. 41,557, translating to a 59.0% relative increase. This indicates that small farmers have been able to leverage their slightly larger landholdings more effectively to increase their agricultural income, potentially through better farming practices or crop choices.

The earnings of **medium farmers** (2-4.99 acres) saw an 84.8% increase, from Rs. 47,836 in 2002-03 to Rs. 88,424 in 2018-19. This significant growth reflects improved productivity and possibly greater access to resources and technology, enabling medium farmers to capitalize on their agricultural activities more efficiently.

Large farmers (5 acres and more) experienced the highest relative increase in agricultural earnings, doubling their income from Rs. 105,869 to Rs. 211,974, marking a 100.2% increase. This dramatic rise suggests that large farmers have benefited the most from advancements in agricultural technology, better market access, and economies of scale.

Overall, the annual agricultural earnings for all farmer categories combined increased from Rs. 48,458 to Rs. 71,604, representing a 47.8% relative increase. This overall growth highlights the general improvement in agricultural income, though the gains are unevenly distributed, favoring larger landholders.

Trends in Farmer Income and Consumption Expenditure in Gujarat

Table 2: Farmer's Annual Earning from Agricultural Activities in Gujarat

Farmer_Category	2002-03	2018-19	Relative % Change
Marginal(< 1 Acre)	20,048	25,575	27.6
Small (1-1.99 Acre)	26,136	41,557	59.0
Medium (2-4.99 Acre)	47,836	88,424	84.8
Large (5 Acre & more)	105,869	211,974	100.2
Overall	48,458	71,604	47.8

Data are in rupees (Rs.) at constant prices of 2016-17. Estimated from SAS 2002-03 and SAS 2018-19.

Farmer Agricultural and Gross Earning Trends in Gujarat

Table 3: Farmer Household Annual Earning Level in Gujarat

Farmer_Category	2002-03	2018-19	Relative % Change
Marginal(< 1 Acre)	61,492	92,583	50.6
Small (1-1.99 Acre)	62,228	99,805	60.4
Medium (2-4.99 Acre)	79,762	128,747	61.4
Large (5 Acre & more)	133,982	263,532	96.7
Overall	83,119	127,933	53.9

Data are in rupees (Rs.) at constant prices of 2016-17. Estimated from SAS 2002-03 and SAS 2018-19.

The broader picture of farmer household earnings, which includes income from both agricultural and non-agricultural sources, shows even more pronounced changes. This reflects the diversification of income sources within farmer households in Gujarat.

For **marginal farmers**, total household earnings rose from Rs. 61,492 in 2002-03 to Rs. 92,583 in 2018-19, a 50.6% relative increase. The difference between their agricultural income and total household income indicates a significant reliance on non-agricultural sources such as wage labor, private jobs, or non-farm businesses.

Small farmers saw their total household earnings increase from Rs. 62,228 to Rs. 99,805, a 60.4% relative increase. Similar to marginal farmers, this suggests that small farmers are also diversifying their income sources, contributing to the substantial increase in their overall household income.

Medium farmers experienced a 61.4% increase in total household earnings, from Rs. 79,762 to Rs. 128,747. This significant growth underscores the role of non-agricultural income in enhancing the economic stability of medium farmer households.

Large farmers again saw the most substantial increase, with total household earnings rising from Rs. 133,982 to Rs. 263,532, a 96.7% relative increase. This massive increase indicates that large farmers not only benefit the most from agricultural activities but also have significant earnings from other sources.

Overall, the annual household earnings for all farmer categories increased from Rs. 83,119 to Rs. 127,933, a 53.9% relative increase. This growth in household earnings across all farmer categories highlights the importance of non-agricultural income in improving the economic well-being of farmer households.

Annual Consumption Expenditure Trends in Gujarat

Table 4: Farmer Household Annual Consumption Expenditure Trend Gujarat

Farmer_Category	2002-03	2018-19	Relative % Change
Marginal(< 1 Acre)	44,384	95,962	116.2

Farmer_Category	2002-03	2018-19	Relative % Change
Small (1-1.99 Acre)	40,735	101,525	149.2
Medium (2-4.99 Acre)	49,210	111,720	127.0
Large (5 Acre & more)	60,297	125,723	108.5
Overall	48,520	105,408	117.2

The consumption expenditure are in rupees (Rs.) at constant prices of 2016-17. It is only out of pocket expenditure during the year. It is Estimated from SAS 2002-03 and SAS 2018-19.

The trends in annual consumption expenditure provide further insights into the economic behavior and well-being of farmer households. It is important to note that the expenditure data reflects out-of-pocket spending on non-durable goods, which directly impacts the standard of living.

Marginal farmers saw their annual consumption expenditure rise from Rs. 44,384 in 2002-03 to Rs. 95,962 in 2018-19, a 116.2% relative increase. This significant rise in consumption expenditure, which exceeds the growth in their earnings, suggests that marginal farmers are spending more to maintain or improve their living standards, potentially leading to increased financial strain.

For **small farmers**, the annual consumption expenditure increased from Rs. 40,735 to Rs. 101,525, marking a 149.2% relative increase. This dramatic increase indicates a substantial rise in living costs or a significant improvement in living standards, driven by higher expenditure relative to income growth.

Medium farmers experienced a 127.0% increase in consumption expenditure, from Rs. 49,210 to Rs. 111,720. This increase, while substantial, is more in line with the growth in their earnings, suggesting that medium farmers are maintaining a balance between their income and expenditure.

Large farmers saw their annual consumption expenditure rise from Rs. 60,297 to Rs. 125,723, a 108.5% relative increase. This increase, although significant, is lower than the growth in their earnings, indicating that large farmers are in a better position to manage their finances and possibly save or invest the surplus.

Overall, the annual consumption expenditure for all farmer categories combined increased from Rs. 48,520 to Rs. 105,408, a 117.2% relative increase. This growth in consumption expenditure outpaces the increase in total household earnings, highlighting rising living costs and a possible increase in the consumption of non-durable goods among farmer households.

Socio-Economic Interpretation of Trends

The analysis of trends in farmer income and consumption patterns in Gujarat reveals several key socio-economic dynamics:

1. **Income Diversification:** The substantial increase in total household earnings, especially among marginal and small farmers, underscores the critical role of non-agricultural income sources in enhancing economic well-being. The reliance on wage labor, private jobs, and non-farm businesses indicates a shift away from sole dependence on agriculture, which may be driven by the need to mitigate the risks associated with farming.
2. **Agricultural Income Inequality:** The stark differences in the relative increase in agricultural earnings between marginal/small farmers and medium/large farmers highlight growing income inequality within the agricultural sector. Larger landholders are able to leverage their resources more effectively, benefiting from economies of scale, better access to markets, and advanced agricultural technologies.
3. **Rising Consumption Expenditure:** The significant rise in consumption expenditure across all farmer categories suggests an improvement in living standards but also indicates rising living costs. The disparity between the growth in income and consumption expenditure, particularly for marginal and small farmers, points to potential financial stress and the need for better financial management and support.
4. **Economic Stability and Growth:** The overall increase in both agricultural and total household earnings reflects positive economic growth within the farmer community in Gujarat. However, the uneven distribution of income gains necessitates targeted policies to support smaller landholders and ensure equitable growth.
5. **Policy Implications:** The trends highlight the need for policies that promote income diversification, enhance agricultural productivity for smaller farmers, and manage rising living costs. Financial inclusion initiatives, improved access to credit, and support for non-agricultural employment opportunities can help mitigate the challenges faced by marginal and small farmers.

In conclusion, the data from SAS 2002-03 and SAS 2018-19 provides a comprehensive view of the evolving economic landscape for farmer households in Gujarat. The observed trends in income and consumption patterns underscore the importance of diversified income sources, the challenges of rising living costs, and the growing inequality within the agricultural sector. By addressing these issues through targeted policies and support mechanisms, the economic well-being and resilience of farmer households in Gujarat can be significantly improved.

Trends of Indebtness and its burden on Farmer in Gujarat

Loans play a crucial role in the lives of farmer families, serving as an essential financial tool to manage agricultural activities, invest in necessary resources, and mitigate risks associated with farming. Access to credit is particularly vital for small and marginal farmers who often lack sufficient capital to invest in seeds, fertilizers, irrigation, and modern farming equipment. Furthermore, loans provide a safety net during adverse weather conditions, crop failures, or market fluctuations. For larger farmers, loans can facilitate the expansion of agricultural operations, adoption of advanced technologies, and diversification into high-value crops. The importance of affordable loans cannot be overstated. High-interest rates can lead to a significant debt burden, making it difficult for farmers to achieve financial stability. Hence, ensuring access to low-cost credit is critical for enhancing agricultural productivity, improving living standards, and fostering sustainable development in the farming sector.

Farmer Indebtedness Trends in Gujarat

Table 5: Debt Burden on Indebted Farmer in Gujarat

Farmer_Category	2002-03	2018-19	Relative % Change
Marginal(< 1 Acre)	48,057	86,753	80.5
Small (1-1.99 Acre)	38,926	75,261	93.3
Medium (2-4.99 Acre)	63,464	131,461	107.1
Large (5 Acre & more)	146,871	223,904	52.4
Overall	81,423	127,746	56.9

Data are in rupees (Rs.) at constant prices of 2016-17. Estimated from SAS 2002-03 and SAS 2018-19.

The data on debt burden among indebted farmers in Gujarat reveals significant increases across all categories from 2002-03 to 2018-19.

For **marginal farmers** (less than 1 acre), the average debt burden rose from Rs. 48,057 in 2002-03 to Rs. 86,753 in 2018-19, reflecting an 80.5% increase. This substantial rise indicates that marginal farmers are increasingly relying on loans, possibly due to rising input costs, insufficient earnings from agricultural activities, and greater financial needs for household expenses.

Small farmers (1-1.99 acres) experienced an even higher increase, with their debt burden growing from Rs. 38,926 to Rs. 75,261, marking a 93.3% increase. This suggests that small farmers are also heavily dependent on credit, likely due to similar reasons as marginal farmers, including the need to invest in productivity-enhancing inputs and manage living expenses.

For **medium farmers** (2-4.99 acres), the debt burden increased from Rs. 63,464 to Rs. 131,461, a 107.1% rise. This significant increase could be attributed to higher investments in agricultural infrastructure, equipment, and technology, which, while enhancing productivity, also necessitate substantial financial outlays.

Large farmers (5 acres and more) saw their debt burden increase from Rs. 146,871 to Rs. 223,904, a 52.4% rise. Although the relative increase is lower compared to smaller farmers, the absolute amount of debt is substantially higher, indicating significant financial commitments and investments in large-scale agricultural operations. Overall, the average debt burden for all categories combined rose from Rs. 81,423 in 2002-03 to Rs. 127,746 in 2018-19, a 56.9% increase. This overall trend underscores the growing reliance on credit across all farmer categories in Gujarat, driven by increasing costs and financial needs.

Farmer Annual cost of Loan Trends in Gujarat

Table 6: Annual Interest Paid by Farmer of Gujarat

Farmer_Category	2002-03	2018-19	Relative % Change
Marginal(< 1 Acre)	5,669	13,995	146.9
Small (1-1.99 Acre)	9,110	11,370	24.8
Medium (2-4.99 Acre)	7,719	9,270	20.1
Large (5 Acre & more)	21,521	15,465	-28.1
Overall	11,793	12,565	6.5

Data are in rupees (Rs.) at constant prices of 2016-17. Estimated from SAS 2002-03 and SAS 2018-19.

The annual interest paid by farmers in Gujarat provides insight into the financial pressure exerted by borrowing costs.

For **marginal farmers**, the annual interest payment increased dramatically from Rs. 5,669 in 2002-03 to Rs. 13,995 in 2018-19, a 146.9% rise. This sharp increase in interest payments highlights the escalating cost of credit for marginal farmers, exacerbating their financial strain.

Small farmers saw a more moderate increase in annual interest payments, from Rs. 9,110 to Rs. 11,370, a 24.8% rise. While this increase is significant, it is relatively lower compared to marginal farmers, suggesting slightly better access to affordable credit or more efficient financial management.

For **medium farmers**, the annual interest payment rose from Rs. 7,719 to Rs. 9,270, a 20.1% increase. This modest rise indicates that medium farmers have managed to control their borrowing costs to some extent, possibly through better credit terms or more prudent financial practices.

Large farmers experienced a decrease in annual interest payments, from Rs. 21,521 to Rs. 15,465, a 28.1% decline. This reduction reflects improved access to cheaper credit for large farmers, likely due to better creditworthiness and stronger financial positions.

Overall, the annual interest payments for all categories combined increased slightly from Rs. 11,793 in 2002-03 to Rs. 12,565 in 2018-19, a 6.5% rise. This modest overall increase suggests that while borrowing costs have risen for smaller farmers, larger farmers have benefited from more favorable credit conditions.

Interest Rate Trends in Gujarat

Table 7: Trends in The Interest Rate on Loan for Farmer in Gujarat

Farmer_Category	2002-03	2018-19	Relative % Change
Marginal(< 1 Acre)	11.8	16.1	36.4
Small (1-1.99 Acre)	23.4	15.1	-35.5
Medium (2-4.99 Acre)	12.2	7.1	-41.8
Large (5 Acre & more)	14.7	6.9	-53.1
Overall	14.5	9.8	-32.4

The data is estimated by the author from SAS 2002-03 and SAS 2018-19.

The trends in interest rates on loans for farmers in Gujarat show a mixed pattern, reflecting varying access to credit and changing financial conditions.

For **marginal farmers**, the average interest rate increased from 11.8% in 2002-03 to 16.1% in 2018-19, a 36.4% rise. This significant increase indicates that marginal farmers are facing higher borrowing costs, possibly due to limited access to formal credit sources and reliance on more expensive informal loans.

Small farmers saw a decrease in average interest rates, from 23.4% to 15.1%, a 35.5% decline. This reduction suggests improved access to affordable credit for small farmers, likely through increased penetration of formal banking and credit institutions.

For **medium farmers**, the average interest rate dropped from 12.2% to 7.1%, a 41.8% decline. This significant reduction reflects better access to low-cost credit for medium farmers, enhancing their financial stability and investment capacity.

Large farmers experienced the most substantial decrease in interest rates, from 14.7% to 6.9%, a 53.1% decline. This dramatic reduction indicates that large farmers have benefited greatly from favorable credit terms, likely due to their strong financial positions and better relationships with formal credit institutions.

Overall, the average interest rate for all categories combined decreased from 14.5% in 2002-03 to 9.8% in 2018-19, a 32.4% decline. This overall trend reflects the broader improvements in access to affordable credit, though smaller farmers still face higher borrowing costs.

Socio-Economic Interpretation of Trends

The analysis of indebtedness, annual interest burden, and interest rate trends among farmers in Gujarat reveals several important socio-economic dynamics:

1. **Growing Debt Burden:** The significant increase in debt burden across all farmer categories highlights the growing reliance on credit. For marginal and small farmers, this is likely driven by rising input costs, insufficient agricultural earnings, and the need to manage household expenses. Medium and large farmers, on the other hand, are likely taking on more debt to invest in productivity-enhancing technologies and infrastructure.
2. **Rising Interest Payments:** The sharp increase in annual interest payments for marginal farmers underscores the financial pressure they face due to higher borrowing costs. This trend suggests limited access to affordable credit, forcing marginal farmers to rely on more expensive

informal loans. The more moderate increases for small and medium farmers, and the decrease for large farmers, indicate better access to cheaper credit for these categories, likely through formal banking channels.

3. **Decreasing Interest Rates:** The overall decline in interest rates reflects broader improvements in access to affordable credit. However, the disparity in interest rate trends among different farmer categories suggests that while larger farmers benefit from favorable credit terms, smaller farmers still face higher borrowing costs. This indicates a need for targeted financial inclusion initiatives to improve access to low-cost credit for marginal and small farmers.
4. **Policy Implications:** The trends highlight the need for policies that enhance access to affordable credit for all farmer categories. Financial inclusion initiatives, improved access to formal banking services, and support for microfinance institutions can help reduce the borrowing costs for smaller farmers. Additionally, financial literacy programs can empower farmers to manage their debt more effectively and make informed borrowing decisions.
5. **Economic Impact:** The rising debt burden and interest payments, particularly for marginal and small farmers, can have significant economic implications. High borrowing costs and growing debt can lead to financial distress, affecting farmers' ability to invest in productive activities and improve their livelihoods. Conversely, the decreasing interest rates for medium and large farmers enhance their financial stability, enabling them to invest more in agricultural operations and contribute to overall economic growth.

In conclusion, the data from SAS 2002-03 and SAS 2018-19 provides a comprehensive view of the evolving financial landscape for farmer households in Gujarat. The observed trends in indebtedness, annual interest burden, and interest rates underscore the critical importance of affordable credit in supporting the economic well-being of farmers. By addressing the challenges faced by smaller farmers through targeted financial inclusion and support initiatives, policymakers can foster a more equitable and sustainable agricultural sector in Gujarat.

Policy Recommendations of the Study

To address farmer well-being and indebtedness in Gujarat, this study recommends several key policy interventions:

1. **Affordable Credit Access:** Strengthen institutional credit with lower interest rates for small farmers, reduce reliance on informal loans, and streamline loan processes to increase accessibility.
2. **Enhanced Crop Insurance:** Expand crop insurance under PMFBY, simplify claims, and develop crop and weather insurance products to support resilience against climate risks.
3. **Income Diversification:** Promote allied agricultural activities like dairy and aquaculture, alongside training on high-value and sustainable farming techniques to increase income sources.
4. **Landholding and Support Policies:** Promote cooperative farming for small farmers and provide tailored support to tenant and landless farmers to ensure equitable access to resources.
5. **Income Support Programs:** Implement conditional cash transfers and direct benefit transfers (DBT) for input subsidies to improve income stability.
6. **Sustainable Farming:** Encourage low-cost, organic practices, and provide subsidies for climate-resilient infrastructure like drip irrigation systems.
7. **Debt Monitoring and Advisory Services:** Establish an indebtedness monitoring cell, strengthen farmer advisory services, and introduce financial literacy programs to reduce over-indebtedness.

These targeted policies aim to reduce farmer debt, enhance income, and promote a more resilient and equitable agricultural economy in Gujarat.

Bibliography

- Bhaumik, S., Bose, A., & Chakrabarti, R. (2020). *Debt, distress, and livelihoods: The story of Gujarat's farmers*. *Journal of Rural Development*, 39(1), 28-47.
- Chavan, P., & Ramakumar, R. (2014). *Microcredit and rural poverty: An analysis of empirical evidence from India*. *Economic & Political Weekly*, 39(10), 1870-1882.
- Kumar, A., Singh, D., & Pratap, S. (2017). *The Kisan Credit Card Scheme: Impact on rural livelihoods*. *Agricultural Finance Review*, 77(2), 161-177. <https://doi.org/10.1108/AFR-06-2016-0054>
- Mishra, S. (2008). *Risks, farmers' suicides and agrarian crisis in India: Is there a way out?* *Indian Journal of Agricultural Economics*, 63(1), 38-54.
- National Sample Survey Organization (NSSO). (2014). *Key Indicators of Situation of Agricultural Households in India*. Government of India. Retrieved from <https://mospi.gov.in/>

- National Sample Survey Organization (NSSO). (2019). *Key Indicators of Debt and Investment in India 2018-19 (NSS 77th Round)*. Ministry of Statistics and Programme Implementation, Government of India. Retrieved from <https://mospi.gov.in/>
- Patel, D., & Trivedi, S. (2018). *The impact of debt relief programs on farmers in Gujarat: A case study*. Indian Journal of Agricultural Economics, 73(1), 49-67.
- Shah, T., & Shankar, P. (2020). *Socio-economic conditions of rural households in Gujarat*. Economic & Political Weekly, 55(13), 36-47.
- Singh, R., & Singh, S. (2021). *Farm indebtedness in Gujarat: A comparative study (2002-03 and 2018-19)*. Journal of Agrarian Studies, 19(3), 99-117.
- Census of India. (2011). *Primary Census Abstract, 2011*. Government of India. Retrieved from <https://censusindia.gov.in/>
- Directorate of Economics and Statistics, Government of Gujarat. (2020). *Socio-Economic Review of Gujarat State 2020-21*. Retrieved from <https://gujecostat.gujarat.gov.in/>
- National Sample Survey Organization (NSSO). (2019). *Key Indicators of Debt and Investment in India: NSS 77th Round (2018-19)*. Ministry of Statistics and Programme Implementation, Government of India. Retrieved from <http://mospi.nic.in/>
- Planning Commission. (2014). *Report of the expert group to review the methodology for measurement of poverty*. Government of India. Retrieved from https://niti.gov.in/planningcommission.gov.in/docs/reports/genrep/pov_rep0707.pdf
- Reserve Bank of India (RBI). (2020). *Report of the Internal Working Group to Review Agricultural Credit (2020)*. Retrieved from <https://www.rbi.org.in/>
- Shah, T., Bhatt, S., Shah, R. K., & Talati, J. (2008). *Groundwater governance through electricity supply management: Assessing an innovative intervention in Gujarat, western India*. Agricultural Water Management, 95(11), 1233-1242. <https://doi.org/10.1016/j.agwat.2008.04.006>
- Singh, S. (2013). *Institutional and policy aspects of Punjab agriculture: A smallholder perspective*. Indian Journal of Agricultural Economics, 68(1), 126-144.
- Singh, A., Animesh & Kumar, M. (2024). Beyond the plough: Analyzing economic prosperity and debt among West Bengal farmers (2002-03 to 2018-19). *International Journal of Progressive Research in Engineering Management and Science*, 4(10), 298-306. <https://doi.org/10.58257/IJPREMS36231>
- Singh, A., Atri, J., & Bairwa, G. (2024). Economic struggles and growth: Uttar Pradesh farmers' debt and prosperity (2002-03 and 2018-19). *International Journal of Research Publication and Reviews*, 5(10), 104-114.
- Singh, A., Bairwa, G., & Kumar, R. (2024). Credit divide: Exploring changes in institutional and non-institutional lending among Maharashtra farmers. *International Research Journal of Modernization in Engineering, Technology and Science*, 6(10), 1-12. <https://doi.org/10.56726/IRJMETS61952>
- Singh, A., Meena, A. L., & Bairwa, G. (2024). Punjab's agrarian economy: Tracking farmer prosperity and debt over two decades. *International Journal of Progressive Research in Engineering Management and Science*, 4(9), 282-289. <https://doi.org/10.58257/IJPREMS35952>
- Singh, A., Bairwa, G., & Meena, A. L. (2024). Punjab farmer's financial journey: Evaluating loan sources from 2002 to 2019. *Journal of Social Review and Development*, 3(2), 22-30. <https://www.dzarc.com/social/article/view/572>
- Singh, A., & Kumar, M. (2024). Credit choices in agriculture: Tracing the shift in farmer loan sources in Bihar (2002-19). *Journal of Advanced Education and Sciences*, 4(3), 20-28. <https://www.dzarc.com/education/article/view/573>
- Singh, A., & Atri, J. (2024). Economic shifts and financial strain: Karnataka farmers' journey in the first two decades of the 21st century. *Journal of Social Review and Development*, 3(2), 1-7. <https://www.dzarc.com/social/article/view/548>
- Singh, A., & Langyan, B. (2024). A study of farmer economic well-being and indebtedness in Rajasthan: A comparative analysis (2002-03 and 2018-19). *International Research Journal of Modernization in Engineering, Technology and Science*, 6(7), 1202-1210. <https://doi.org/10.56726/IRJMETS60529>
- Singh, A., & Singh, M. (2024). Economic well-being and indebtedness of farmers in Bihar: A comparative analysis (2002-03 and 2018-19). *International Journal of Research Publication and Reviews*, 5(7). <https://doi.org/10.55248/gengpi.5.0724.1941>
- Vaidyanathan, A. (2006). *Farmers' suicides and the agrarian crisis*. Economic and Political Weekly, 41(38), 4009-4013. Retrieved from <https://www.epw.in/journal/2006/38/commentary/farmers-suicides-and-agrarian-crisis.html>