

# An empirical analysis of relation between income, consumption and investment of rural Haryana

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## Abstract

**Objectives:** The present study aims to analyse the Relation between Income, Consumption and Investment of Rural Haryana.

**Methods/Statistical analysis:** This study is based on the primary data A questionnaire is prepared and the personal interviews method is used to collect the primary data from rural household. The sample selected involved 100 households. Stratified random sampling technique is used for sample selection. Haryana is divided into four divisions for administrative purpose that is Ambala, Rohtak, Gurgaon and Hisar. Data collected is analyzed by using regression analysis and MANOVA.

**Findings:** The regression outcome shows that there is a significant relationship between household income and household consumption expenditure and there is also a significant relationship between household income and household investment in rural Haryana. As the income of the household increases, simultaneously there is high increase in consumption expenditure as compared to investment. MANOVA results revealed that there is no significant relationship between income and consumption expenditure, but it is significant in case of total investment

**Application/Improvements:** In Haryana none of the study has been conducted to measure or analyse relationship between income, consumption and investment of rural household especially at micro level. Most of the studies on income, consumption and investment pattern of rural people are based on secondary data which sometimes does not prove to be adequate for the study. Most of the data available does not serve the needs of Haryana in a ground level prospective. So the current research paper seeks to analyse the relationship between Income, Consumption and Investment of rural Haryana.

**Keywords:** Income, Consumption, Investment, Regression Analysis, Rural Household, relationship.

## 1. Introduction

The developing countries like India need funds for economic development and growth. For economic development cash management is required. While keeping liquidity and profitability are kept in mind. The performance of any economy is measured in terms of the trends and pattern of macroeconomic variable which include national income, consumption, saving, investment and employment. Per capita income and consumption both are the indicators of Human

Development but consumption is a better indicator of human welfare. Consumption is an important activity performed by the household sector. Whatever personal income we obtain, from one source or the other, is spent either on consumption or is saved. Today's consumption is worsening inequalities [1].

While investment is the single most factors for the development of an economy, it is savings which provides the basis for investment. Investment is a major issue of the household as their small saving of today is to meet the expenditures of tomorrow. An investment may be defined as the commitment of funds at present, in probability of some positive rate of return in future. The spectrum of investment is really wide. An investment is challenged with array of investment opportunities like, bank deposits and life insurance small saving, commercial deposits, bullions, real estate, corporate security bonds, equity, mutual funds and preference shares[2]. Investment in its broadest sense means the sacrifice of certain present value for future value[3].

Income = Consumption + Investment

In this simple equation, it is easy to see the relationship between income, consumption, and investment. If income increases then consumption and investment will change. The consequence of income is the most important determinant of consumption. Income gives people the ability to pay for motorized transport instead of walking, to pay for health care and education for their families, to buy miscellaneous, nutritious foods instead of eating only their own crops, to pay for water from a tap instead of walking for many hours to collect it from a well. The increasing dependence of consumption on income means that changes in income have a dominant influence on changes in consumption. When incomes rise regularly consumption rises for most of the population. But for the same reason, when incomes decline, consumption also falls suddenly, with devastating significances for human wellbeing. The rural households drive their income from various sources like agriculture, wages, livestock, poultry and other self-employed activities. Consumption expenditure and household income are two direct monetary measures used in assessing the economic welfare of a population. However, consumption expenditure is referred to income as it imitates long-term economic status of the household, particularly in low income countries.

Various researches are available relating to the income and consumption of households.

The pattern of consumption when compared with the income and employment of people in 5 villages in Nepal during 2008-09 found that a large change in expenditure of education has been examined in different income groups [4]. The consequence of income and occupation over the expenditure of rural household and found that bulk of household having low states of education are rapid about their importance of their health standards are suggested to replace alcoholic items with nutrition food items [5]. Socio-economic factors affect the consumption pattern and cultivator household's consumption is highest in rural household of Guntur district of Andhra Pradesh [6]. Per capita cereal consumption is unrelated to per capita income but it is influenced by other factors in India [7]. The GDP per capita and change in jobs rate are the main impact factors on household income in Romania during the period 2000-2008 [8]. The pattern of saving and investment opportunity such as bullions, bank deposits, small savings, real estate and life insurance etc. age, gender, occupation education and income influences investor awareness and investment preferences of individual Indian household [2]. There are bank deposits as their main preference of investment and income influences household investor awareness in Pune city [9]. Most of employees have awareness about the industrial securities and as income increase awareness about securities also increases [3]. The rural urban inequality is negatively related to financial development, economic growth and inflation in India during 1965 to 2008 [10]. There is disparity in income distribution of different income groups and poverty inequalities in Sri Lanka [11]. When the trends and patterns of food consumption and nutritional intake in rural India examined between different states and expenditure classes using three NSS rounds right from the 1993-94 to 2011-12. The result revealed that monthly per capita consumption expenditure, has recorded the highest [12]. The income generation process in rural sericulture revealed the vigour of the earning process within the rural people. Income from sericulture be influenced by upon area of cultivation, price of raw silk, price of reeling cocoon, export earnings and import quantity [13].

### 1.1. Statement of the Problem

On the basis of review of literature it is found none of the study has been conducted to measure or analyse relationship between income, consumption and investment of rural household of Haryana especially at micro level. There are less good publications on the state of the Rural Masses. This is because the NSSO and other related organizations or the official agencies that collects such data for the whole country, does not generally publish data separately for rural areas especially in the context of individual households. Most of the studies on income, consumption and investment pattern of rural people are based on secondary data which sometimes does not prove to be adequate for the study. Most of the data available does not serve the needs of Haryana in a ground level prospective. There exists a literature gap in this area. So the current research paper seeks to analyse the relationship between Income, Consumption and Investment of rural Haryana.

### 1.2. Objective

- To examine the relationship between household Income and Consumption of rural Haryana.
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### 1.3. Hypothesis

**Ho.** There is no significant relationship between household Income and household Consumption in Haryana.

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## 2. Research methodology

In this study primary data is collected from rural households in Haryana. Questionnaire is designed and Personal interviews method is used to collect data from rural household. Stratified random sampling technique is used for sample selection. Haryana is divided into four divisions for administrative purpose that is Ambala, Rohtak, Gurgaon and Hisar. From the four sample districts, a sample of 100 rural households (25 households from Ambala, 25 households from Rohtak, 25 households from Gurgaon and 25 households from Hisar) is selected by adopting convenience sampling technique. Hence approached only those households who were ready to cooperate and provide the required information. The field investigation is carried out during the period November 2014 to February 2015. Data collected is analyzed by using regression analysis and MANOVA. MANOVA is used for analysing 2 dependent variables (Metric) Consumption and Investment and 1 Independent variable (Non-Metric) Total Income of Family.

## 3. Results and Discussion

### 3.1. Income and consumption relation

Regression helps in determination of a statistical relationship between two or more variables. In simple regression, we have only two variables, one variable (defined as independent) is the cause of the behaviour of another one (defined as dependent variable). Regression can only interpret what exists physically i.e., there must be a physical way in which independent variable income can affect dependent variable consumption. The basic relationship between income and consumption is given Table 1 provides the value of R and R<sup>2</sup> which indicates high degree of correlation R value represents the simple correlation and is 0.881. The R<sup>2</sup> value is 0.838, which is very large, hence indicates 83.8% of total variation in dependent variable that is annual consumption expenditure is explained by independent variable that is total income of family.

As per Table 2 value of P is 0.000 (which is less than 0.05) and therefore significant. Hence regression model statistically significantly predicts the outcome variable.

Table 3 indicates value of P is less than 0.05 and hence significant. There for Null hypothesis is rejected. Hence there is a significant relation between total consumption expenditure and total household income of rural Haryana.

The consumption expenditure can be predicting income through following regression equation:

$$Ce = 84669.804 + 0.205 (\text{income})$$

Table 1. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.881 <sup>a</sup>	.838	.749	874.779

a. Predictors: (Constant), TOTAL INCOME OF FAMILY

(Sources: Researcher's Calculation)

Table 2. ANOVA<sup>b</sup>

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	4.903E11	1	4.903E11	49.947	.000 <sup>a</sup>
Residual	9.620E11	98	9.816E9		
Total	1.452E12	99			

a. Predictors: (Constant), TOTAL INCOME OF FAMILY

b. Dependent Variable: ANNUAL CONSUMPTION EXPENDITURE

(Sources: Researcher's Calculation)

### 3.2. Income and Investment Relation

Table 4 provides the value of R and R<sup>2</sup> which indicates high degree of correlation R value represents the simple correlation and is 0.709. The R<sup>2</sup> value is 0.667, which is very large, hence indicates 66.7% of total variation in dependent variable that is total investment is explained by independent variable that is total income of family

As per Table 5 value of P is 0.000 (which is less than 0.05) and therefore significant. Hence regression modal statistically significantly predicts the outcome variable. Table 6 indicates value of P is less than 0.05 and hence

significant. There for Null hypothesis is rejected. Hence there is a significant relation between investment and income of rural household in Haryana. The investment can be predicting income through following regression equation:

$$TI = -31804.930 + 0.472 (\text{income})$$

Table 3. Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	84669.804	16826.393		5.032	.000
	TOTAL INCOME OF FAMILY	.205	.029	.581	7.067	.000

a. Dependent Variable: ANNUAL CONSUMPTION EXPENDITURE  
(Sources:Researcher’s Calculation)

Table 4. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.709 <sup>a</sup>	.667	.605	808.119

a. Predictors: (Constant), TOTAL INCOME OF FAMILY  
(Sources:Researcher’s Calculation)

Table 5. ANOVA<sup>b</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.128E12	1	2.128E12	13.439	.000 <sup>a</sup>
	Residual	1.061E13	67	1.583E11		
	Total	1.273E13	68			

a. Predictors: (Constant), TOTAL INCOME OF FAMILY  
a. Dependent Variable: TOTAL INVESTMENT  
(Sources:Researcher’s Calculation)

Table 6. Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-31804.930	86377.458		-.368	.714
	TOTAL INCOME OF FAMILY	.472	.129	.409	3.666	.000

a. Dependent Variable: TOTAL INVESTMENT  
(Sources:Researcher’s Calculation)

### 3.3. Relationship between Income, Consumption and Investment of Rural

Table 7 clearly shows the size (N) which are approximately equal. Hence the groups formulated will meet the assumptions.

As per the Table 8 value of P is 0.000. This is less than 0.001 indicating that there is significant difference between the co variance matrices and hence assumption of homogeneity is violated. Therefore MANOVA uses Pillai’s Trace test (a test statistic that is not linked to assumptions about normality of the distribution of the data). Using an alpha level of 0.05, the test is significant, Pillai’s Trace Value = 0.35, F (6,130) = 4.61, P< 0.001, multivariate  $\eta^2 = 0.18$ . This significant F indicates that there no significant differences among the income groups on a linear combination of two dependent variables. Value of  $\eta^2$  indicates that 18% of multivariate variance of the dependent variables is associated with group factor. (Table 9)

Table 10 describes the Leven’s Test of equality of error variance test and its assumption of MANOVA and ANOVA that the variances of each variable are equal across the groups Leven’s Test is not significant in case of consumption expenditure as P>0.01, but it is significant in case of total investment as value of P is 0.004. Hence error variance of consumption expenditure is equal across groups while unequal in case of total investment.

As per Univariate ANOVA results, total investment and annual consumption expenditure dependent variables are statistically significant. There are four level of income; there for multiple comparisons are conducted to see which

pairs of means are different. To protect against type I error Bonferoni procedure is used. The result of Table 11 shows that there is a significant pair wise difference between income up to 2 lakh and above 8 lakh.

Table 7. Descriptive Statistics

	Group wise income		Mean	Std. Deviation	N
TOTAL INVESTMENT	dimension1	up to2 lakh	129896.6316	2.21196E5	19
		2 lakh-3 lakh	61971.4286	1.00904E5	14
		3 lakh -8 lakh	181568.4211	3.87512E5	19
		above 8 lakh	541294.1176	6.49110E5	17
		Total	231701.9710	4.32757E5	69
ANNUAL CONSUMPTION EXPENDITURE	dimension1	up to2 lakh	135852.6316	43163.09340	19
		2 lakh-3 lakh	173297.1429	68710.90244	14
		3 lakh -8 lakh	230134.7368	1.12480E5	19
		above 8 lakh	304560.0000	1.63489E5	17
		Total	210977.3913	1.23268E5	69

(Sources:Researcher’s Calculation)

Table 8. Box’s Test of Equality of Covariance Matrices<sup>a</sup>

Box's M	73.628
F	7.716
df1	9
df2	36984.280
Sig.	.000

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

a. Design: Intercept + income

(Sources:Researcher’s Calculation)

Table 9. Multivariate Tests<sup>c</sup>

Effect		Value	F	Hypothesis	Error df	Sig.	Partial Eta Squared
				df			
Intercept	Pillai’s Trace	.801	128.961 <sup>a</sup>	2.000	64.000	.000	.801
	Wilks’ Lambda	.199	128.961 <sup>a</sup>	2.000	64.000	.000	.801
	Hotelling’s Trace	4.030	128.961 <sup>a</sup>	2.000	64.000	.000	.801
	Roy’s Largest Root	4.030	128.961 <sup>a</sup>	2.000	64.000	.000	.801
income	Pillai’s Trace	.351	4.614	6.000	130.000	.000	.176
	Wilks’ Lambda	.662	4.890 <sup>a</sup>	6.000	128.000	.000	.186
	Hotelling’s Trace	.491	5.160	6.000	126.000	.000	.197
	Roy’s Largest Root	.448	9.699 <sup>b</sup>	3.000	65.000	.000	.309

a. Exact statistic

b. The statistic is an upper bound on F that yields a lower bound on the significance level.

c. Design: Intercept + income

(Sources:Researcher’s Calculation)

Table 10. Levene’s Test of Equality of Error Variances<sup>a</sup>

	F	df1	df2	Sig.
TOTAL INVESTMENT	4.834	3	65	.004
ANNUAL CONSUMPTION EXPENDITURE	10.041	3	65	.000

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + income

(Sources: Researcher’s Calculation)

Table 11. Pairwise Comparisons

Dependent Variable	(I) Group wise income	(J) Group wise income	Mean Difference (I-J)	Std. Error	Sig. <sup>a</sup>	95% Confidence Interval for Difference <sup>a</sup>	
						Lower Bound	Upper Bound
TOTAL INVESTMENT	up to 2 lakh	2 lakh-3 lakh	67925.203	141277.923	1.000	-316549.087	452399.493
		3 lakh -8 lakh	-51671.789	130135.668	1.000	-405823.504	302479.925
		above 8 lakh	-411397.486*	133908.498	.019	-775816.594	-46978.378
	2 lakh-3 lakh	up to 2 lakh	-67925.203	141277.923	1.000	-452399.493	316549.087
		3 lakh -8 lakh	-119596.992	141277.923	1.000	-504071.282	264877.297
		above 8 lakh	-479322.689*	144760.648	.009	-873274.880	-85370.498
	3 lakh -8 lakh	up to 2 lakh	51671.789	130135.668	1.000	-302479.925	405823.504
		2 lakh-3 lakh	119596.992	141277.923	1.000	-264877.297	504071.282
		above 8 lakh	-359725.697	133908.498	.055	-724144.805	4693.411
	above 8 lakh	up to 2 lakh	411397.486*	133908.498	.019	46978.378	775816.594
		2 lakh-3 lakh	479322.689*	144760.648	.009	85370.498	873274.880
		3 lakh -8 lakh	359725.697	133908.498	.055	-4693.411	724144.805
ANNUAL CONSUMPTION EXPENDITURE	up to 2 lakh	2 lakh-3 lakh	-37444.511	37842.287	1.000	-140428.658	65539.635
		3 lakh -8 lakh	-94282.105	34857.755	.052	-189144.136	579.926
		above 8 lakh	-168707.368*	35868.334	.000	-266319.593	-71095.144
	2 lakh-3 lakh	up to 2 lakh	37444.511	37842.287	1.000	-65539.635	140428.658
		3 lakh -8 lakh	-56837.594	37842.287	.828	-159821.740	46146.552
		above 8 lakh	-131262.857*	38775.159	.007	-236785.726	-25739.988
	3 lakh -8 lakh	up to 2 lakh	94282.105	34857.755	.052	-579.926	189144.136
		2 lakh-3 lakh	56837.594	37842.287	.828	-46146.552	159821.740
		above 8 lakh	-74425.263	35868.334	.252	-172037.488	23186.962
	above 8 lakh	up to 2 lakh	168707.368*	35868.334	.000	71095.144	266319.593
		2 lakh-3 lakh	131262.857*	38775.159	.007	25739.988	236785.726
		3 lakh -8 lakh	74425.263	35868.334	.252	-23186.962	172037.488

Based on estimated marginal means

a. Adjustment for multiple comparisons: Bonferroni.

\*. The mean difference is significant at the .05 level.

(Sources: Researcher's Calculation)

#### 4. Conclusion

This study highlights An Empirical Analysis of Relation between Income, Consumption and Investment of Rural Haryana. The main objective of this study is to examine the relationship between income, consumption and investment of rural household in Haryana. The regression outcome shows that there is a significant relationship between household income and household consumption expenditure and there is also a significant relationship between household income and household investment in rural Haryana. As the income of the household increases, simultaneously there is high increase in consumption expenditure as compared to investment. MANOVA results revealed that there is no significant relationship between income and consumption expenditure, but it is significant in case of total investment.

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