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Pattern of Households' Savings: A Tale of Two Surveys

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Abstract: This paper attempts to assess the households' savings behavior from two sets of nationally representative panel data—IHDS-I and IHDS-II (India Human Development Survey). The study finds that each income quintile is not a homogeneous group. Among top income quintiles, there are households whose expenditure exceeds income. Whereas, among bottom segment, there are households whose income exceeds expenditure and have surplus income for saving. Among bottom quintiles the food-income ratio is 54 per cent in IHDS-I, and at a lower level of 47 per cent in IHDS-II. These results are comparable with other countries like Nigeria and Kenya which spend 56.4 and 46.7 per cent respectively, of their income on food. Among top quintile the food-income ratio was 22.6 per cent in IHDS-I, and at a lower level of 17.5 per cent in IHDS-II. One interesting fact observed among quintiles-I and quintile-II is that the savings to income ratio is lower in IHDS-II than in IHDS-I. The marginal propensity to save has also declined from 0.227 in IHDS-I to 0.196 in IHDS-II. The value of average propensity to save and elasticity of savings is negative among top quintile in IHDS-II, indicating that savings reach the saturation level and an increase in income will lead to fall in demand for savings and may lead to more expenditure on luxurious commodities.

Key words: Household, savings, income, marginal, propensity, elasticity.

1. BACKGROUND

Households' savings is one of the most essential component for financial security and welfare of the

households. It reflects the status of income and wealth of the households. Various studies find that disposable income is the major determinant of households' savings. The households saving is

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mobilized through a varieties of instruments, such as bank deposits, units of mutual funds, bonds, equity shares and public provident funds, national savings certificate, life insurance, etc. It is a well-known fact that the consumption expenditure on various items is highly flexible upwards but it is quite rigid / inflexible downwards.

In this study two sets of primary household survey IHDS-I and IHDS-II, data has been used to assess the savings behavior among five quintiles. The first round of IHDS-I was completed in 2004–05 and the second round IHDS-II was completed in 2011–12. IHDS data are nationally representative, multi-topic survey of around 41 thousand households across states. IHDS has been jointly organized by researchers from University of Maryland (USA) and National council of Applied Economic research (NCAER). These two sets of households’ penal data have been distributed in five quintiles presented in Table 1.

Table 1
Sample Size by Quintiles

<i>Distribution of survey households</i>	<i>IHDS-I</i>	<i>IHDS-II</i>
Quintile-1(0-20)Bottom	7,206	8,308
Quintile-2 (21-40)	7,240	8,607
Quintile-3(41-60)	7,900	8,075
Quintile-4(61-80)	8,671	8,240
Quintile-5(81-100) Top	9,866	8,304
Total	40,883	41,534

These households have been further distributed in five income quintiles. The estimated households’ income and expenditure have been presented in Table 2. It reveals that only in top quintile group, at aggregate level, the income exceeds total expenditure in 2004–05 in IHDS-I. In all other income quintile groups, their expenditure exceeds income and are left with negative savings. This provides a misery picture of the income status of the households. As per IHDS-II, in the top two quintiles—quintiles 4

and quintile 5—households’ income exceeds total expenditure and have surplus income for savings. This indicates the rise in income of the households over the years. Table 3 presents the size and per cent of each income quintiles’ saver households in both IHDS-I and IHDS-II. As per IHDS-I, among bottom quintile 7.6 per cent were able save as against 79 per cent in top quintiles. Whereas in IHDS-I, 8.2 per cent were able to save among bottom quintile as against 85 per cent in top quintile. This change implies the rise of households’ income over the period. In order to avoid distortion result of these two panel data sets (Bhalla, S. 2018), in our study we considered only savers’ households to assess the responsiveness in changed income on consumption and savings.

In India, about 266 million people (22 per cent) are below poverty line (planning commission 2012–13). For households living at or below poverty line, income elasticity of consumption will be infinity or at least unity unless household incomes rise consistently over a long period. If the proportion of households below poverty line substantially reduces or the incremental income is appropriated largely by higher income groups whose marginal propensities to consume may be much higher than the average, the average income elasticity will rise.

According to Richard Stone (1954), the consumers’ choice is restricted by the fact that a part of disposable income has already been committed to necessary minimum or routine expenditure on specific goods. The committed part of total expenditure is beyond the free choice between expenditure and savings on the one hand and between different allocation patterns on various aspects on the other. The households become accustomed to the consumption of given quantities of particular goods which in due course emerge as habits. The aggregate consumption function describes the relationship between consumption and income. Savings emerge only when actual incomes

Table 2
Estimates of Income and Expenditure by Income Quintiles (Rs Crores)

Income Quintiles	IHDS-I (2004-05)			IHDS-II (2011-12)		
	Income	Expenditure	Savings	Income	Expenditure	Savings
Q₁(0-20) bottom	31857	110369	-78513	116758	357469	-240710
Q₂(21-40)	68005	121560	-53555	267004	443680	-176676
Q₃(41-60)	109877	151921	-42044	359339	455441	-96102
Q₄(61-80)	186709	193443	-6734	590180	588025	2155
Q₅(81-100) Top	524199	341312	182887	1564979	892844	672135

of the households exceed the minimum threshold income at which subsistence needs are fully met and savings become affordable. In such cases, savings may be treated as residual of disposable income of the households.

It is observed from RBI Handbook of Statistics (2014-15) that during 1950-51, households' savings as per cent of personal disposable income was as low as 6.5 per cent, which has increased to 49.17 per cent in 2007-08. There is a decline in household sector savings, despite increased personal disposable income during the latest years. The total personal disposable income has gone up from Rs 242 billion in 1970-71 to Rs 71641 billion in 2012-13. Similarly, consumption expenditure has also increased considerably as a consequence savings have declined. This implies that the expenditure elasticity will be less than unity: $0 < e(y) < 1$, where $e(y)$ denotes income elasticity of expenditure on necessities. Marginal propensity to spend will also be much lower than unity: $0 < m_p < e(y) < 1$. Lower the income higher will be the proportion of income spent on household necessities mainly on food items, higher the income lower will be proportion of income spent on households' food items. Thus, relative expenditure on households' food items is postulated to be inversely related to income of the households. This hypothesis does not imply that expenditure on households' basic items such as food declines with rises in income; this stipulates only slower growth

of expenditure on basic items. As it has upper limit or saturation. However, the decline in household sector saving may also imply the growth of consumerism, as large number of malls were set up in the main cities in all over India and private sector participation in various business, availability and benefits of smart phones and growth of population in India. However, this implies that there is a direct association of savings with disposable income.

2. STUDY OBJECTIVE

With this backdrop, in this study an attempt is made to test various hypotheses based on fundamental theories of savings in context of consumption behavior on food items and non-food items by using two sets of households' survey penal data to assess the impact of rise in income of households on savings.

2.1. Sample Size

The study is based on primary households' survey data. Two sets of large scale penal data from India Human Development Survey- have been used in this study.

2.2. Hypothesis and Methodology

Keynesian consumption function's implicit hypothesis is that the average propensity to save rises as the income rises. This implies households' income

Table 3
Sample size

<i>Income Quintiles</i>	<i>IHDS-I</i> <i>(2004–05)</i>	<i>IHDS-II</i> <i>(2011–12)</i>
Q ₁ (0–20) bottom	542 (7.6)	671 (8.2)
Q ₂ (21–40)	1540 (21.3)	1954 (22.8)
Q ₃ (41–60)	2760 (35.0)	3455 (42.8)
Q ₄ (61–80)	4928 (56.9)	5156 (62.6)
Q ₅ (81–100) Top	7783 (79.0)	7069 (85.2)
Total	17553	18305

is the major determinants of consumption and saving. Saving is excess of income over consumption ($S=Y-C$). Marginal propensity to spend on consumption is stable and lies in (0–1) range: $0 < dc/dy = MPC < 1$. It increases when income increases, but less than the increment of income. This behavior of consumption further explains the rise in saving as income increases. Therefore, the marginal propensity to save should also be stable, positive and less than one. Marginal propensity to save increases when income increases and it falls when income falls.

To understand the households savings and consumption behavior three basic savings functions have been used. These are as follows:

1. $S_t/Y_t = \alpha + \beta \ln Y_t$
2. $S_t = \alpha + \beta Y_t$
3. $\ln S_t = \alpha + \beta \ln Y_t$

These functions are estimated by using Ordinary Least Squares (OLS) regression. One of the major considerations for the use of these methods is to assess the magnitude and direction of determinates of savings. The results of these functions are presented in Tables 4 and 5.

3. EMPIRICAL FINDINGS

3.1. Households' income ratio to food items

Figure 1 presents the per cent of households' income spend on basic food items in IHDS-I and IHDS-II

across income quintiles. The bottom quintile households in IHDS-I spend more than half (54.1%) of their income on food items in the year 2004–05. In IHDS-II, the per cent of expenditure on food in bottom quintile is (47.2%), indicates growth of households income over the years. It is observed that, the per cent of income spent on basic food items in IHDS-II is much lower than the per cent of income spent on food in IHDS-I across income groups. As per 2015 World Economic Forum, Nigeria, Kenya and Cameroon spent 56.4%, 46.7% and 45.6% of households' income on food, respectively. Whereas, USA, UK, Canada and Australia spent 6.4%, 8.2%, 9.1% and 9.8 % of their income on food, respectively.

3.2. Households' income ratio to non-food items

Figure 2 presents the extent of income spent on non-food items, which includes, expenditure on health care, schooling, clothing—foot wear, energy, transportation, etc. Similarly, the per cent of income spent on non-food items is much higher during the IHDS-II than the same in IHDS-I across all income groups. However, among top quintile group, the per cent of expenditure on non-food items is slightly lower than the per cent of income spend on non-food items in IHDS-I. This indicates level of savings as well as expenditure on non-food items reached saturation level over the years among top income quintiles.

3.3. Households' income ratio to savings

Figure 3 presents the extent of households' savings by income quintiles. The households' income saving ratio is much higher at top quintiles in IHDS-II. One interesting fact observed from these two sets of data is that among two bottom quintiles 1 and 2, lower savings are witnessed in IHDS-II than the savings incurred in IHDS-I. This implies that among these two bottom income quintiles, when income increases, there is higher tendency to spend on non-food items

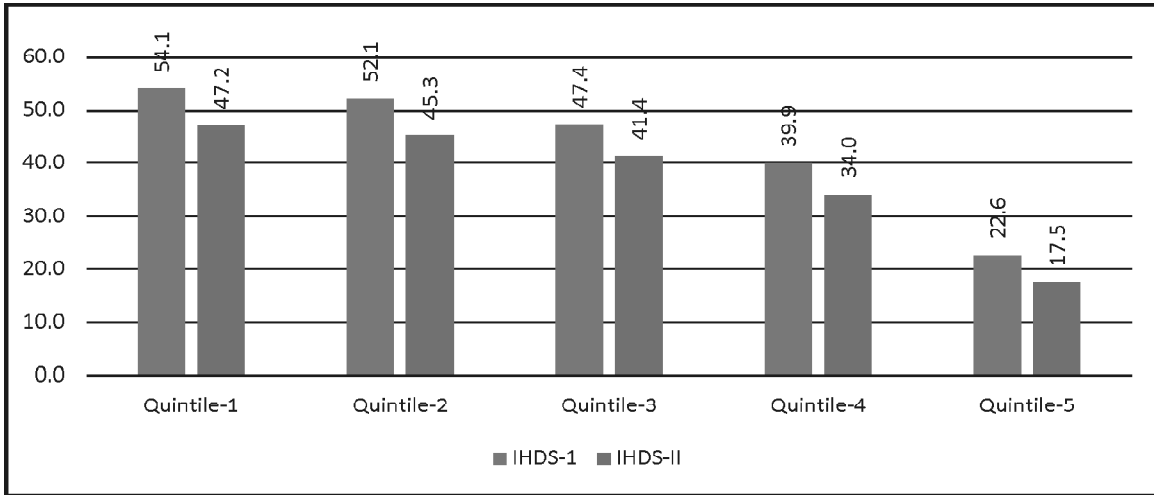


Figure 1: Food items to households income ratio

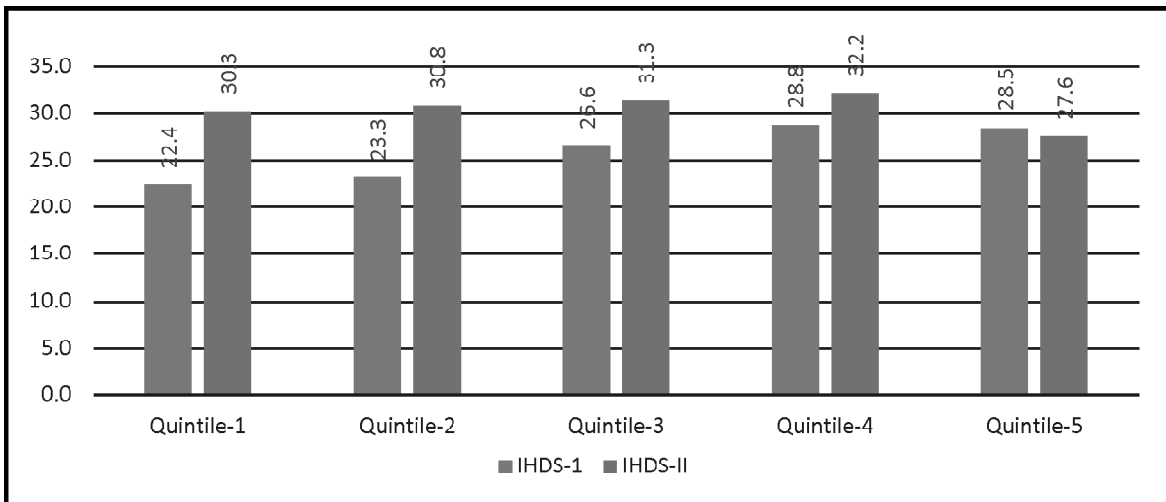


Figure 2: Non- food items to households' income ratio

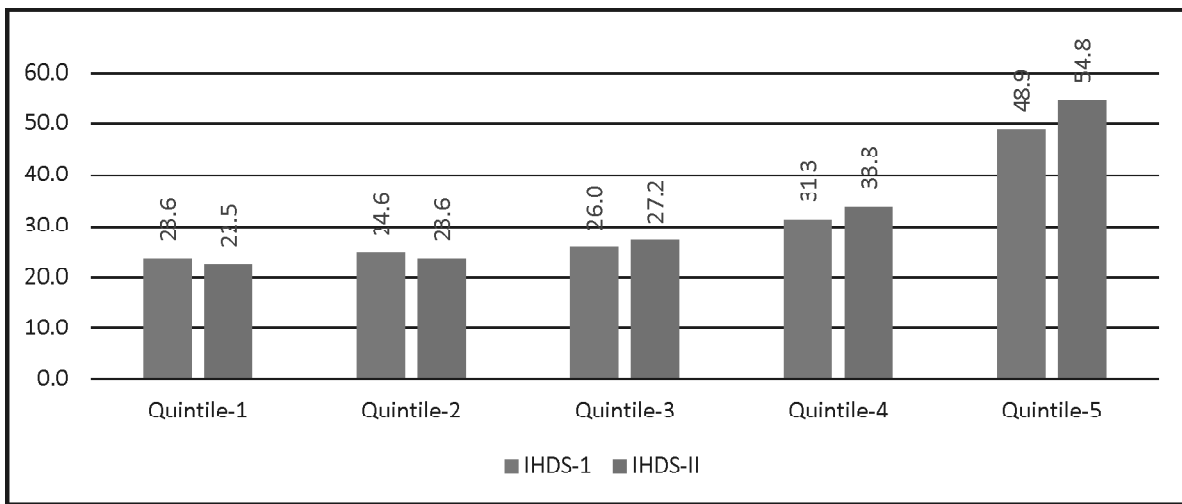


Figure 3: Savings to households' income ratio

than for savings. *This indicates the percolations of consumerism which propels economic growth.*

The results show that, it is consistent with fundamental hypothesis that bottom quintiles tend to have lower savings as they spend more on basic necessities like food items. On the other hand, top income quintiles have higher tendency for savings as well as spending on non-food items. These two sets of data confirmed the hypothesis that when income increases the per cent of income spend on basic necessities decline, except some extent among bottom quintile. This hypothesis does not imply that expenditure on households' basic items such as food declines with rises in income; this stipulates only slower growth of expenditure on basic items. As income increases, the households may shift to better quality products for their taste than the traditionally used product.

4. MARGINAL PROPENSITY TO SPEND ON FOOD ITEMS, NON-FOOD ITEMS AND SAVINGS BY QUINTILE GROUPS

4.1. Marginal Propensity to spend on Food Items

Table 4 shows the pattern of marginal propensity to consume (MPC) on food items, non-food items and savings across income quintiles. The marginal propensity to consume (MPC) represent where the change in income (Y) and change in consumption (C) are incremental households' income and consumption respectively. As per IHDS-I, in bottom income quintile the value of marginal propensity to consume on food items is as high as 0.508 as against 0.043 in top income quintiles. This indicates that increase of one rupee worth of income leads to an increase of about 51 paise and less than one paise for bottom and top income quintiles respectively, on consumption of food items. It is important to note that the marginal propensity to spend on food is almost same in IHDS-II. This implies that the marginal propensity to consume is stable and lies

between zero and one. The expenditure on basic items increases when income increases but less than the increment of income.

4.2. Marginal Propensity to spend on non-Food Items

The value of MPC for non-food items among the different income quintiles in IHDS-II provides insight into the extent of economic growth over the years. It is worth noting that the values of MPCs are almost equal among all income quintiles in both IHDS-I and IHDS –II for non-food items. Secondly, the value of MPC in bottom quintile, as per IHDS-II is lower than the corresponding value as per IHDS-I in case of marginal propensity to save. This implies a very slower growth of income among bottom quintiles over the years. However, the value of marginal propensity to save is positive, stable and less than one as expected.

5. HOUSEHOLDS' SAVINGS BEHAVIOUR

As we observed in an earlier study (Buragohain, T. 2016), disposable income is the main determinant of households' savings and consumption, which has declined in the last decade. The growth of income and changes of prices of commodities are not uniform in each year. Allocation of income on various uses poses an important problem of decision-making at households' level, especially on savings. Inflation has been influencing on households' savings which can be observed from the extent of consumer price index (CPI). The CPI was 195.3 in 2005, which increased to 232.9 in 2012. The CPI has increased by more than 100 per cent over a period of eight years.

5.1. Average Propensity to save and Elasticity of savings

It is assumed that, current year income is the most important factor influencing the level of household savings. Therefore, a direct functional form between current year income and current year savings are

Table 4
Marginal Propensity to Consume/ Spend on Food Items, Non-food items and Savings by Quintile groups

Income quintiles	MPC – Food Items $Cf_t = \alpha + \beta Y_t$		MPC – Non-Food Items $Cnf_t = \alpha + \beta Y_t$		MPC – Savings $S_t = \alpha + \beta Y_t$	
	IHDS-I	IHDS-II	IHDS-I	IHDS-II	IHDS-I	IHDS-II
Q ₁ (0-20) bottom	0.508	0.513	0.265	0.297	0.227	0.196
Q ₂ (21-40)	0.444	0.388	0.267	0.329	0.289	0.282
Q ₃ (41-60)	0.366	0.293	0.339	0.372	0.295	0.334
Q ₄ (61-80)	0.259	0.193	0.331	0.314	0.409	0.492
Q ₅ (81-100) Top	0.043	0.028	0.123	0.121	0.834	0.851

Notes: Cf_t=expenditure on food, Y_t= Income of households in the year t, Cnf_t= expenditure on non- food items, Y_t= current Income of households, S_t=Current saving

estimated. A large number of study available tested Keynesian hypothesis ‘that the average propensity to save rises as the income rises and it falls when income falls’. We have tested this hypothesis with these two sets of penal data in different periods to assess the impact of changes of income on savings. The results are presented in Table 5. The average propensity to save is negative and zero among bottom quintiles of IHDS–I and IHDS–II respectively. The average propensity to save can be affected by various factors such as inflation rates and demonstration effects (availability of items which are not very essential, but are possessed only for elevating ones status in the society). The average propensity

to save shows positive relationship with rise in income among second quintile to top quintile in IHDS–I. The average propensity to save ranges from 6 per cent for quintile-3 to 36 percent for quintile-5. However, the average propensity to save ranges from 11 per cent in quintile-2 to 34 per cent in quintile-4 in IHDS–II. Again, the average propensity to save and income elasticity of saving is negative among top quintiles in IHDS–II. This implies saving is no longer a normal good and is rather considered an inferior good for top quintiles, as saving has crossed the saturation level. After reaching such a level, a rise in income does not result in increase in savings or is consumed less like an inferior good.

Table 5
Average propensity to save and Elasticity of savings

Income quintiles	Average propensities to save $S_t/Y_t = \alpha + \beta \ln Y_t$		Elasticities of savings $\ln S_t = \alpha + \beta \ln Y_t$	
	IHDS-I	IHDS-II	IHDS-I	IHDS-II
Q ₁ (0-20) bottom	-0.068	0	0.93	0
Q ₂ (21-40)	0.123	0.11	1.96	1.33
Q ₃ (41-60)	0.06	0.15	1.22	1.45
Q ₄ (61-80)	0.216	0.34	1.4	1.6
Q ₅ (81-100) Top	0.36	-0.47	1.41	-0.066

Note: S_t/Y_t= proportion of income–savings, Y_t= current households income, S_t=Current saving

The income elasticity of savings are estimated as 0.93, 1.96, 1.22, 1.40 and 1.41 for quintile-1, quintile -2, quintile-3, quintile 4 and quintile-5 respectively in IHDS-I as against the income elasticity of savings are 1.33, 1.45 and 1.6 for quintile-2, quintile -3 and quintile -4 respectively in IHDS-II. This implies that there is a positive relationship of households' savings and income and income is the major determinants of households' savings. The zero income elasticity of savings and average propensity of savings among bottom quintile in IHDS-II, indicates that the demand for savings remains constant.

6. CONCLUSION

Allocation of income on various uses poses an important problem of decision-making at households' level, especially on savings. Inflation has been influencing on households' saving which can be observed from the extent of consumer price index (CPI). The CPI was 195.3 in 2005 and increased to 232.9 in 2012. The CPI has increased by more than 100 per cent over a period of eight years.

It is worth noting that the values of MPCs for non-food items are almost equal among all income quintiles in both IHDS-I and IHDS-II. Secondly, the value of marginal propensity to save in bottom quintile—IHDS-II—is lower than the value of IHDS-I. This implies a very slower growth of income among bottom quintiles over the years. However, the value of marginal propensity to save is positive, stable and less than one as expected.

The study finds that the estimated value of income elasticity of savings differs from one income quintile to another quintile in both IHDS-I and IHDS-II. Similarly, average propensity to save also varies from one income quintiles to another quintile,

implies the households' income is the major determinants of savings.

The negative income elasticity of savings implies that an increase in income has been leading to a fall in the demand for savings and hence leading to more expenditure on non-food items or luxurious commodities. The zero income elasticity (or inelastic) demand occurs when an increase in income is not associated with a change in the demand for a goods or savings. The empirical evidence indicates that, zero income elasticity among top quintiles implies savings may be like a sticky goods for them.

The zero income elasticity and average propensity of savings among bottom quintile in IHDS-II indicate that demand for savings remains constant either due to increased CPI or increased expenditure on non-food items.

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