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Does farm size explain food consumption pattern? evidence from semi-arid regions of India

Vijayalaxmi Khed[a]*, V Saravanakumar[b] and K B Umesh[a]

[a]Department of Agricultural Economics, University of Agricultural Sciences, Bengaluru-560065, Karnataka, India
[b]Directorate of Planning and Monitoring (DPM), Tamil Nadu Agricultural University (TNAU), Coimbatore-641003, Tamil Nadu, India

Abstract This paper examines responsiveness of consumption of major food items to change in their prices and household per capita income across different farm size groups. The results show significant variation in the food consumption pattern and demand elasticities across farm size groups and also between farm and non-farm households'. The income and price elasticities are low for cereals, pulses, edible oils and vegetables than those of animal products and fruits. Further, we find a better response from non-farm households' to changes in their income and food prices. The results suggest that it is the income effect is more important in the case of non-farm households' and production effect in the case of farm households'. Further, among farm households' the smallholders are more vulnerable to changes in production/income and prices.

Keywords Farm households', Consumption pattern, Income elasticity, Price elasticity

JEL classification Q1, Q11, Q18, R22, N35

1 Introduction

Farm size is an important determinant of farmers' livelihood — larger the farm, better is the livelihood. In India, the average farm size is 1.15 ha, and 85% of the farms are of size less than or equal to 2 ha. The question is: can such a huge mass survive of such tiny pieces of land? Moreover, increasing frequency of extreme climatic events such as droughts, floods and heat waves have been threatening agriculture and livelihood of farmers' as well other stakeholders. The growing food demands, reduced crop yields and higher food prices may adversely affect households' access to food but differentially to different categories of farm households'. The literature shows a positive relationship between farm production diversity and dietary diversity (World Bank 2007). It can, however, vary across farm size groups.

*Corresponding author: vijayalaxmikhed39@gmail.com

In this paper we examine farm households' consumption pattern by farm size. There are a number of studies on food consumption pattern across income groups in rural and urban areas (Umanath et al. 2016; Kumar et al. 2011; Abdulai & Aubert 2004; Sheng et al. 2010) but there are only a few that analyze food consumption pattern of farm households' differentiated by farm size (Carriker et al. 1993; Lee & Phillips 1971). Farm households' differ in many aspects from non-farm households' such as income level, its stability and distribution and production of food. Friedman (1957) hypothesized that income elasticities for farm and non-farm households' differ largely due to stability of income. Income is more stable for non-farm households' than for farm households'.

1.1 Conceptual framework

A general hypothesis derived from multiple functions of farm households' is that their production and consumption decisions are interrelated (Barnum &

Squire 1979). A part or whole of income generated from production is expended on household consumption. In general, the decisions pertaining to production and consumption are based on the endowment of resources such as land, labour and livestock, and transaction cost associated with sale and purchase of food and non-food items. The fixed capital is land, which will clearly have effects on food consumption. A household with a large land size can produce diversified food and therefore does not need to purchase these. It might also specialize in commercial crops, sell these and purchase most of its food requirements if needed. Transaction costs are high for a household at a remote location, resulting into a large gap between sale and purchase prices. This makes it follow the subsistence path. If transaction costs are low, then the household is more likely to specialize in production of certain crops, *ceteris paribus*. Figure 1 depicts the relation between key concepts that have been identified in modeling farm household behavior. It helps to test the differential response of farm households' and non-farm households' to the changes in household income and food prices. While, a farm household level and pattern of consumption depend on the level of production and also market, a non-farm household is solely dependent on market for its food requirement.

2 Empirical framework and source of data

The Almost Ideal Demand System (AIDS) has used for testing the households' consumption behavior and demand elasticities. Its quadratic approximation (QU-AIDS) has been applied in examining the income and own price food demand elasticities for major food items across different farm sizes. The AIDS model proposed by Deaton & Muellbauer (1980) is probably the most popular demand system in empirical demand analysis. Although the AIDS model is more than 25 years old, this functional form is still widely used (Mittal 2010; Kumar et al. 2011) because it unifies almost all theoretical and empirical desirable properties. For instance, QU-AIDS with multi-stage budgeting technique allows non-linear Engel curves (Banks et al. 1997) and zero expenditure on some of the food groups. The advantage of the QU-AIDS model is that the homogeneity and symmetry restrictions are easily imposed and tested.

Accordingly, the household decisions on allocation of total income (expenditure) on food groups based on non-food groups expenditure and household demographic characteristics were captured in the first stage. In the second stage, allocation of total food expenditure across different food groups, viz. cereals,

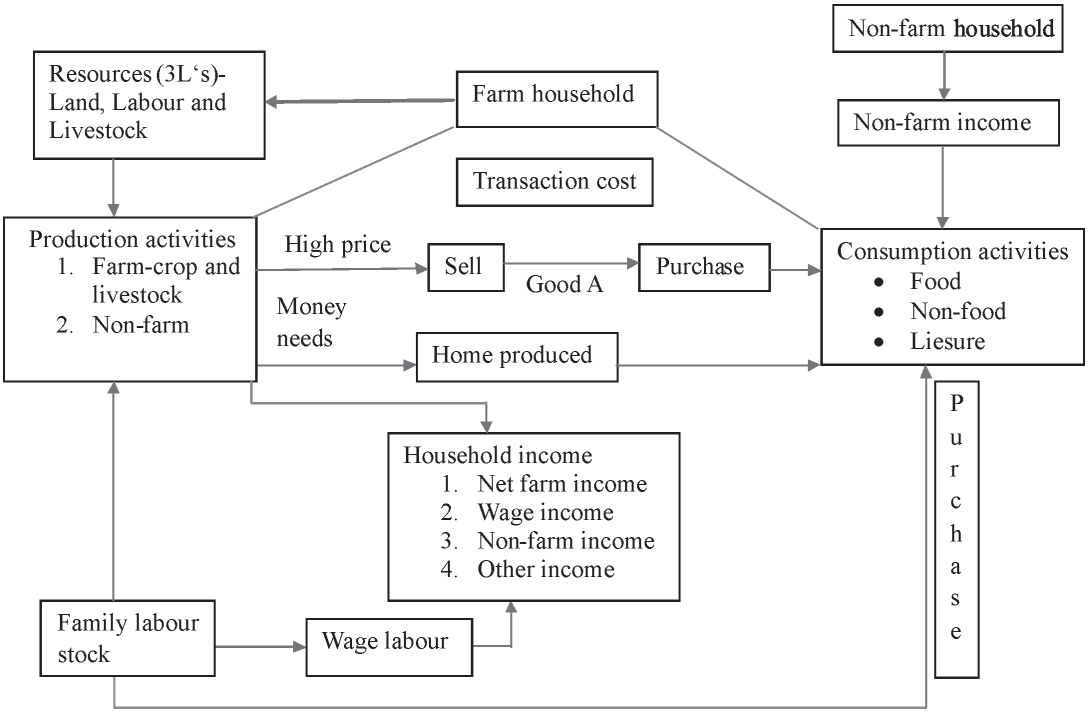

Figure 1. Conceptual framework for consumption decisions
Source: Authors'

pulses, milk and milk products, edible oils, vegetables, fruits and meat, fish & eggs were analyzed. The specific functional form of first stage food demand functions as follows:

$$\ln(X) = a_0 + a_1 \ln(PI) + a_2 \ln(I) + \Sigma a_3 Q + \varepsilon \quad \ldots(1)$$

Where, X is the per capita food expenditure, PI is the price indices of food group and I is the per capita income(total expenditure). Q is the vector of socio-demographic characteristics of households' including age, education, family size, operational land holding size and regional dummy; and ε is error term. Equation (1) was estimated through the ordinary least squares method.

In the second stage we use QU-AIDS to estimate the income and own price elasticity of different food groups as:

$$Z_i = a_i + \sum_{i=1}^{n} \gamma_{ij}(PI_i) + \beta_i \ln\left(\frac{X}{SI}\right) + \delta_i \, Region \quad \ldots(2)$$

Where, Z_i is the income and price elasticity of i^{th} food group; PI_i is the price of i^{th} food group; SI is the stone price index and Region is the dummy for the villages where the sample households' are located. It is assumed that the utility functions of the households' are identical across farm size classes and states. Theory-based conditions of adding up (imposed while estimating the coefficients of the last equation in the model that excluded from the estimation), homogeneity and symmetry (imposed at sample mean) may be statistically tested on equation (2) as:

Adding up

$$\sum_{i=1}^{n} \alpha_i = 1, \sum_{i=1}^{n} \gamma_{ij} = \sum_{i=1}^{n} \beta_i = \sum_{i=1}^{n} \delta_i = 0 \quad \ldots(2a)$$

Homogeneity

$$\sum_{j=1}^{n} \gamma_{ij} = 0 \quad \ldots(2b)$$

Symmetry

$$\gamma_{ij} = \gamma_{ji} \text{ for } i \neq j \quad \ldots(2c)$$

The income (expenditure) elasticity of different food group was computed using the method adopted by Green & Alston (1991) and Hayes et al. (1990):

$$\eta_i = \left(\beta_{i0} + \frac{2\beta_{i1} \ln[x]}{w_i}\right) + 1 \quad \ldots(3)$$

Where, η_1 is income elasticity.

The uncompensated own price elasticities were computed as:

$$\xi_{ij} = \left[\frac{\gamma_{ij}}{w_i}\right] - \left(\beta_{i0} + 2\beta_{i1} \ln[X]\right)\left[\frac{w_j}{w_i}\right] - k_{ij} \quad \ldots(4)$$

Where, ξ_{ij} is uncompensated own price elasticity, k_{ij} is the Kronecker delta, which takes the value one for own-price elasticity and zero for cross-price elasticity; w_i is the share of i^{th} food group in total expenditure and considered as weight in constructing price indices. After computing income and uncompensated and own price elasticities, the compensated and cross-price elasticities are estimated using the Slutsky equation.

$$\xi_{ij}^{H} = \xi_{ij} + w_i \eta_i \quad \ldots(4a)$$

Where, ξ_{ij}^{H} is the compensated (Hicksian demand) price elasticity. Income elasticity of i^{th} food group is estimated by the product of expenditure made on i^{th} food group and food expenditure elasticity w.r.t total income (expenditure).

$$\eta_i^{I} = \eta_i * \eta^{I} * \Psi_i \quad \ldots(5)$$

Where, η_i^{I} income elasticity of demand for an individual food group, η_i is the expenditure elasticity of an individual food group, η^{I} is the food expenditure elasticity w.r.t total income and Ψ_i is the probability of occurrence of positive consumption of i^{th} food group. It is computed as the share of household consuming i^{th} food group in total sample households' during the survey.

2.1 Variables and data

This study is based on the household level data collected by the International Crop Research Institute for Semi-Arid Tropics (ICRISAT) under a project Village Dynamics Studies in South Asia (VDSA). These data is available at household, individual and plot levels on a continuous basis over several years across farm size groups. In this paper, we use data for 2012-2013. It covers 865 households' from 18 villages located in Andhra Pradesh (AP), Gujarat (GJ), Karnataka (KN), Maharashtra (MH) and Madhya Pradesh (MP). The resident investigators re-interview the participating households' every month so as to capture the dynamics of farm households' related to

income, expenditure, consumption, investment, socio-demographic and farming practices. From this data-set, we extracted and used monthly data related to per capita food consumption and expenditure made on different food and non-food items. We used per capita expenditure as a proxy for income, and therefore both have been used interchangeably. We have constructed eight food groups' viz. cereals, pulses, edible oils, milk and milk products, vegetables, fruits, egg & meats and others. For estimation of demand elasticity, we excluded 'others' because of non-availability of unit prices. To overcome the problem of purchase infrequency (no purchase) of particular food item and to reduce the zeros in dependent variable, we aggregated monthly expenditure into annual expenditure.

Based on operational holding, the households' were divided into five groups viz., non-farm (no land), small (≤ 2.0 acres), semi-medium (2.01 to 4.0 acres), medium (4.01 to 10.0 acres) and large (>10.01 acres). The distribution of households' is shown in figure 2. On the whole, these fairly equally distributed into different groups: medium (23.01%) followed by non-farm (22.54%), small (21.50%) and semi-medium (20.35%). Large farmers' comprise 12.60%. Across states, the non-farm households' dominate in Madhya Pradesh and Andhra Pradesh and small and medium farm households' in Gujarat and Karnataka. The share of large farm households' is comparatively low, ranging from 5.66 to 17.28%. The descriptive statistics for different farm size classes is given in appendix table 1.

3 Households' expenditure and consumption pattern

Farm production is subject to biotic and abiotic factors; hence their consumption is more vulnerable to such factors than that of non-farm households'. Any changes in production will affect their consumption. Therefore, a study on food consumption pattern and response towards changes across farm size groups has great significance. This section provides empirical evidence on the nature and extent of consumption patterns and demand elasticity and across different farm size groups.

The monthly per capita expenditure of the sample households' across farm size groups is presented in table 1. We observe significant difference in the level of expenditure across farm sizes. In general, total monthly per capita expenditure of non-farm households' is higher than that of small and semi-medium farm households'. The positive relation between expenditure and farm size could be observed for states (except for the non-farm households'). It is due to non-farm households' mainly depend on non-farm income, which is more stable than the farm income. Andhra Pradesh has the highest average monthly per capita expenditure of Rs 2,496 followed by Maharashtra (Rs 2,126). The monthly per capita expenditure is comparatively low in Gujarat (Rs 1,433).

The share of food expenditure in total expenditure is above 40% in all the states irrespective of the land holding size. Amongst states, share of food expenditure

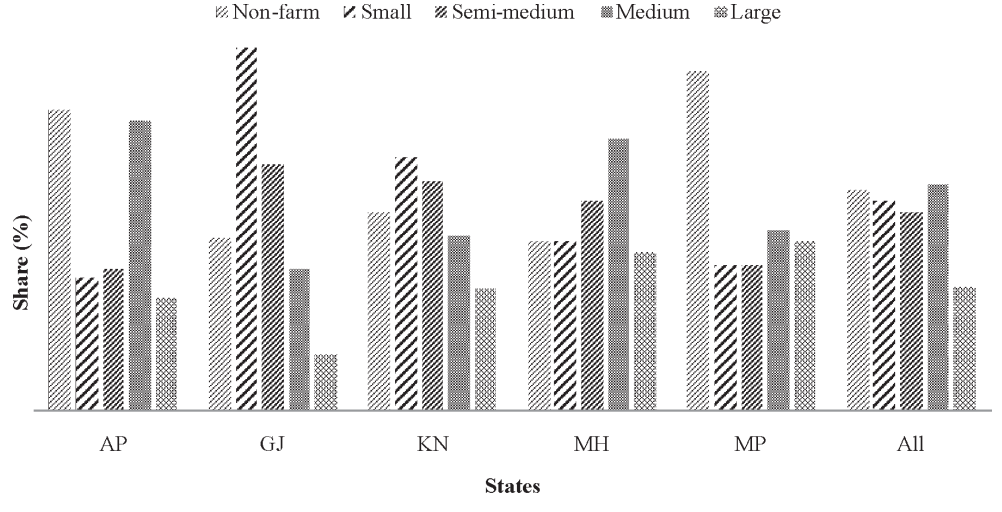

Figure 2. The share of different farm size groups in the total sample
Source: VDSA, ICRISAT

Table 1. Average monthly per capita expenditure across farm size groups (in Rs)

States	Non-farm	Small	Semi-medium	Medium	Large	All
AP	2,387	1,613	1,775	2,918	3,632	2,496
	(45)	(48)	(49)	(42)	(41)	(45)
GJ	1,483	1,361	1,413	1,562	1,528	1,433
	(58)	(53)	(55)	(56)	(53)	(55)
KN	1,665	1,290	1,383	1,419	2,234	1,530
	(53)	(52)	(52)	(53)	(58)	(53)
MH	1,763	1,545	1,803	2,234	3,318	2,126
	(57)	(57)	(57)	(56)	(51)	(56)
MP	1,282	1,140	1,268	1,232	3,326	1,595
	(49)	(50)	(54)	(51)	(46)	(50)
Overall	1,827	1,409	1,579	2,145	3,036	1,912
	(52)	(53)	(54)	(51)	(50)	(52)

Source: VDSA, ICRISAT

Note: Figures in parenthesis indicates share (%) of food expenditure in total expenditure

is higher in Maharashtra (55.8%). It is further observed that the share of food decreases with land holding size (except for non-farm households' in Karnataka). This is in conformity with the Engel;s law that suggests a positive relation between food expenditure and income. Similar results have been reported by Kumar et al. (2011) across income groups, Shinoj et al. (2015) for farm size groups.

3.1 Food consumption pattern of farm households'

The per capita consumption of major food items across different farm size groups and share in total food expenditure are presented in table 2. Overall, the per capita monthly consumption of major food items is higher for large farm households' and non-farm households'. Consumption of meat, fish and egg is very low among farm households' in this group. Such differences exist on account of self-production of majority food items in large farm size households' and stable income in non-farm households'. Although, the expenditure on food items are incommensurate with the farm size but these indicate that large farm households' spend more. In Karnataka, food expenditure is proportional to farm size for all food items. Across all states, the per capita consumption and expenditure on meat, fish and egg are not proportional to farm size, except for Maharashtra. It indicates that large farm households' prefer vegetarian diet.

4 Food demand elasticities

4.1 Income elasticity

Income elasticity of food items for different income groups is presented in table 3. As expected, we do not find any definite in income elasticity of different food items across farm size groups. As farm size increases, farm households' become either self-sufficient in cereal consumption or less valued cereals and shift towards high value food items. The income elasticity for food is higher for non-farm households' than for farm households'. The income elasticity is higher for milk & milk products (1.42) followed by meat, fish & egg (1.15), fruits (1.08), edible oils (0.90), cereals (0.84), vegetables (0.82) and pulses (0.71). However, non-farm households' are more responsive to income changes than the farm households'.

4.2 Own price elasticity of food demand

Table 3 presents un-compensated own price elasticity of demand for major food groups across farm size groups. The own price elasticity for food items is negative and inelastic across farm size groups except for pulses. Across food items and farm size groups, the magnitude of the own price elasticity is high for all the food groups except cereals and vegetables. With the rise in price of food items, the response from farm household is significant.

Table 2. Per capita consumption of major food items across farm size groups

(kg/person/month)

States	Land-class	Cereals	Pulses	Oils	Milk	Fruits	Vegetables	Meat, Fish & Egg	Others
AP	Non-farm	10.15	0.69	0.77	4.08	0.92	4.15	0.91	-
		(24.98)	(4.82)	(6.32)	(14.91)	(3.79)	(12.46)	(11.16)	(21.54)
	Small	10.14	0.43	0.63	2.78	0.66	3.32	0.74	-
		(30.46)	(3.75)	(5.73)	(13.21)	(2.91)	(10.99)	(12.49)	(20.47)
	Semi-medium	10.89	0.62	0.73	3.60	0.81	4.01	0.79	-
		(27.93)	(4.55)	(6.00)	(13.27)	(3.34)	(11.83)	(13.23)	(19.86)
	Medium	9.71	0.58	0.67	3.57	0.76	3.52	0.68	-
		(31.33)	(4.53)	(5.63)	(14.89)	(2.99)	(10.56)	(11.81)	(18.25)
	Large	10.39	0.82	0.78	4.91	0.89	3.97	0.48	-
		(31.39)	(5.18)	(5.68)	(15.75)	(3.30)	(9.88)	(11.20)	(17.62)
	All	10.15	0.63	0.72	3.79	0.82	3.81	0.75	-
		(28.74)	(4.60)	(5.92)	(14.54)	(3.32)	(11.32)	(11.83)	(19.74)
GJ	Non-farm	9.80	0.57	1.23	6.05	0.76	3.35	0.21	-
		(18.27)	(5.06)	(13.88)	(25.99)	(2.81)	(12.31)	(5.14)	(19.01)
	Small	8.94	0.56	0.98	4.71	0.60	2.84	0.37	-
		(20.21)	(5.93)	(12.57)	(22.66)	(2.77)	(10.26)	(3.42)	(23.80)
	Semi-medium	8.75	0.55	1.28	6.24	0.72	2.96	0.48	-
		(18.58)	(4.86)	(13.82)	(27.85)	(2.84)	(10.32)	(2.97)	(18.74)
	Medium	8.99	0.55	1.23	6.84	0.75	3.24	0.07	-
		(17.96)	(4.56)	(12.53)	(30.54)	(3.07)	(12.04)	(1.78)	(17.52)
	Large	7.90	0.48	1.22	6.17	0.75	2.56	0.05	-
		(18.88)	(4.56)	(14.18)	(31.93)	(3.33)	(11.07)	(1.63)	(14.42)
	All	8.99	0.56	1.15	5.72	0.69	3.00	0.31	-
		(19.06)	(5.24)	(13.19)	(26.18)	(2.87)	(10.93)	(3.27)	(20.29)
KN	Non-farm	13.24	1.40	0.85	3.32	4.48	4.32	0.40	-
		(17.41)	(10.46)	(8.54)	(12.23)	(4.22)	(10.80)	(8.19)	(34.09)
	Small	11.11	1.06	0.64	2.13	1.93	3.82	0.60	-
		(13.03)	(8.94)	(7.32)	(7.87)	(3.87)	(10.18)	(12.24)	(36.55)
	Semi-medium	11.35	1.19	0.71	2.60	2.69	3.78	0.37	-
		(14.45)	(9.49)	(8.02)	(10.51)	(4.23)	(10.90)	(8.24)	(34.61)
	Medium	11.42	1.21	0.73	2.70	3.61	3.24	0.22	-
		(19.17)	(10.28)	(7.83)	(12.54)	(4.03)	(9.74)	(5.07)	(31.33)
	Large	12.67	1.51	0.86	7.08	6.96	4.30	0.28	-
		(21.75)	(9.21)	(7.21)	(19.68)	(3.65)	(8.98)	(5.38)	(26.46)
	All	11.85	1.24	0.74	3.21	3.56	3.87	0.40	-
		(16.44)	(9.65)	(7.81)	(11.69)	(4.03)	(10.24)	(8.34)	(33.39)
MH	Non-farm	11.26	1.09	1.15	2.74	8.16	3.92	0.38	-
		(13.73)	(7.98)	(9.57)	(8.60)	(4.80)	(11.08)	(8.01)	(35.05)
	Small	9.97	0.92	1.03	3.22	6.36	3.66	0.34	-
		(13.09)	(7.51)	(9.59)	(10.44)	(4.11)	(11.52)	(7.88)	(35.85)
	Semi-medium	10.80	0.94	1.10	4.29	6.71	3.86	0.36	-
		(15.20)	(7.12)	(9.53)	(11.49)	(4.18)	(10.98)	(7.52)	(33.98)
	Medium	10.86	1.02	1.19	5.09	6.34	4.16	0.46	-
		(14.88)	(6.79)	(9.10)	(11.96)	(4.34)	(10.17)	(9.16)	(33.60)
	Large	10.18	1.12	1.28	6.00	5.85	4.06	0.53	-
		(14.19)	(6.44)	(8.66)	(15.38)	(4.49)	(9.50)	(9.67)	(32.18)

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	All	10.65	1.01	1.15	4.36	6.64	3.95	0.42	-
		(14.34)	(7.12)	(9.28)	(11.61)	(4.37)	(10.61)	(8.49)	(34.06)
MP	Non-farm	13.37	1.13	0.86	4.33	1.29	4.47	0.08	-
		(24.06)	(9.36)	(10.52)	(24.50)	(7.04)	(13.80)	(2.77)	(7.94)
	Small	13.24	1.19	0.81	3.50	1.21	4.20	0.09	-
		(25.71)	(10.81)	(11.51)	(17.83)	(6.78)	(14.58)	(3.42)	(9.25)
	Semi-medium	13.23	1.40	0.90	4.15	1.75	5.05	0.01	-
		(22.96)	(10.63)	(10.25)	(23.64)	(8.73)	(14.32)	(0.26)	(9.21)
	Medium	12.49	1.34	0.82	3.11	1.60	4.77	0.03	-
		(25.54)	(11.12)	(10.63)	(19.32)	(8.62)	(15.05)	(0.98)	(8.71)
	Large	16.58	1.86	1.28	10.72	2.52	7.17	0.04	-
		(26.30)	(9.70)	(9.72)	(30.42)	(9.36)	(14.35)	(0.63)	(7.01)
	All	13.70	1.34	0.92	5.03	1.61	5.03	0.05	-
		(24.80)	(10.15)	(10.51)	(23.43)	(7.94)	(14.33)	(1.80)	(8.31)
Overall	Non-farm	11.36	0.95	0.95	3.97	3.21	4.06	0.48	-
		(20.00)	(7.21)	(9.16)	(16.03)	(4.43)	(12.03)	(7.83)	(24.42)
	Small	10.12	0.79	0.85	3.42	2.35	3.41	0.45	-
		(18.56)	(7.01)	(9.65)	(14.74)	(3.61)	(10.91)	(7.75)	(28.30)
	Semi-medium	10.61	0.88	0.99	4.27	3.18	3.73	0.43	-
		(18.30)	(6.94)	(9.72)	(16.21)	(4.04)	(11.16)	(7.01)	(26.73)
	Medium	10.53	0.90	0.95	4.38	3.36	3.78	0.40	-
		(21.25)	(6.75)	(8.49)	(15.66)	(4.11)	(10.82)	(7.77)	(25.16)
	Large	11.32	1.18	1.09	6.59	4.25	4.36	0.37	-
		(20.99)	(6.98)	(8.33)	(19.44)	(4.61)	(10.20)	(7.41)	(23.63)
	All	10.74	0.92	0.96	4.34	3.18	3.83	0.43	-
		(19.76)	(6.98)	(9.12)	(16.13)	(4.12)	(11.10)	(7.58)	(25.79)

Source: VDSA, ICRISAT
Note: Figures in parenthesis indicates % share of food in total food expenditure.

Table 3. Income and price elasticity by farm size groups

Food items	Farm size groups					
	Non-farm	Small	Semi-Medium	Medium	Large	All
Income (Expenditure) elasticities of food						
Cereals	0.98	0.91	0.86	0.83	0.78	0.84
Pulses	0.77	0.61	0.59	0.81	0.79	0.71
Edible oils	0.92	0.83	0.97	0.94	0.76	0.90
Milk & milk products	1.14	1.43	1.46	1.39	1.40	1.42
Vegetables	0.93	0.79	0.74	0.87	0.95	0.82
Fruits	1.14	1.09	1.06	1.13	1.05	1.08
Meat, fish & eggs	1.09	1.25	1.23	1.06	1.12	1.15
Uncompensated own price elasticities of food						
Cereals	-0.33	-0.25	-0.25	-0.18	-0.33	-0.23
Pulses	-1.08	-0.58	-1.18	-1.05	-0.98	-0.99
Edible oils	-0.59	-0.58	-0.86	-0.48	-0.31	-0.60
Milk & Milk products	-0.94	-0.68	-0.67	-0.78	-0.67	-0.75
Vegetables	-0.44	-0.22	-0.34	-0.58	-0.40	-0.38
Fruits	-0.83	-0.69	-0.75	-0.84	-0.78	-0.76
Meat, fish & eggs	-0.59	-0.69	-0.65	-0.59	-0.43	-0.62

Source: Authors' calculation

If we compare elasticity between non-farm and farm households' there is a marked difference. These finding are on par with the Friedman permanent income hypothesis (Friedman 1957), i.e., income elasticity of farm households' is lower than that for the non-farm households'. It helps to separate out the income driven effect in non-farm and production driven effect in farm households'. To confirm these findings and to understand the effect of farm production on consumption, additional research is needed with distinct analysis of farm and non-farm households'.

5 Conclusions

This study has examined the hypothesis of differential consumption pattern and response towards price and income change between farm and non-farm households'. The results show that food consumption patterns and demand elasticity across farm size groups are quite different. The land holding size of farm households' has positive influence on the consumption of food items. It indicates the stability of income in non-farm households' and production effect in large farm size households'. Comparing to the demand elasticity of different farm households', non-farm households' are more responsive to the changes in the income and prices. The evidence presented in this paper implies that the income effect in non-farm households' and production effect in farm size households' play major role in their consumption decisions.

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Appendix table 1. Descriptive statistics by farm size group

Particulars	Non-farm	Small	Semi-medium	Medium	Large	All
Family size (No.)	4.14	4.98	5.15	5.57	6.24	5.12
	(0.13)	(0.14)	(0.16)	(0.17)	(0.30)	(0.08)
Age of household head (Years)	51.02	49.32	50.59	50.87	52.06	50.66
	(0.94)	(0.93)	(0.90)	(0.85)	(1.22)	(0.42)
Education of household head (Years)	4.09	4.13	5.27	5.13	7.10	4.96
	(0.34)	(0.35)	(0.35)	(0.33)	(0.52)	(0.17)
The average size of operational holding (Acres)	-	1.38	3.33	6.73	19.78	5.02
		(0.04)	(0.04)	(0.12)	(1.08)	(0.25)
Occupation (%) Non-farm=1, farm=0	96.57	48.88	40.83	29.69	16.35	48.55
	(0.02)	(0.04)	(0.04)	(0.03)	(0. 03)	(0.02)
Vegetarian (%) Vegetarian=1, otherwise=0	31.89	34.27	33.46	35.73	36.65	34.52
	(0. .03)	(0.04)	(0.04)	(0.04)	(0.04)	(0. .02)
Production diversity (No. of crop/livestock produced in a year)	0.42	3.91	4.63	5.53	8.79	4.26
	(0.05)	(0.17)	(0.21)	(0.22)	(0.43)	(0.13)
Dietary diversity (No. of food items consumed)	27.94	29.24	29.91	30.92	31.98	29.82
	(0.37)	(0.39)	(0.40)	(0.36)	(0.44)	(0.18)
No. of observations	195	186	176	199	109	865

Source: Estimated by authors'
Note: Mean values are shown with standard deviation in parenthesis