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INFLATIONARY PRESSURE ON HOUSEHOLDS

RAGCHAASUREN GALINDEV

MIDDLE CLASS PROFILE IN MONGOLIA

ENKHTSETSEG BYAMBAA, AMARTUVSHIN TSERENNADMIND,
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TABLE OF CONTENTS

Inflationary pressure on households

Ragchaasuren Galindev 1

Middle class profile in Mongolia

Enkhtsetseg Byambaa, Amartuvshin Tserennadmind, Gansukh Durvedkhaan 31

INFLATIONARY PRESSURE ON HOUSEHOLDS

Ragchaasuren Galindev¹

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Abstract

This paper examines the effects of price inflation on households by processing the Household Socio-Economic Survey data conducted by the National Statistical Office of Mongolia. Using the standard methods, we calculate the monthly, annual and cumulative CPI inflation rates for individual households and consumption quintiles between 2009 and 2012. It is found that monthly CPIs were volatile due to seasonal changes in the prices of goods such as meat, milk products and vegetables. Households with high consumption share of food items faced with lower price inflation in the summer months relative to those with high non-food consumption shares, but higher price inflation in the other months. Although there were differences in the rates of monthly and annual inflation rates across households, the cumulative general inflation rate over the four year were more or less the same across the households representing quintiles. It also studies the real consumption of representative households of quintiles which grew at rather questionable rates over the period.

Keywords: Consumer price index, consumption, consumption shares of goods and services

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1. Introduction

Inflation receives regular media attention in Mongolia as being one of the main determinants of the standard of living. The National Statistical Office (NSO) calls for a press conference every month and reports the consumer price index (CPI) inflation rates in past periods – in last month, since the beginning of the year and since the same time last year. Some tend to ignore NSO's inflation figures instead refer to increases in the prices of individual or group of items as inflation which can be acceptable as such items could account for large shares in one's consumption basket.

Inflation has been studied well in Mongolia but at the aggregate level. Many researchers consider the effect of various shocks such as money aggregates on inflation (Gan-Ochir and Borkhuu, 2004; Davaajargal, 2005; Khulan, 2005; Gan-Ochir, 2008). Some considers the relationship between the inflation rates and nominal wages (Gan-Ochir, 2006). On the hand, some propose a method to calculate the seasonality in the inflation rates and choose other impulse mechanisms (Batsukh, 2008). A related research to our study is Batmunkh and Enkh-Amgalan (2013) which uses the NSO's inflation data, studies the seasonality in food prices, calculates various types of core inflation measures and examines the effect of the exchange rate on the inflation rate.

The objective of this paper is to examine the effect of inflation on various types of households which differ in terms of their level of consumption. The hypothesis is that different households face with different price inflation depending on the structure of their consumption. This could be studied in both short and long-run. In the short-run, the difference could be large, but there could be mechanisms to reduce the difference in the long-run. With this in mind, we employ NSO's Household Socio-Economic Survey (HSES) data and study the relationship consumption and inflation for the households participated in the survey. HSES has been conducted on a regular basis since 2009. At the time of start of this project, the available data was until the end of 2012. Every month, HSES samples over 500 households in urban areas, implying that we have 48-month of data. HSES, however, does not repeat the same households every month – we have the information of over 25000 households. We collect the consumption expenditure of each household in the survey on 123 food items and 10 non-food groups to calculate their consumption shares (or weights). We find that the consumption share of food group gets higher as the level of consumption falls. Each household in the survey reports the price and quantity of food items they purchased. Using the reported prices, we generate the time series of average prices for food items. For non-food groups, we use NSO's monthly CPIs as households only report the total cost of non-food items. We find that the prices of food items are much more volatile and seasonal than non-food groups. Especially those of meat and milk products tend to decrease in the summer months. Using the consumption shares and the price series, we generate the CPI inflation (general, food and non-food) for each households in different time frames – monthly and annual. The results show that households, indeed, faced with different rates of inflation depending on their consumption, especially the consumption share of food group. When the food CPI was less than the general CPI (e.g., in the summer months), households with high food consumption shares benefit more and vice versa. Although there were differences in the monthly and annual rates of inflation across the households, the cumulative inflation rates between January 2009 and December 2012 for the representative households of the quintiles were found to be similar.

Another piece of research we have conducted is to divide all the households in quintiles and study the real consumption of households over time. In doing so, we divide households in each

month into quintiles and obtain the average consumption of food and non-food items – we call it the consumption of a representative household of each quintile. Then we divide the nominal consumption of each representative household by current prices and find the real quantities of all 133 items. By expressing the quantities by a set of constant prices (January 2009 is the base period), we then obtain the real aggregated expenditure. We find that the real consumption of the representative households in all quintiles grew, but the one in quintile 5 grew at the fastest rate, 0.42 percent per month after fitting exponential functions to the data. The real consumption of quintile 1 grew faster (0.26 percent per month) than those in quintiles 2 (0.17 percent), 3 (0.18 percent) and 4 (0.19 percent). One might say that the gap between the rich and the others will grow and the poor might catch up with those in quintile 2 in terms of their real consumption. This answers that although there could be a difference in the rates of inflation in the short-run due to seasonality, the rates of inflation in the long-run seem to be similar. These growth rates are, however, quite questionable as the R^2 of each regression equation is very low.

The paper is organized as follows. Section 2 presents the data and its summary statistics. Section 3 briefly discusses the methodology used in the analyses. Section 4 has various consumption shares of goods and service – e.g., annual and monthly aggregate and household specific. Section 5 has the prices of goods and services. Section 6 discusses the relationship between consumption and the rate inflation. Section 7 has the results based on real consumption analyses and Section 8 concludes the paper.

2. Data

We employ the data from the HSES, which has been conducted on a regular basis since 2009, as the main source of information to examine the effect of inflation on households.² It is conducted on a yearly basis covering over 12000 households in both rural and urban areas. In this research, we only consider urban (Ulaanbaatar and aimag centers) households (over 6200) due to a time constraint and 67.2 percent of population live in urban areas so that leaving rural households for future research.

Data availability allows us to consider the HSES data for the period of 2009-12. In the HSES, households report their consumption on about 500 goods and services of which 122 is food items.³ They report the quantities and prices of food items they purchased, but the total cost of non-food items rather than prices and quantities. In the following table, we show the overview of the data (the number of households and monthly average consumption expenditure per household) being considered in this research. As can be seen, the average nominal consumption per household increased over time. We find that the standard deviations are greater than the average, implying that the distribution is right-tailed – i.e., there are a few households with very high level of consumption in each year.

² The objectives of the HSES are to determine the subsistence level of population and poverty, to calculate household income and expenditure and to renew the goods and services in the consumption basket and their related weights.

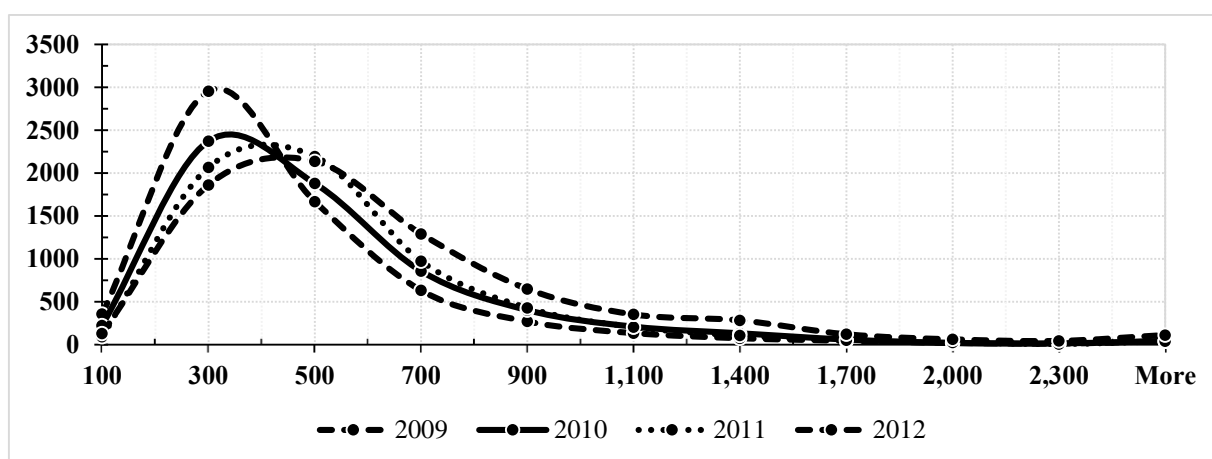
³ There were 495 goods and services (of which 122 is food items) in the 2009-11 questionnaire but increased to 506 (123 food items) in 2012.

TABLE 1. HSES OVERVIEW

Year	Number of households	Monthly nominal consumption expenditure (MNT)			
		Average	Max	Min	STD
2009	6,223	397,250	32,884,038	2,500	798,315
2010	6,211	453,434	30,188,541	4,800	687,457
2011	6,205	477,705	30,175,222	16,700	672,227
2012	7,051	610,147	60,720,097	1,300	1,259,590
Total	25,690				

To expose the information in Table 1, we show the distribution of nominal monthly consumption expenditure per household for the period of 2009-12 in the following figure.

FIGURE 1. HOUSEHOLD NOMINAL CONSUMPTION EXPENDITURE HISTOGRAM (HOUSEHOLD NUMBERS, THOUSANDS MNT)



According to Figure 1, the entire distribution shifted to the right. For example, most households (over 2000 households out of over 6000) had nominal consumption of 100-300 thousand MNT in 2009 while it increased to 300-500 thousand MNT in 2012.

The level of monthly consumption reported by households is measured by expenses on those 495 and 506 goods and services in 2009-11 and 2012 respectively according to the survey questionnaires. There are 122 and 123 food items respectively and the rest are non-food items.⁴ Table 2 has the aggregate consumption shares of food and non-food groups for all households in each year. One may conclude that the consumption share of food group was more or less the same around 37 percent over the four-year period.⁵

⁴ NSO has used 329 specific goods and services in the consumption basket to calculate the CPI inflation in urban areas since 2012. That number was 287 before 2012. Our research, on the other hand, is based on all the goods and services in the questionnaire consumed by particular households in particular months rather than those used by NSO for its CPI calculation. Consequently, one should expect differences in the CPIs calculated by us and NSO.

⁵ By contrast, the consumption share of food group in urban areas calculated by NSO in those 4 years was between 27.7 and 33.3 percent.

TABLE 2. CONSUMPTION STRUCTURE OF AN AVERAGE HOUSEHOLD⁶

	2009	2010	2011	2012
Total consumption expenditure (%)	100.0	100.0	100.0	100.0
Food	36.4	35.8	40.8	37.2
Purchased	35.8	35.2	38.0	34.2
Received from others free of charge	0.4	0.4	2.5	2.9
Foodstuff, which consumed from private farm and enterprise	0.3	0.2	0.3	0.1
Non-food	63.6	64.2	59.2	62.8
Purchased	61.2	61.7	57.0	59.3
Received from others free of charge	2.4	2.5	2.2	3.4

Also from Table 2, we see that purchased expenses account for the most in both food and non-food expenses. The consumption share of gifts and benefits in non-food expenses was relatively stable while that in food expense increased noticeably in last two years. In the following analyses, we focus only on the purchased expenses.

3. Methodology

We follow the NSO’s “Method of calculating CPI” to calculate household specific CPIs which takes the following steps:

1. Allocate goods and services consumed by households into 122 food items and 10 non-food groups – i.e., we consider 132 items in total. The reason for considering 10 non-food groups is that households report on their expenditure rather than quantity and price of non-food items. Since there is no other source than the NSO’s non-food CPIs, we aggregate non-food items into 10 groups as in the survey.
2. Calculate the consumption shares, W_{ij} for $i = 1, \dots, 132$ and $j = 1, \dots, N$ where N is the number of households in the sample period.
3. Calculate the price indices of 132 items, P_i by using individually reported food prices in the HSES and the NSO’s non-food CPIs.

The general CPI_j for an individual household j is then calculated by the following formula:

$$CPI_j = \sum_{i=1}^{132} W_{ij} P_i \quad j = 1, \dots, N \quad (1)$$

where $\sum_{i=1}^{132} W_{ij} = 1$ for each j .

Decomposing Eq. (1) it into the food and non-food groups, we have:

$$CPI_j = \sum_{k=1}^{122} W_{kj} P_k + \sum_{i=1}^{10} W_{ij} P_i, \quad j = 1, \dots, N \quad (2)$$

where W_{kj} is the consumption share of food item k , P_k is the price index of food item k which is based on the average of the reported prices by households, W_{ij} is the consumption share of

⁶ Average household size is 3.8 and 3.7 in 2009-2010 and 2011-2012 respectively.

ERI Discussion Paper Series No. 4

non-food group item i and P_i is the NSO's price index of i . The condition $\sum_{k=1}^{122} W_{kj} + \sum_{i=1}^{10} W_{ij} = 1$ must be met. Another way to look at the above formula is that 2 food groups out of 12 in the usual NSO's CPI calculation are disaggregated into 122 items and the remaining 10 subgroups are non-food which are considered as aggregate in our study.

In addition to the general CPIs for all households, we consider the relationship between the food CPI inflation and the general CPI inflation for each household. First, we decompose the consumption expenditure of each household, TC_j , into food expenses, C_j^{food} , and non-food expenses, $C_j^{non-food}$, as follows:

$$C_j^{food} + C_j^{non-food} = TC_j, \quad j = 1, \dots, N \quad (3)$$

Dividing both sides of Eq. (3) by TC_j and considering the price percentage changes in each group, we derive the following expression:

$$\pi_j = s_j^{food} \pi_j^{food} + s_j^{non-food} \pi_j^{non-food} \quad (4)$$

where π_j^{food} is the food price inflation rate, $\pi_j^{non-food}$ is the non-food price inflation rate, π_j is the general CPI inflation rate and $s_j^{food} = \frac{C_j^{food}}{TC_j}$ is the consumption share of food group and

$s_j^{non-food} = \frac{C_j^{non-food}}{TC_j} = 1 - s_j^{food}$ is the consumption share of non-food group for household j .

From Eq. (4), we obtain the following relationship between the general inflation rate and the consumption share of food group:

$$\frac{\partial \pi_j}{\partial s_j^{food}} = \left(\pi_j^{food} - \pi_j^{non-food} \right) \begin{matrix} > \\ < \end{matrix} 0 \quad (5)$$

According to Eq. (5), whether the relationship between π_j and s_j^{food} is positive or negative depends on whether π_j^{food} is greater or lower than $\pi_j^{non-food}$. Suppose that $\frac{\partial \pi_j}{\partial s_j^{food}} > 0$. This

implies that as the food share in consumption expenditure increases, the CPI inflation rate tends to be higher if households face with higher food price inflation than non-food price inflation. Alternatively, households with higher shares of food consumption tends to face with higher price inflation if the food price inflation rate is higher than that of non-food group.

4. Consumption shares of goods and services

As mentioned earlier, we consider all the goods and services in the HSES questionnaire rather than 329 specific items used by the NSO for the calculation of its CPI inflation. The HSES had 122 food items and 373 non-food items in 2009-11, but 123 and 383 in 2012.

NSO uses 2010 as the base (reference) year and takes the aggregate consumption shares or weights of 329 goods and services in 2010 HSES. We, on the other hand, calculate monthly, yearly aggregate and household specific consumption shares from the survey.

Inflationary pressure on households

In the following table, we show the aggregate consumption shares of 12 major groups of goods in 2009-12 obtained from the total purchased consumption of goods and services in the HSES.

TABLE 3. COST STRUCTURE OF PURCHASED CONSUMPTION (BY 12 MAJOR GROUPS OF GOODS)

		2009	2010	2011	2012
Purchased consumption (%)		100	100	100	100
1	Food and non-alcoholic beverages	35.6	35.2	38.9	35.2
2	Alcoholic beverages and tobacco	1.3	1.2	1.2	1.4
3	Clothing, footwear and cloth	6.7	7.9	7.4	8.2
4	Housing, water, electricity and fuels	9.0	8.6	9.1	9.2
5	Furnishings, household equipment and tool	2.5	2.6	2.5	3.1
6	Health, medical care and services	2.8	3.0	2.9	3.3
7	Transport	8.5	8.3	7.9	13.2
8	Communication	8.5	8.5	7.7	8.7
9	Recreation and culture	1.9	1.8	1.7	2.0
10	Education	2.3	1.8	1.7	1.3
11	Restaurants and hotels	2.9	3.1	2.7	0.1
12	Miscellaneous goods and services	18.1	18.2	16.4	14.2

“Food and non-alcoholic beverages” accounts for around 35 percent. In 2012, the consumption share of “Transport” increased sharply to 13 percent. The reason is that the number of vehicles purchased by households in 2012 and related consumption of fuel increased dramatically. The reason why the consumption share of “Restaurants and hotels” decreased to 0.1 percent in 2012 is that spending in restaurants, cafes and refectories at schools and work places decreased sharply for some reason. In addition, the consumption share of “Miscellaneous goods and services” stayed constant at 18 percent in 2009-10 but fell continuously to 14 percent in 2012. For the other major groups, the consumption shares remained rather stable over the four years.

Looking closely at “Food and non-alcoholic beverages” by sub-groups (Table 4), we find:

- ✓ The share of “Meat and related products” increased from 28 percent to 40 percent between 2009 and 2012.
- ✓ The share of “Bread, flour and rice” fell from 29 percent in 2009 to 21 percent in 2012.
- ✓ Other sub-groups kept their shares more or less the same.

TABLE 4. STRUCTURE OF FOOD GROUP (BY SUB-GROUPS)

		2009	2010	2011	2012
Purchased consumption (%)		100	100	100	100
1. Food and non-alcoholic beverages		96.5	96.8	97.1	96.3
1.1	Bread, flour, rice	28.9	26.7	25.0	21.4
1.2	Meat and related products	28.0	31.2	31.7	39.6
1.3	Milk and related products	11.6	11.5	12.0	11.2
1.4	Oil, vegetable oil	5.5	4.7	4.0	3.4
1.5	Fruits	2.3	2.5	3.1	2.9
1.6	Vegetables	9.2	9.2	9.0	7.3
1.7	Sugar, jam, sweets, chocolates	5.2	4.9	5.7	4.7
1.8	Other food items	1.6	1.5	1.5	1.0
1.9	Non-alcoholic beverages	4.2	4.5	5.0	4.8

ERI Discussion Paper Series No. 4

2. Alcohol beverages and tobacco	3.5	3.2	2.9	3.7
2.1 Alcohol beverages	1.8	1.8	1.6	1.5
2.2 Tobacco	1.7	1.4	1.3	2.2

We also divide the total number of households in 2012 into quintiles in terms of their consumption and summarize the consumption shares of the 12 major groups of goods and services (Table 5).⁷ As can be seen, the consumption share of “Food and non-alcoholic beverages” for the lowest consumption quintile (Q1) is around 60 percent while that of the highest consumption quintile (Q5) is about 23 percent. Except for the likes of “Food and non-alcoholic beverages”, “Housing, water, electricity and fuels”, “Alcoholic beverages and tobacco” and “Communication”, the consumption shares of other groups tend to increase with the level of consumption.

**TABLE 5. COMPOSITION OF CONSUMPTION BY HOUSEHOLD QUINTILES
(CONSUMPTION SHARES, 2012)**

	Q1	Q2	Q3	Q4	Q5
1 Food and non-alcoholic beverages	60.2	56.1	50.7	43.5	23.2
2 Alcoholic beverages and tobacco	2.0	2.1	1.9	1.8	1.0
3 Clothing, footwear and cloth	3.1	4.8	6.4	8.2	11.7
4 Housing, water, electricity and fuels	12.3	12.4	11.8	10.7	7.8
5 Furnishings, household equipment and tool	2.6	2.2	2.1	2.3	4.5
6 Health, medical care and services	1.9	2.2	2.6	3.2	4.5
7 Transport	1.6	2.6	4.5	8.1	15.3
8 Communication	9.6	10.6	11.2	10.3	7.9
9 Recreation and culture	0.7	1.0	1.2	1.5	3.3
10 Education	0.0	0.0	0.0	0.2	2.9
11 Restaurants and hotels	0.0	0.0	0.1	0.1	0.2
12 Miscellaneous goods and services	5.8	6.1	7.5	10.1	17.7

In general, one may conclude that there is a significant negative relationship between the consumption share of food group and the level of consumption. This result is consistent with the findings of Hymans and Shapiro (1976) and De Hoyos and Lessem (2008). The former finds that 50 percent of income of poor households spend on food consumption while the highest income households spend 3/10 of their income on food. Based on households of different countries, the latter confirms a negative relationship between food consumption share and household income.

5. Price indices of goods and services

This section has two parts. The first part deals with the reported prices of food items in the HSES by collecting, obtaining the averages, calculating the standard deviations and filling any missing information. The second part discusses the rationale for using NSO’s CPI inflation of non-food groups.

5.1. Food CPIs

Households in the HSES report the prices of food items in the survey questionnaire. We collect those prices from the survey and calculate the monthly average price of each food item.⁸ In

⁷ See Appendix 1 for the same calculations for the other years.

⁸ As mentioned earlier, households in the HSES report only the cost of non-food items.

collecting and processing the price data, we find that there were no reported prices for some food items in some months as the households in the survey did not consume them.⁹ These items are given in Table 6 together with their aggregate consumption shares.

**TABLE 6. CONSUMPTION SHARE OF GOODS,
MISSING PRICE INFORMATION**

Food items	2009	2010	2011	2012
1 Pizza - Piece	0.04	0.10	0.17	0.22
2 Game - kg	0.01	0.32	0.18	0.01
3 Dried, smoked, salted fish - kg	0.01	0.01	0.01	0.01
4 Other fish and seafood - kg	0.01	0.01	0.02	0.01
5 Dried eggs - kg	0.00	0.00	0.00	0.00
6 Olive oil - lt	0.03	0.02	0.04	0.03
7 Other oils and fats - kg	0.01	0.01	0.01	0.01
8 Wild nuts,kg - kg	0.01	0.16	0.08	0.04
9 Sugar substitution - gr	0.00	0.00	0.01	0.00

To fill the gap in the time series of such prices, we use the following corrections:

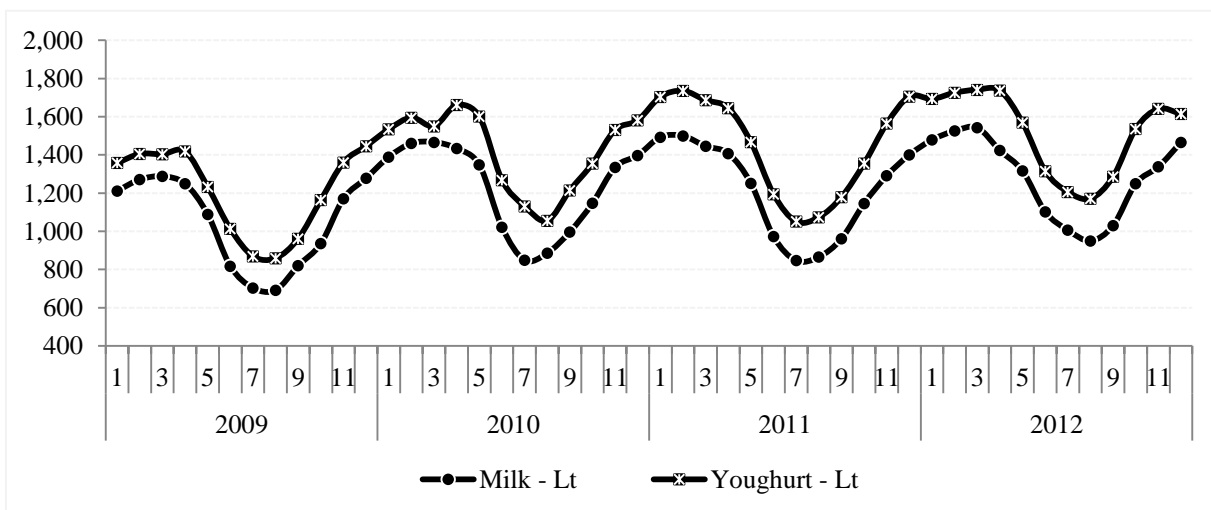
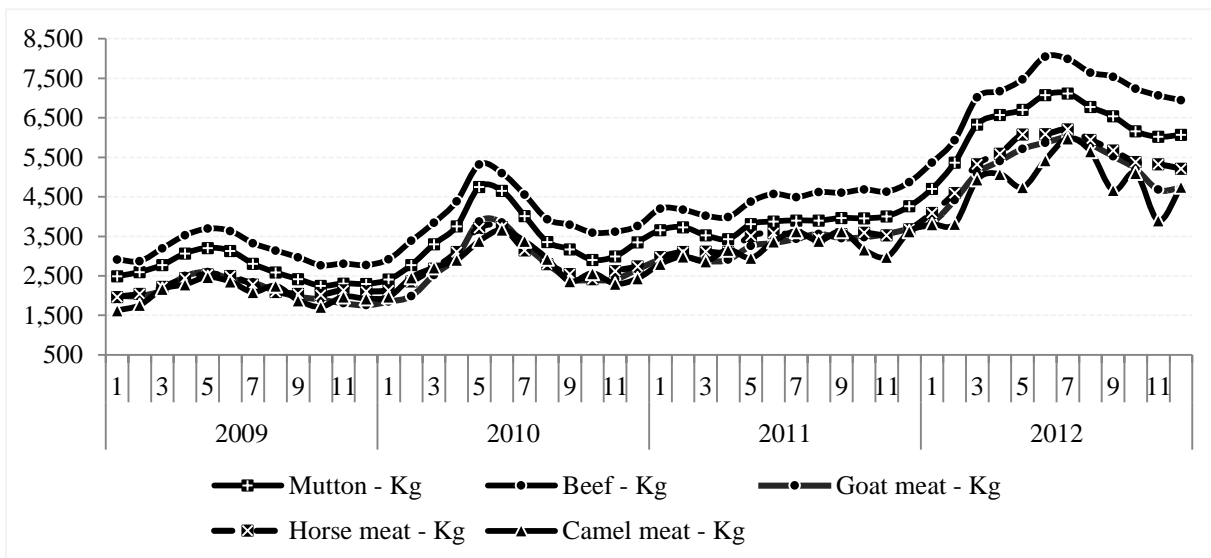
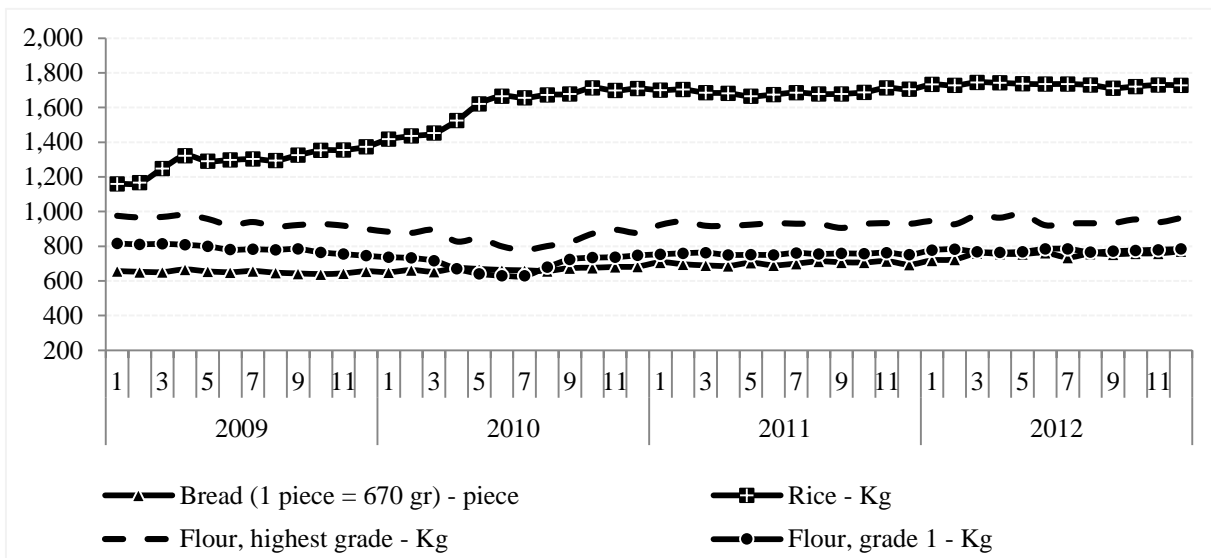
- 1) If those goods have counterparts in the NSO's consumption basket, we use the monthly price indices reported by NSO for those items.
- 2) If those goods do not have counterparts in the NSO's consumption basket, we simply assume that the prices of those did not change over the missing month from the previous month.
- 3) For the yearly analyses, we substitute the NSO's general CPI inflation for them.

It is worthwhile emphasizing that these food items account for small shares in the consumption of an average household. For that reason, changing the above corrections would not make a significant difference in the results.

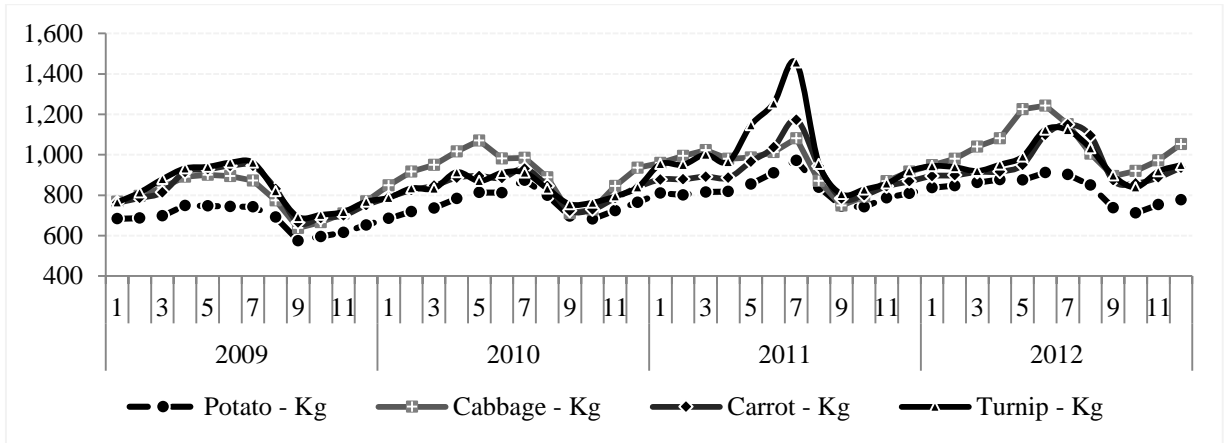
In the following figure, we show the dynamics of the average prices of selected food items for 2009-12.

⁹ For example, the average reported price of milk was 1044 MNT per liter in 2009 and increased by 22 percent to 1276 MNT in 2012. The price of yogurt increased by approximately 25 percent. The price meat showed a dramatic increase. In 2009, mutton was 2663 MNT per kg and increased to 6354 MNT in 2012. Beef price showed 2.2 fold increase over the same period and reached 7169 MNT per kg.

FIGURE 3. PRICE DYNAMICS OF SELECTED FOOD ITEMS (MNT)



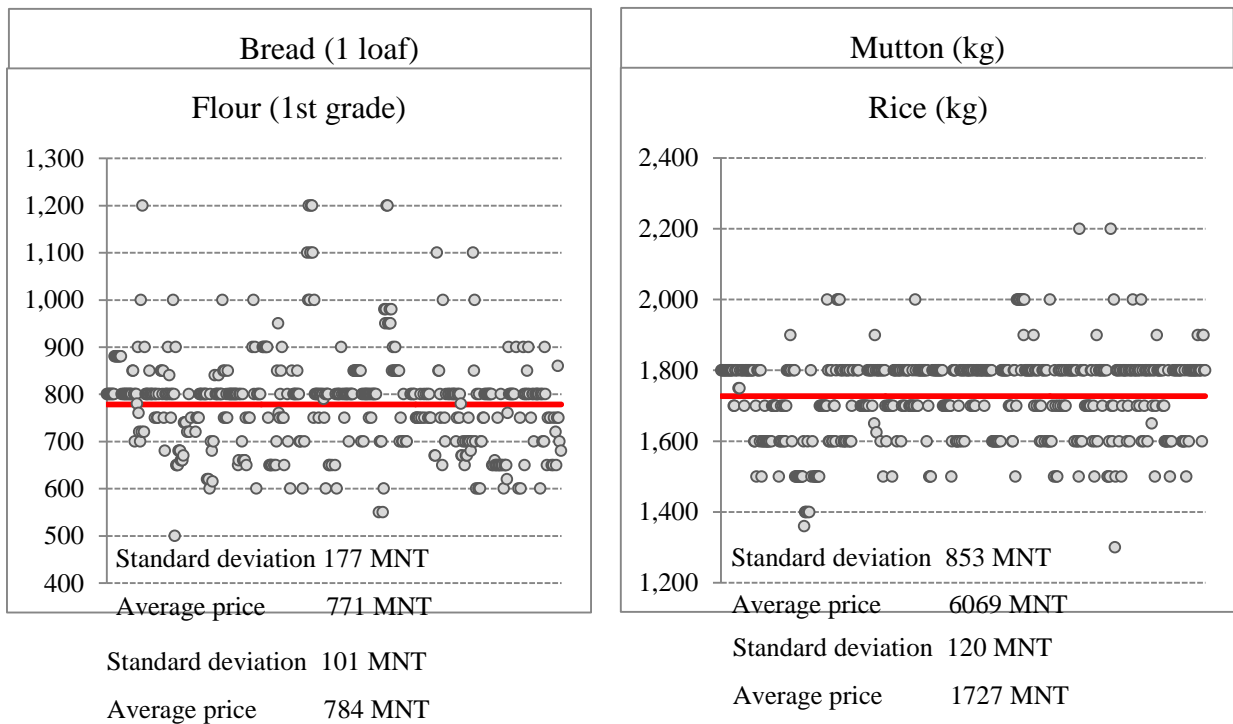
Inflationary pressure on households



From Figure 3, we can clearly see the seasonality of milk and meat products and vegetables as well their time trends.

To calculate monthly CPI inflation, NSO follows a specific procedure in collecting price data – i.e., the prices of certain items are collected from certain market places at certain times. Our reported prices, on the other hand, could be noisy as being reported by individuals who purchased goods and services with different quality at different places and at different times over the month period. For this reason, we examine the price data to see if we could use the average prices for our further analyses. We calculate the standard deviation of the prices for each food items and find that the results are reasonable enough to use the average prices for the further analyses. Below we show some examples.

FIGURE 4. REPORTED PRICES OF SOME PRODUCTS (DEC 2012, AVERAGE AND STANDARD DEVIATIONS, MNT)

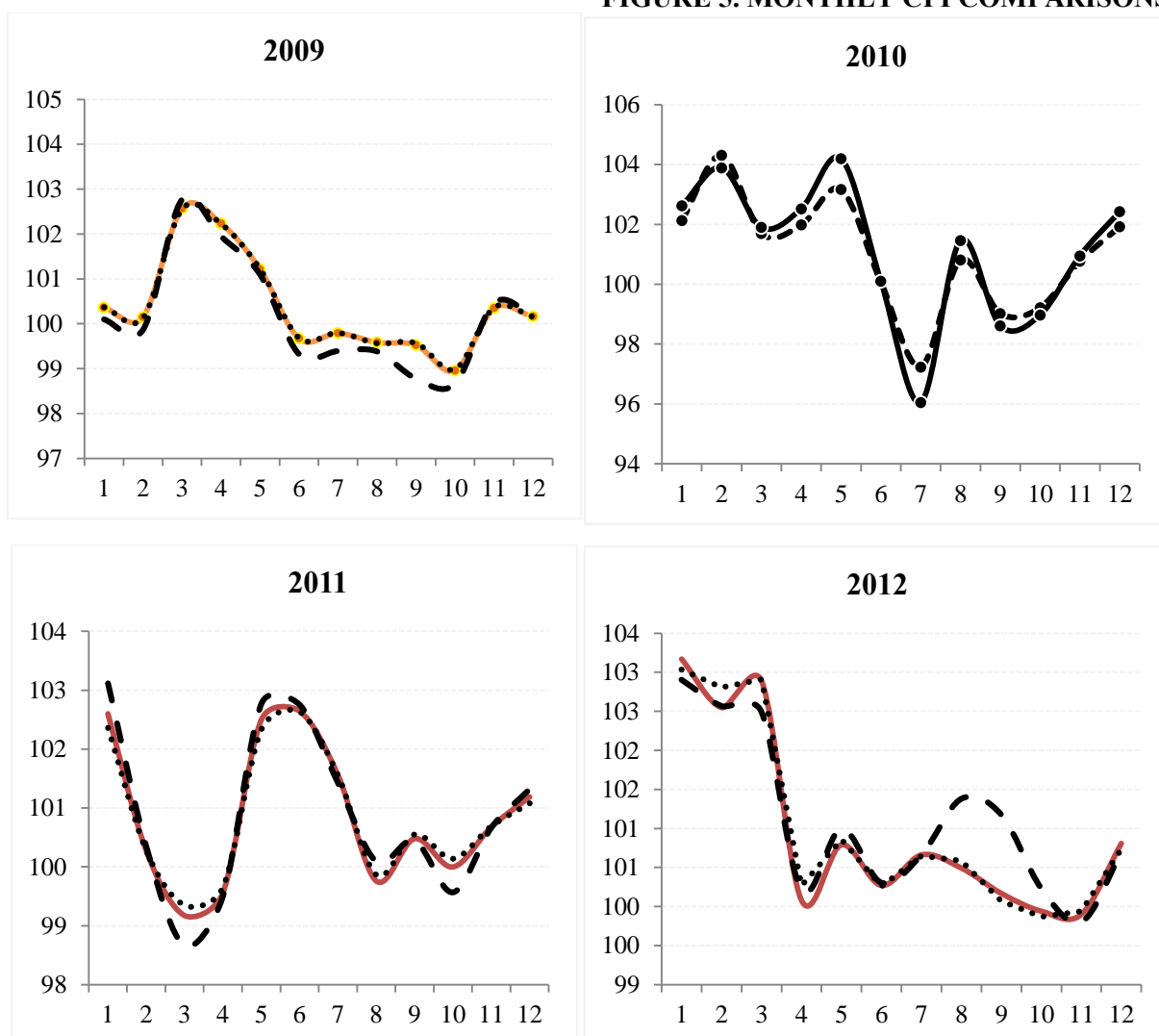


5.2. Non-food CPIs

The HSES does not reflect the prices and quantities of non-food items, instead it collects data on the expenditure. Consequently, we had to find the information about their prices from other sources. In this case, we use the NSO's price indices for 10 non-food groups. However, to examine if the NSO's price indices for the 10 non-food groups can be used for the further analyses, we employ the monthly aggregate consumption shares of all 12 groups (of which 2 are food groups) derived from the HSES together with the NSO's price indices for all 12 groups to calculate monthly CPIs for the 4 years. The results are given in Figure 5 which compares 3 different scenarios.

- a. The dashed line indicates the CPIs calculated by NSO.
- b. The solid line is the CPIs calculated by us on the basis of current year aggregate consumption shares.
- c. The dotted line is the CPIs calculated by us on the basis of the 2010 (the reference year) aggregate consumption shares.

FIGURE 5. MONTHLY CPI COMPARISONS



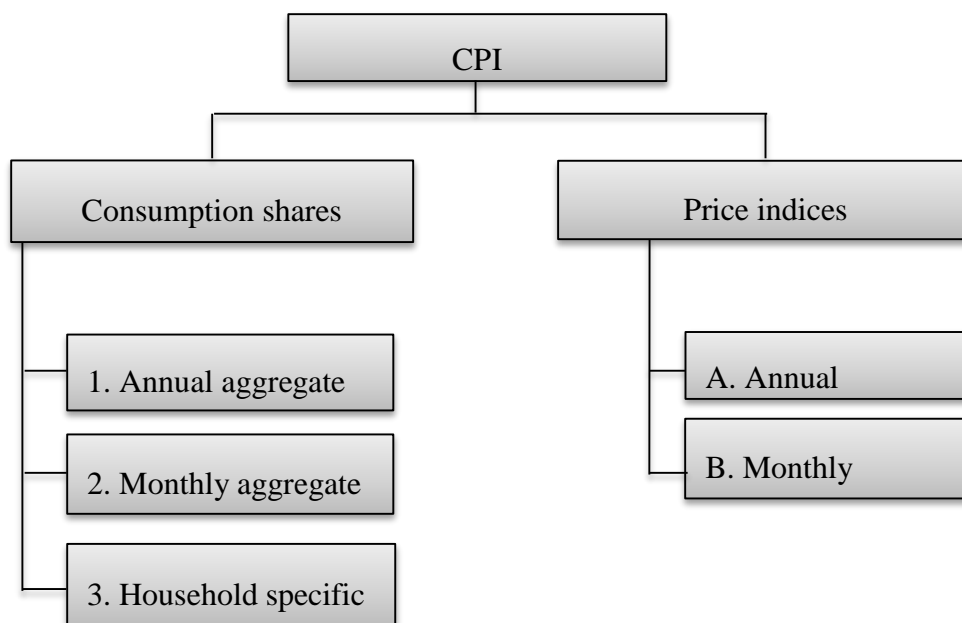
As can be seen from the figure above, the consumption shares did not change much over the 4 years as the solid and dotted lines overlap for most of the time. Since there are no significant

difference in terms of patterns, we use the NSO’s price indices for non-food groups in the further analyses.

6. CPI calculation

In this section, we try to analyze the effect of inflation on households. In doing so, we calculate monthly and yearly CPIs for each household in the survey using various consumption shares – more specifically, annual aggregate, monthly aggregate and household specific. The reason is that the different set of households are selected in each survey. These are summarized in the following figure.

FIGURE 6. CALCULATING CPIS



Clearly, there are many versions of CPIs (A1, A2, B1, B2 and B3) calculated depending on the combinations of the consumption shares and the price indices.

A. Annual inflation

A1. Using the annual changes in the prices and the aggregate annual consumption shares, we calculate the annual average CPI inflation.

A2. Using the consumption shares of each household, we calculate their annual CPI inflation.

B. Monthly inflation

B1. Using the annual aggregate consumption shares as in A1 and monthly changes in the prices, we calculate monthly average CPI inflation.

B2. We calculate the monthly aggregate consumption shares using the consumption of all households in a current month (roughly 600 households) and the monthly CPI inflation.

B3. Using the consumption shares of each household, we calculate their monthly CPI inflation using the price data obtained from the HSES.

Let us now consider these 5 cases individually.

Case A1

ERI Discussion Paper Series No. 4

In this case, we first obtain the annual aggregate consumption shares using the information of all households in a current year survey and then calculate the annual average CPI inflation using the annual changes in the prices. The results, the calculated inflation rates, are given in the following table.

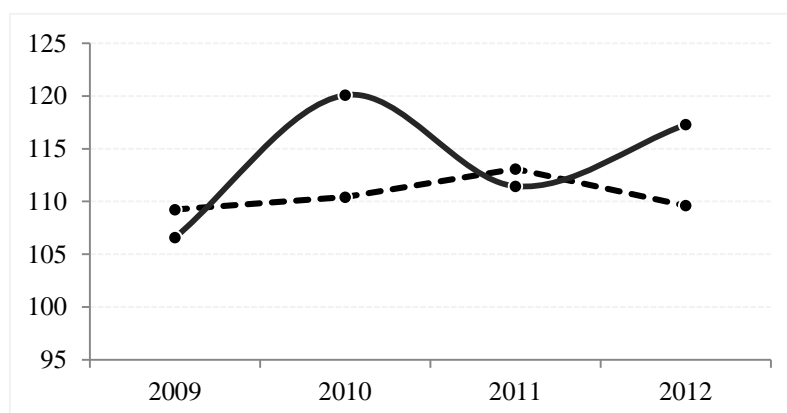
TABLE 7. ANNUAL INFLATION RATES (% , END OF THE YEAR)

Year	2009	2010	2011	2012
Inflation rate	9.2	10.4	13.1	9.6
Inflation rate*	4.2	13.0	10.2	14.0

*Reported by NSO

As can be seen from the results, our annual inflation rates are different from those reported by NSO. The reason for this could be the prices coming from different sources as mentioned earlier. Decomposing the general CPIs further into food and non-food groups, we find the following results in the following figure where the dashed line is for the food CPIs and the solid line is for the general CPIs. In 2009 and 2011, the general CPIs were greater than the food CPI while it is smaller in the other two years. The food CPI was much more volatile than the non-food one so that the general CPI is relatively stable.

FIGURE 7. GENERAL CPI AND FOOD CPI



Case A2

In this case, we calculate annual CPI for each household in the survey (25690 households) using the annual price changes. In doing so, we assume that all households in a particular year (over 6200 households) experience their own consumption shares at the beginning of the year despite the fact that they were selected in different months. The results are summarized in the following table.

TABLE 8. DISTRIBUTION OF INFLATION RATES (BY THE NUMBER OF HOUSEHOLDS)

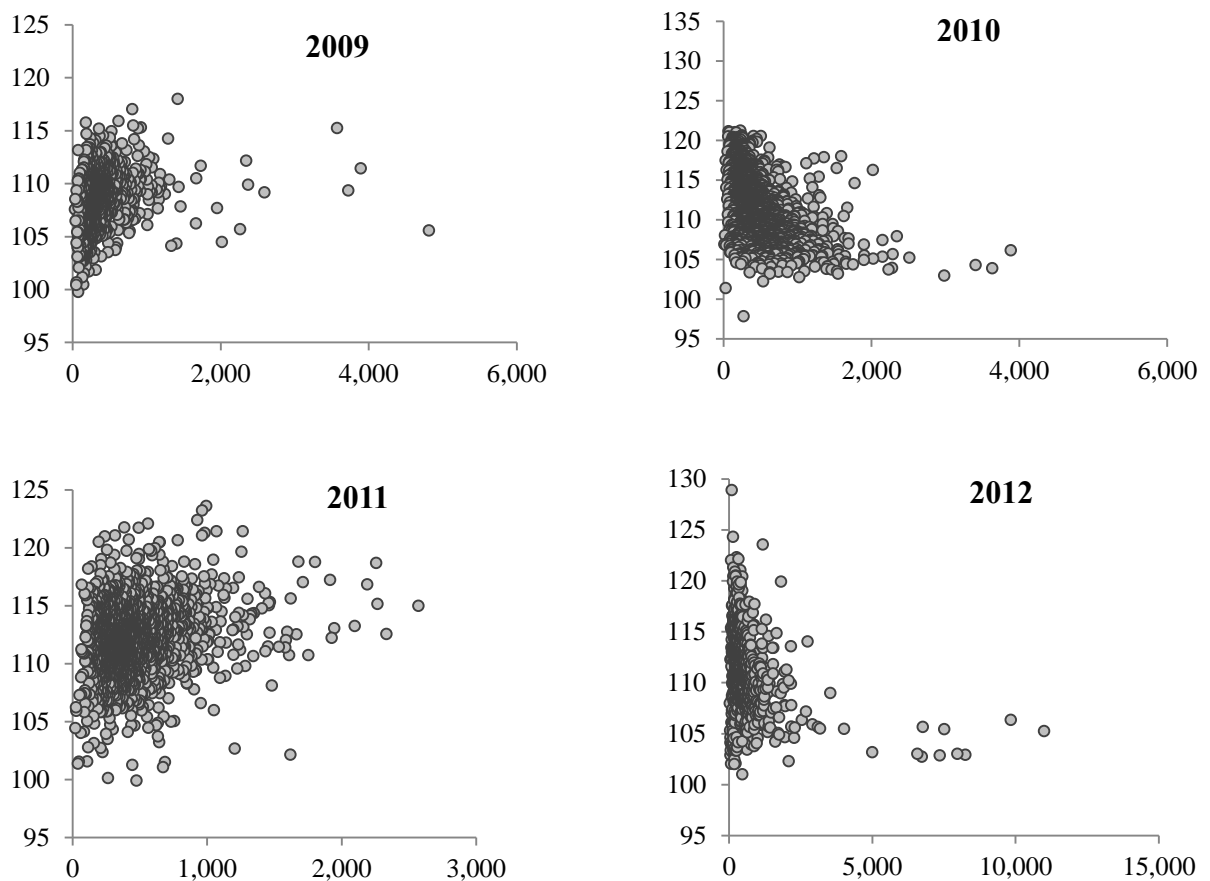
Year	Number of households	Inflation rate (%)				
		< 0	0-6	6.1-10	10.1-15	15.1<
2009	6223	29	1021	3274	1851	48
2010	6211	4	339	1767	2590	1511
2011	6205	7	127	1099	4029	943
2012	7051	2	480	2157	3511	901

In 2009, most households faced with the inflation rate of 6-10 percent while the majority of households experienced the inflation rate of 10-15 percent in the other years. Then the question

Inflationary pressure on households

is about the consumption structure of households who are experiencing different inflation rates. We find that the correlation coefficient of the inflation rates of all households and their consumption expenditure is 0.31 in 2009, -0.47 in 2010, 0.22 in 2011 and -0.28 in 2012 (see the scatter diagrams in Figure 8). It implies that the rich faced higher inflation in 2009 and 2011 while the poor faced higher inflation in 2010 and 2012. This can be explained by Figure 7 in which the general CPI is greater than the food CPI in 2009 and 2011 but lower in 2010 and 2012 with the help of Eq. (5) – i.e., the consumption share of food for the poor is greater than that of richer households. When the poor face higher food price inflation than non-food groups, their general CPI tends to be higher than those of richer households.

FIGURE 8. RELATIONSHIP BETWEEN HOUSEHOLD LEVEL CPIS AND THEIR CONSUMPTION EXPENDITURE (THOUSANDS MNT)



To see how much price inflation households experienced over the four years, we have conducted the following exercise. We first divide households into quintiles in terms of their level of consumption. We then aggregate the consumption expenditure on 122 food items and 10 non-food groups for each quintile. Using the time series of average prices of food items and price indices of non-food groups, we calculate the real quantities of each item consumed by each quintile in the sample period. Then choosing any month as a base period, we form a constant basket of quantities. We calculate the cost of the basket over time. We choose January 2009 as the base period and multiply the quantities in the basket by the corresponding prices in each month. In other words, the quantities in the basket do not change, only the prices change. As one can imagine, the quantities of each food item consumed by households in different quintiles differ reflecting the difference in income and preference. We sum up the nominal cost of the basket and calculate the inflation rates between January and December in each year. We

ERI Discussion Paper Series No. 4

calculate the inflation rate for all households in each year using the same method.¹⁰ In this way, we find the following results.

TABLE 9. ANNUAL CPIS (QUINTILES)

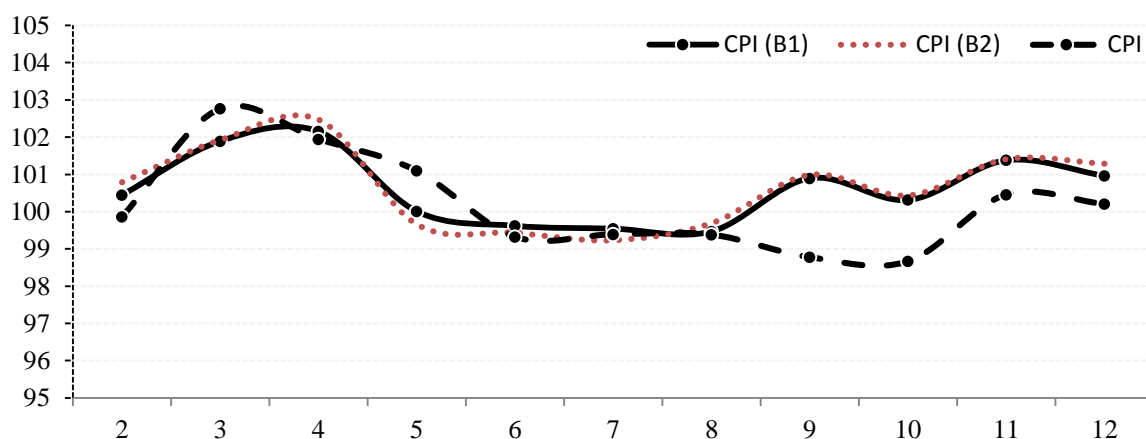
	2009	2010	2011	2012
Quintile 1	3.4	12.1	7.9	9.2
Quintile 2	3.8	11.5	9.6	11.1
Quintile 3	4.6	11.2	9.0	9.7
Quintile 4	5.3	10.4	10.2	11.5
Quintile 5	6.8	7.5	8.4	6.7
All households	5.6	9.4	9.0	9.7

According to the results in the above table, the level of CPIS increased monotonically with quintiles in 2009, decreased monotonically in 2010, but more or less symmetric around the average in 2011 and 2012.

Cases B1 and B2

In these two cases, the monthly average CPI inflation rates are calculated by using annual aggregate and current monthly aggregate consumption shares. Notice that both annual and monthly aggregate consumption shares change over time. We show the results in the following figures graphically in which the solid line (B1) is based on the annual aggregate consumption shares, the dotted line (B2) is based on the current month's aggregate consumption shares and the dashed line is the monthly CPIS reported by NSO. Notice that the former two overlap for most of the time, indicating that there is no significant difference between the annual aggregate and monthly aggregate consumption shares. In all years, it looks as if our calculated CPIS deviate from those of NSO, but the difference is small.

FIGURE 9. MONTHLY CPIS IN 2009



¹⁰ The annual inflation rates for all households calculated in this way is different from those in Table 6 as the methods are different.

Inflationary pressure on households

FIGURE 10. MONTHLY CPIS IN 2010

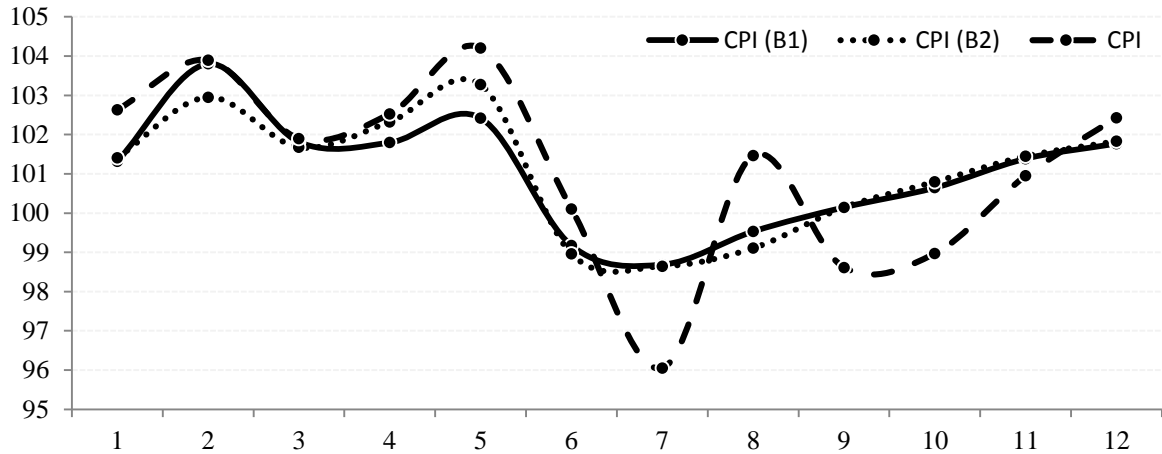


FIGURE 11. MONTHLY CPIS IN 2011

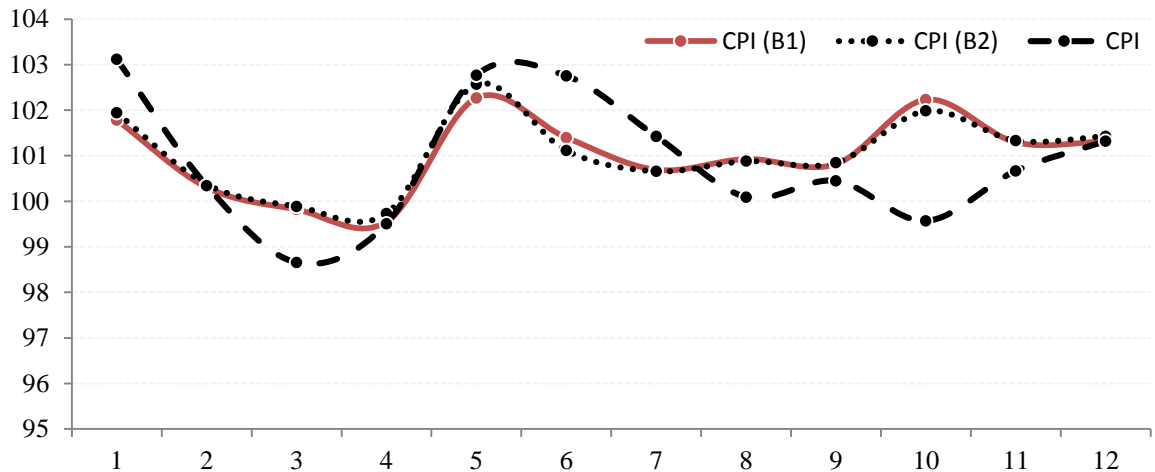
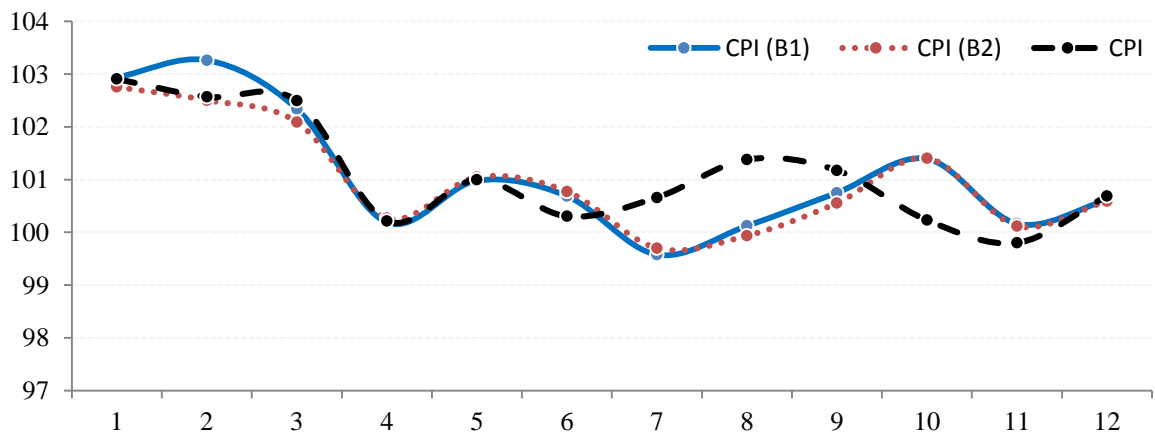


FIGURE 12. MONTHLY CPIS IN 2012

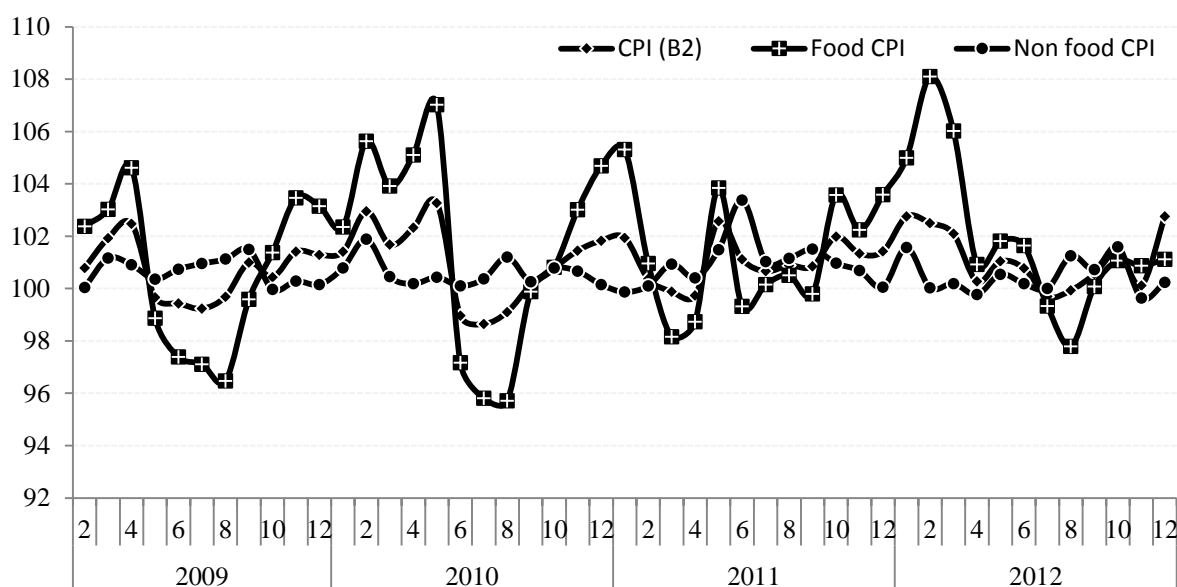


In Mongolia, the food CPI has the highest degree of volatility. The main contributor is the seasonality in the prices of some food items. In the summer and early autumn months (from

ERI Discussion Paper Series No. 4

June to October), the food CPI tends to decrease and become lower than the non-food CPI so that the general CPI tends to be higher than the food CPI. The reason is that the prices of meat, milk products and flour which have high consumption shares tend to decrease in these months (see Figure 3). In the following figure, we show the monthly general, food and non-food CPIs over the whole sample period (48 months) using the monthly consumption shares. As can be seen, the dashed line (the food CPI) is much more volatile than the dotted line (the non-food CPI) so that the general CPI (the solid line) takes the weighted average of these two.

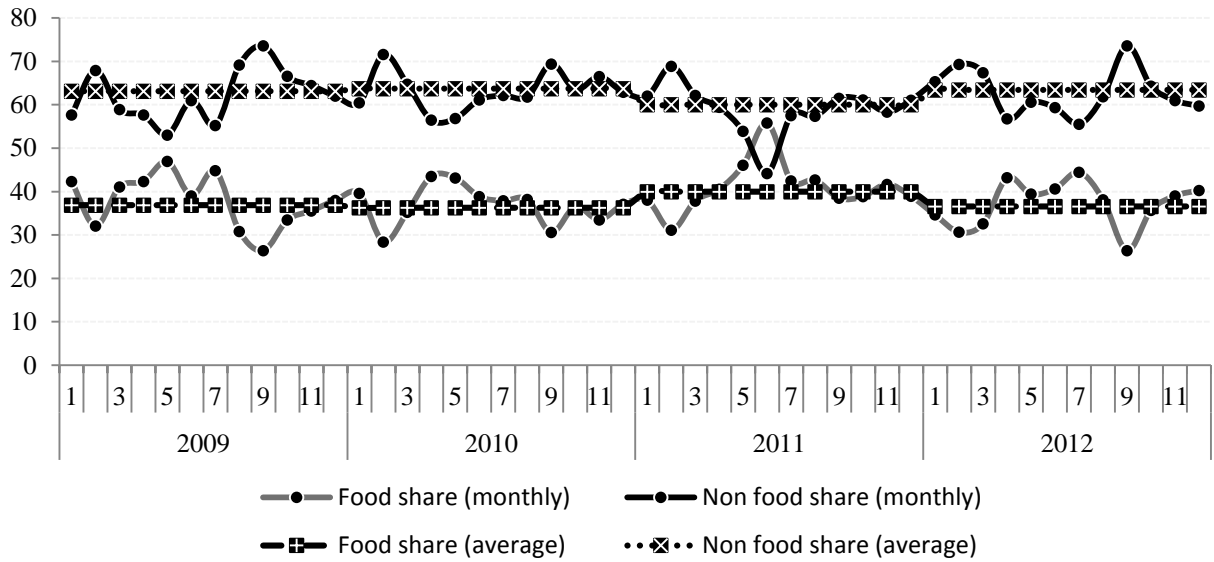
FIGURE 13. MONTHLY GENERAL, FOOD AND NON-FOOD CPIS



There is a strong co-movement in the food and general CPIs, indicating that the food prices are important for households. In addition, the food CPI is most likely to be leading the general CPI as containing cyclically exogenous elements. Moreover, changes in the consumption shares can be contributing to the food, non-food and general CPIs in the above figure. In the following figure, we show the monthly aggregate consumption shares of food (grey line) and non-food (black line) groups. According to these, the average (trend) shares (the dotted line is for the non-food group and dashed line is for the food group) are fairly stable over the period while the actual shares are highly cyclical and seasonal. As being summed to unity, the share of one group increases (decreases), the other falls (increases). It looks as if the consumption share of the food group tends to fall below the trend in February and September but go over the trend between April and August and be around the trend in the other months for all 4 years. The reason for the lower consumption share of the food group in February and September could be Tsagaan Sar (Mongolian New Year celebration) and the school year. Without such increases in non-food consumption, the average or the trend consumption share of the food group would be higher and close to its values in the other months.

Inflationary pressure on households

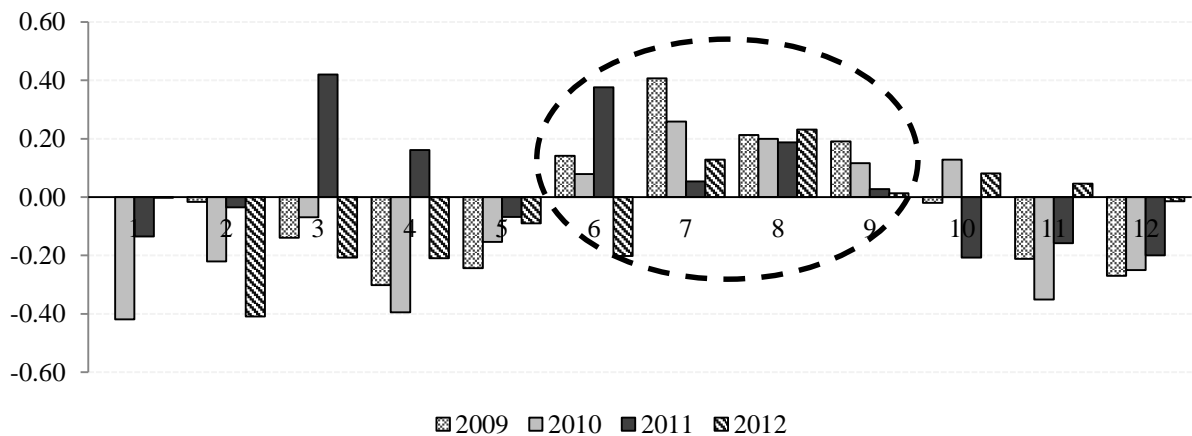
FIGURE 14. MONTHLY AGGREGATE CONSUMPTION SHARES OF FOOD AND NON-FOOD GROUPS



Case B3

Using the consumption shares of each household, we calculate their monthly CPI inflation. More specifically, we calculate the consumption shares of each item for the households selected in each month. Then we use the price changes between the month in which they were selected and the following month to calculate their monthly CPIs. The following figure shows the monthly correlation coefficients between the household specific CPI inflation rates and the level of consumption for all 4 years.

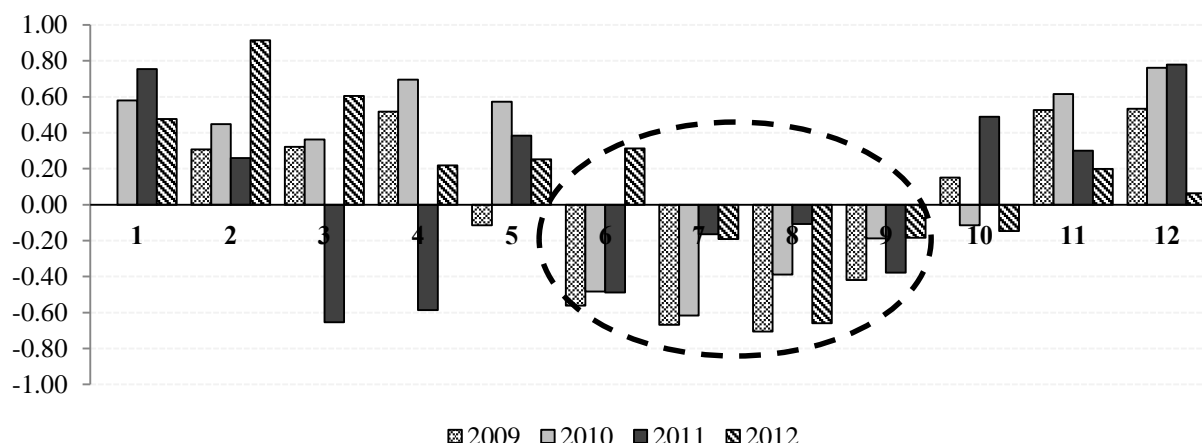
FIGURE 15. CORRELATION COEFFICIENTS BETWEEN HOUSEHOLD CPI INFLATION AND CONSUMPTION



Although it is not strong, the correlation coefficient between the level of consumption and the household specific monthly CPI inflation rate is between -0.5 and 0.5 depending on the season. In the summer months, the correlation tends to be positive while negative in the other months.

In the following graph, we show the correlation coefficients between the household specific monthly CPI inflation rates and the consumption shares of food group of all households.

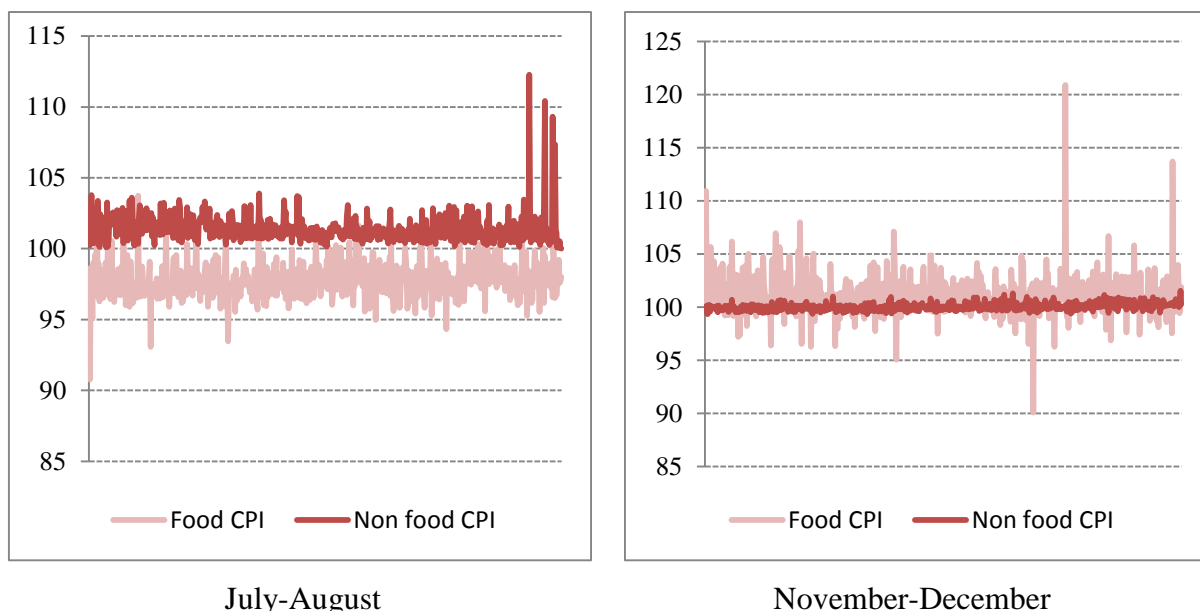
FIGURE 16. CORRELATION BETWEEN HOUSEHOLD CPI AND THE CONSUMPTION SHARE OF FOOD GROUP



As you see, the household specific CPI inflation rates are highly correlated with the consumption share of food group – i.e., the correlation coefficients range between -0.7 and 0.8 depending on the season. In the summer months, the correlation tends to be negative, implying that households with high food consumption shares face with low CPI inflation and vice versa.

The seasonal effects can be seen more clearly from the following figure which has the food and non-food CPIs of all households in those months of 2012. For all households, the non-food CPIs are higher than the food CPIs between July and August while it is the opposite between November and December.

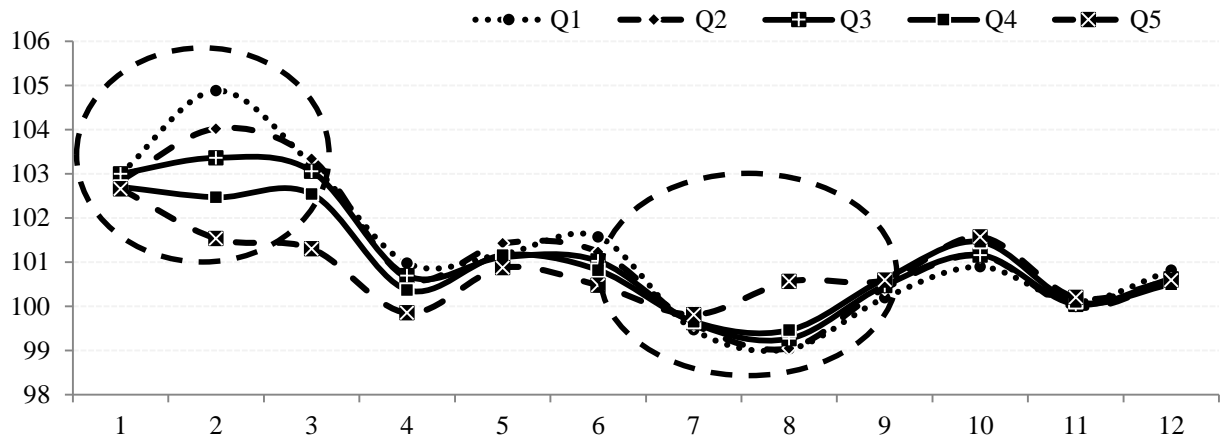
FIGURE 17. HOUSEHOLD SPECIFIC MONTHLY FOOD AND NON-FOOD CPIS (2012)



We also calculate the CPIs of quintiles using the monthly price changes. The following figure shows the monthly CPIs for each quintile in 2012 (see Appendix 2 for the other years). In this particular case, poor households experienced the highest price inflation for the first 3.5 months of the year. In addition, the inflation rates for all quintiles were the highest in these months of the year compared to the other months. In the following months, the difference in inflation facing households shrunk, but lower quintiles faced lower inflation between July and mid-October.

Inflationary pressure on households

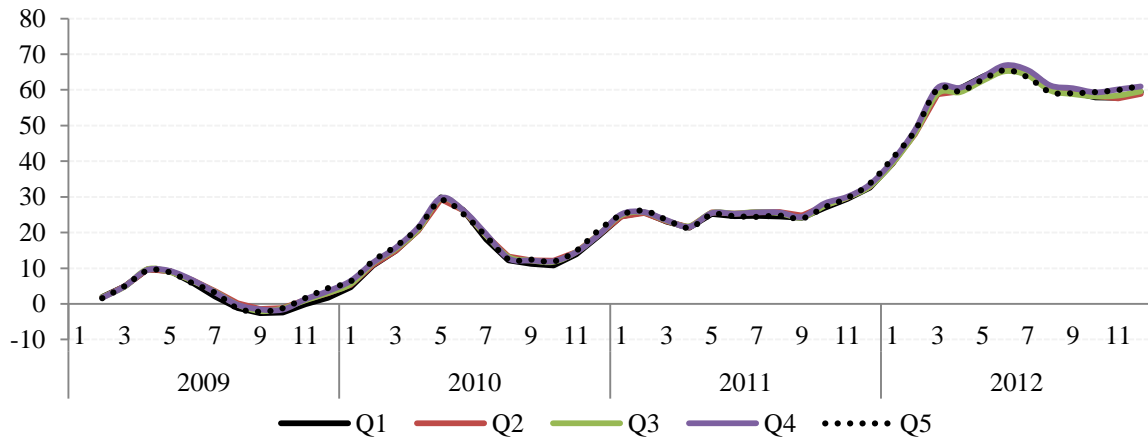
FIGURE 18. MONTHLY CPIS FOR QUINTILES (2012)



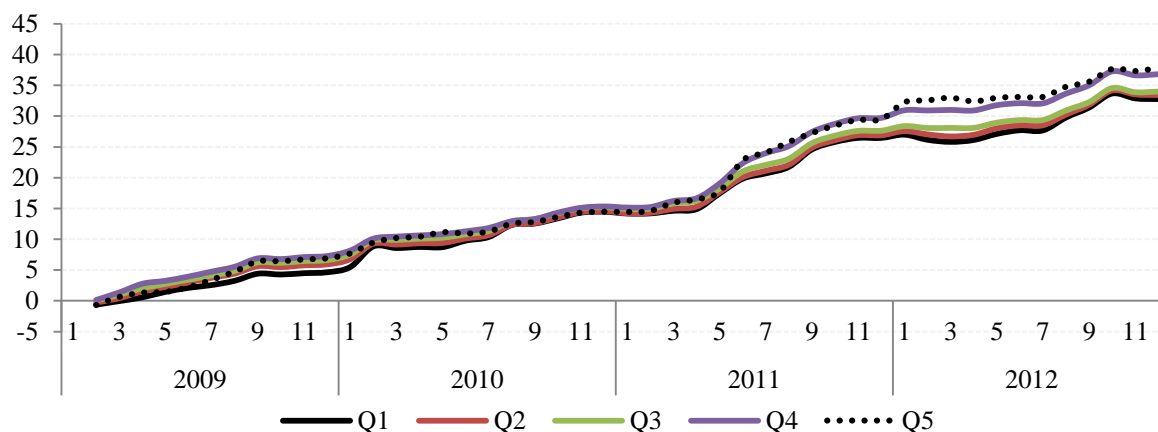
Although there is a difference in monthly and annual CPIS across quintiles, one would be interested in the cumulative measure of inflation between January 2009 and December 2012. Below we show the food, non-food and general cumulative CPI inflation rates for quintiles. As can be seen, households experienced more or less the same rate inflation over the four year period.

FIGURE 19. FOOD, NON-FOOD AND GENERAL CUMULATIVE CPI INFLATION RATES

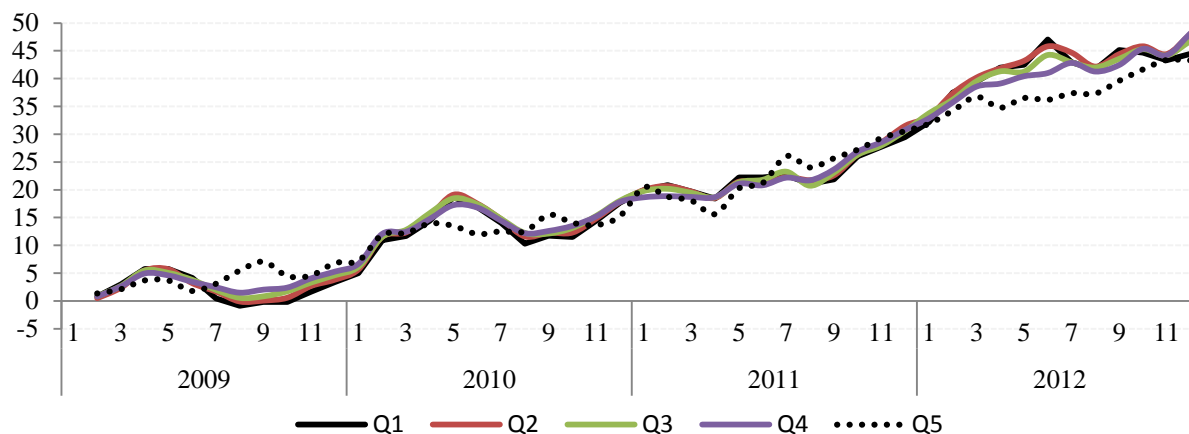
Food price inflation



Non-food CPI inflation



General price inflation



Insofar, we have found the following results:

1. There is a negative relationship between the level of consumption and the consumption share of food group.
2. For the months between June and October, food CPI falls, leading to a decrease in the general CPI while the opposite is observed in the other months.
3. Given the above two, the lower is the quintile, the lower will be the inflation rate in the summer months as their consumption share of food group is higher.
4. Despite monthly and annual differences in the CPI inflation rates across households, there seems to be a mechanism which leads to a similar cumulative inflation rate for all quintiles between January 2009 and December 2012 – roughly 45 percent.

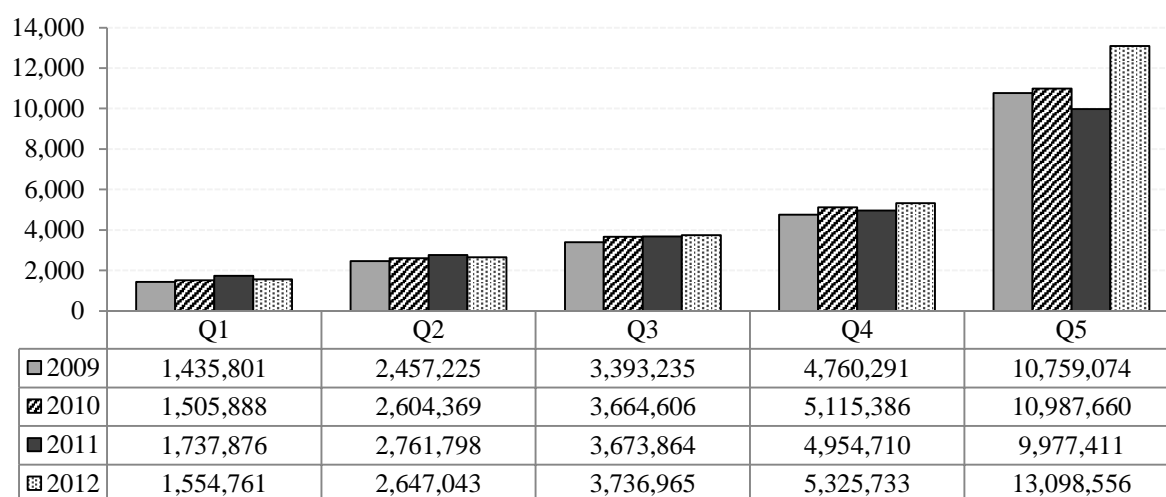
7. Real consumption

So far we have calculated the CPIs for all households and quintiles in the survey. In this section, we consider the real consumption of quintiles. In doing so, we divide households in each month into quintiles, aggregate their consumption by goods and find the consumption of an average (representative) household of each quintile on all items. Households are not repeatedly selected

Inflationary pressure on households

but we are focusing on the consumption of an average household in each quintile. Dividing the nominal consumption of the representative household in each quintile by the actual prices, we can obtain the real quantities of each item consumed by her in each month. We then multiply the quantities of the representative household in each quintile in all 48 months by the set of prices observed in January 2009 (which is considered as the base period). Summing up the consumption expenditure on goods and services expressed by the same prices enables us to calculate the growth rate of the real consumption of representative households. In the following table, we show the annual real consumption of the representative household in each quintile.

TABLE 10. AVERAGE REAL CONSUMPTION OF QUINTILES (THOUSANDS MNT)

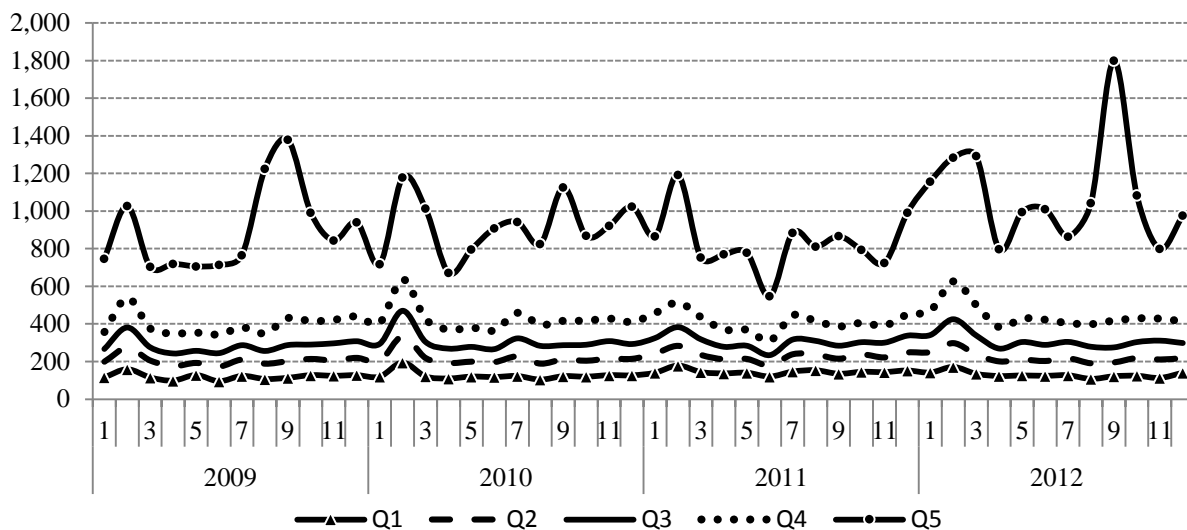


The following figure shows the time series of the real consumption of the representative households. It is straightforward to see the difference in real consumption of households in each quintile. We fit trends line using an exponential function to the data and estimate the monthly growth rates of real consumption of each representative household (see Table 11). As can be seen, the real consumption of quintile 1 and 5 grew at the fastest rates per month while those of other three quintiles grew at more or less the same rate. Given these growth rates, one may forecast that the gap between the rich and the others will widen but the poor is likely to catch up with the upper quintiles. However, the R^2 for each fitted equation is very low (under 1 percent) so it is hard justify that these growth rates are correct.

TABLE 11. MONTHLY GROWTH RATES OF REAL CONSUMPTION (QUINTILES)

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Growth rate (%)	0.26	0.17	0.18	0.19	0.42

FIGURE 20. REAL CONSUMPTION DYNAMICS OF QUINTILES (THOUSANDS MNT)



Another feature from Figure 20 is that the real consumption of quintile 5 is relatively noisier as including all the households with the highest level of consumption. We can also see the seasonality in all quintiles – i.e., the real consumption in all quintiles tend to increase relative to the trend in February and July reflecting the festive seasons, Tsagaan Sar and Naadam respectively.

8. Conclusion

We have come to the point where we can draw conclusions on our research. To see the effect of inflation on households, we studied the consumption behavior of 25690 households in 123 food items and 10 non-food groups in period of 2009-12. We calculated the consumption share of all 133 items by individual households and quintiles as well as aggregate (monthly and annual) shares. For example, the average consumption share of food group for quintile 1 is over 60 percent while it is about 25 percent for those in quintile 5. Consequently, those with high consumption share of food items are prone to food price inflation and vice versa. The aggregate consumption share of food group was, on the other hand, around 35-39 percent. Within food group, meat, milk products, bread, flour and rice account for the largest shares. For example, the food share of meat was about 40 percent in 2012. It was also found that both monthly and annual aggregate consumption shares were close to each other and consistent over time.

We then analyzed the prices of food items reported by the households and the price indices published by NSO. We used the monthly average reported prices for food items. Although the quality and purchasing time and places for food items differ, we found that the standard deviations are not overly large. As households in the HSES do not report the quantities and prices of non-food items but the cost, we had to use the price indices by NSO.

Given the consumption shares and price data, we calculated monthly and annual CPI inflation for individual households, quintiles and for all households. It was found that monthly CPIs showed significant seasonality due to increased supply of meat, milk products and vegetables over the summer and early autumn. Between May and September of all years, household specific CPIs fell but rose in the other months. The correlation coefficients between the level of consumption and household specific CPIs averaged around 0.25 in the summers but -0.25 in the other months. On the other hand, the correlation coefficients between the consumption share of food group and household specific CPIs averaged -0.5 in the summer months but 0.5 in the other months. These results indicate that households with high consumption share of food group or low levels of consumption actually benefited in the summer months as their CPIs were relatively lower than others. However, they faced with relatively higher CPI inflation in the other months. In general, food CPIs tended to lower than non-food CPIs in the summer months as meat and milk products account for significant shares in food expenses.

For annual CPIs, the results are mixed. In 2009 and 2011, households with low levels of consumption had relatively low rate of inflation – i.e., there were negative correlations between the level of consumption and the household specific annual CPIs. In the other two years, we reached the opposite outcome. These again can be explained by annual food and general CPIs. In 2009 and 2011, the food CPIs were lower than the general CPIs but higher in 2010 and 2012. For quintiles, households in quintile 1 had the lowest level of CPIs in 2009 and 2011 but the highest in 2010. For 2012, we did not find any systematic pattern.

Although households faced with different CPI inflation in each month and each year due to seasonal effects and others, it was interesting to see the difference at the end of long period. For this, we calculated the cumulative inflation rates for quintiles and found that there was no significant difference. In other words, households in quintiles faced similar rate of inflation between January 2009 and December 2012. More specifically, the quintile specific inflation rates were 44.4, 48.0, 46.8, 48.1 and 43.3 percent respectively.

We also studied the real consumption of households in quintiles and found that it grew at the highest rate for quintiles 1 and 5. More specifically, the quintile specific monthly growth rate of real consumption were 0.26, 0.17, 0.18, 0.19 and 0.42 percent respectively. This result indicates that the rich is likely widen its difference from the others while the poor is likely to

ERI Discussion Paper Series No. 4

catch up with those in quintile 2. However, measuring the growth rates is highly debatable as there is no reliable one.

9. References

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10. Appendix 1

A1.1. CONSUMPTION SHARES (QUINTILES, 2009)

		Q1	Q2	Q3	Q4	Q5
1	Food and non-alcoholic beverages	62.9	55.8	49.1	41.4	24.2
2	Alcoholic beverages and tobacco	2.0	1.5	1.6	1.5	1.1
3	Clothing, footwear and cloth	3.3	4.5	5.6	7.5	8.4
4	Housing, water, electricity and fuels	11.2	12.0	11.8	10.1	7.5
5	Furnishings, household equipment and tool	2.5	2.0	1.9	1.9	3.3
6	Health, medical care and services	1.8	1.8	2.0	2.6	3.8
7	Transport	0.9	1.2	2.8	4.9	11.2
8	Communication	7.3	9.9	10.2	10.2	7.9
9	Recreation and culture	0.8	1.1	1.2	1.6	2.7
10	Education	0.0	0.1	0.1	0.2	5.2
11	Restaurants and hotels	0.7	1.6	2.3	3.2	3.9
12	Miscellaneous goods and services	6.4	8.6	11.4	14.9	20.8

A1.2. CONSUMPTION SHARES (QUINTILES, 2010)

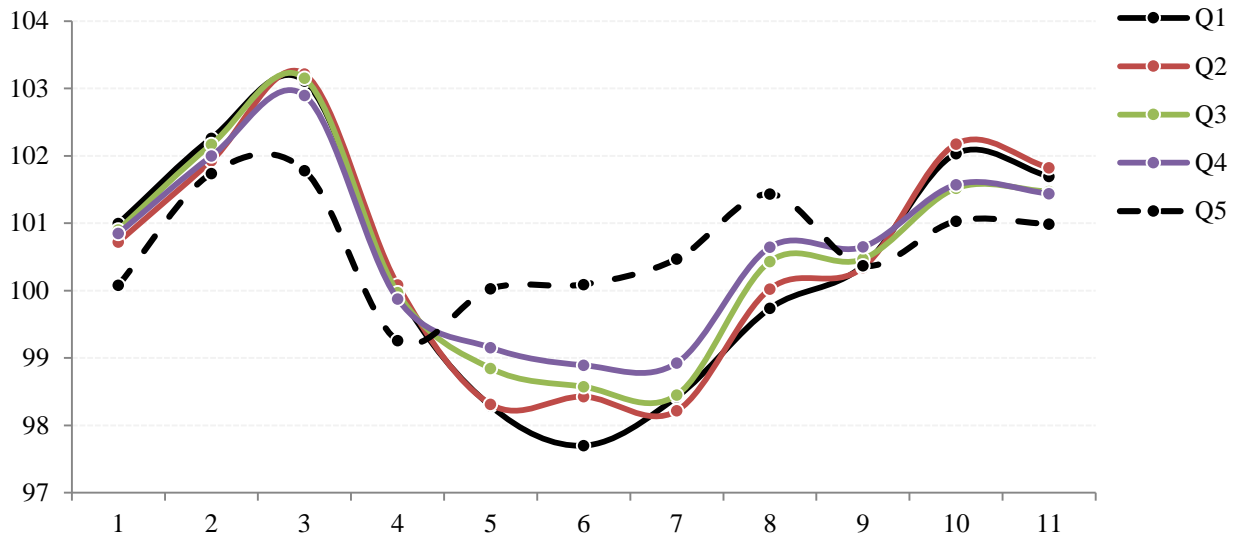
		Q1	Q2	Q3	Q4	Q5
1	Food and non-alcoholic beverages	61.6	54.4	47.3	38.4	24.4
2	Alcoholic beverages and tobacco	1.8	1.5	1.5	1.2	1.0
3	Clothing, footwear and cloth	4.8	6.1	7.2	8.5	9.6
4	Housing, water, electricity and fuels	10.9	11.1	10.8	9.7	7.0
5	Furnishings, household equipment and tool	2.5	2.2	2.1	2.2	3.4
6	Health, medical care and services	1.8	1.8	2.5	2.8	3.4
7	Transport	0.7	1.4	2.5	5.4	9.9
8	Communication	7.7	9.5	9.7	9.9	7.9
9	Recreation and culture	0.9	0.9	1.1	1.3	2.5
10	Education	0.0	0.0	0.1	0.4	3.2
11	Restaurants and hotels	0.7	1.7	2.5	3.7	4.0
12	Miscellaneous goods and services	6.6	9.4	12.6	16.4	23.5

A1.3. CONSUMPTION SHARES (QUINTILES, 2011)

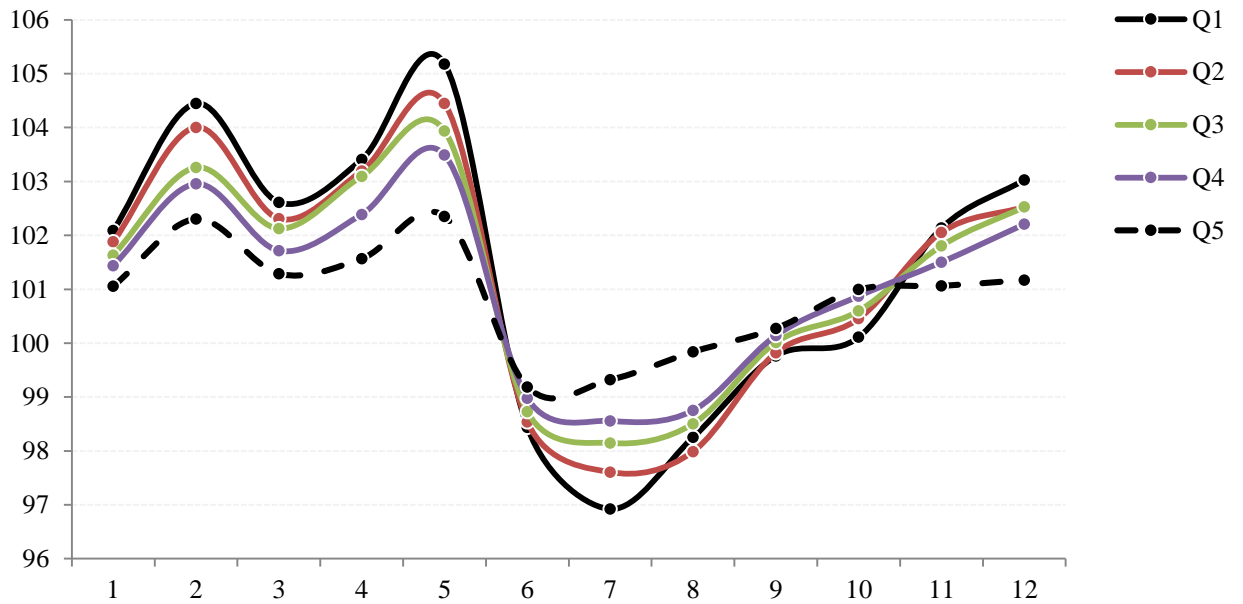
		Q1	Q2	Q3	Q4	Q5
1	Food and non-alcoholic beverages	62.4	57.0	51.9	42.4	27.2
2	Alcoholic beverages and tobacco	1.8	1.5	1.6	1.4	0.8
3	Clothing, footwear and cloth	5.0	6.0	6.8	7.4	9.5
4	Housing, water, electricity and fuels	10.5	11.8	10.7	11.0	7.6
5	Furnishings, household equipment and tool	2.3	1.9	2.1	2.2	3.4
6	Health, medical care and services	1.8	1.8	2.3	2.5	3.4
7	Transport	1.8	2.1	2.8	5.5	9.4
8	Communication	7.7	8.5	8.3	8.6	7.6
9	Recreation and culture	0.8	0.9	0.9	1.1	2.5
10	Education	0.0	0.0	0.2	0.4	3.3
11	Restaurants and hotels	0.6	1.4	2.0	3.1	3.6
12	Miscellaneous goods and services	5.3	7.2	10.4	14.4	21.7

11. Appendix 2

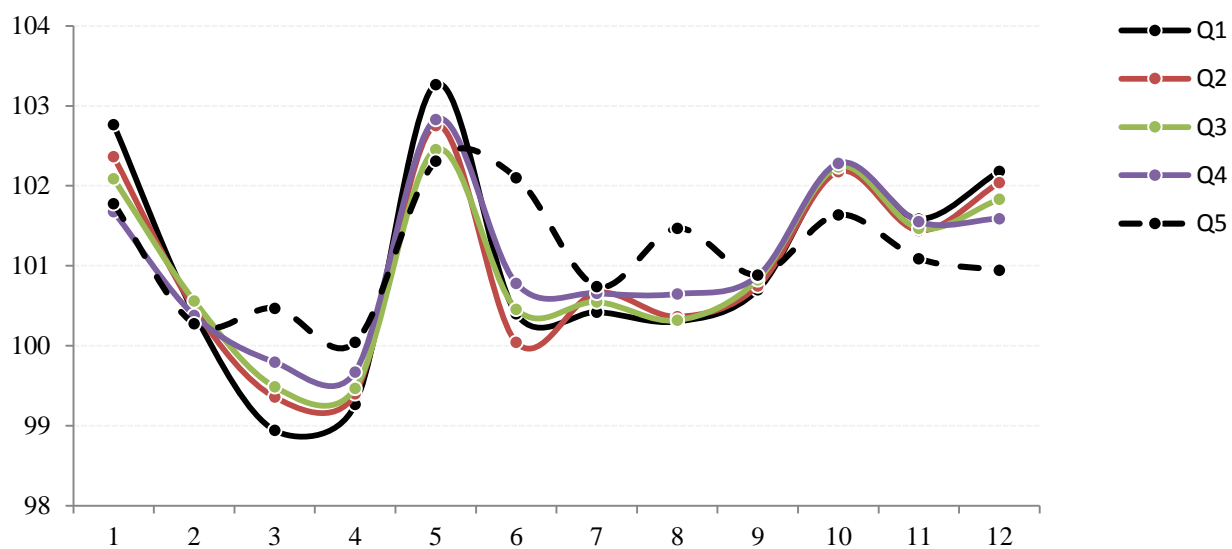
A2.1. MONTHLY CPIS FOR QUINTILES, 2009



A2.2. MONTHLY CPIS FOR QUINTILES, 2010



A2.3. MONTHLY CPIS FOR QUINTILES, 2011



MIDDLE CLASS PROFILE IN MONGOLIA

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The First Draft was submitted on 20 Dec 2012
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Abstract

Over the last decade, the government of Mongolia has implemented a series of policy reforms designed to enhance economic growth and reduce poverty with a more pro-poor orientation. The Mongolian economy has grown considerably since 2003 however, social development and specifically living standards of the population, have not experienced the same progress, contributing to poverty and inequality. The main objective of this research is to provide a preliminary analysis of the patterns of the middle class in Mongolia since no study has yet addressed this issue in the Mongolian context. This research was carried out using both qualitative and quantitative methods with specific purposes. Analysis using the absolute approach based on the average monthly consumption distribution shows that the middle class constitute 49.2% of the population in Mongolia. Middle class households tend to have no children or fewer children and tend to have completed secondary education or higher and work more in the public or private sector. Regarding the welfare profile, salary constitutes the largest income for the middle class. Public transfers such as pension and other allowances is the second highest source of income for all regions. Not surprisingly, livestock business income is the core income source in the countryside. Focus group participants reported that, in general, livelihood has improved as compared to 5 years ago.

Keywords: Relative and absolute approach, Household Socio-Economic Survey, Focus group discussion, Consumption quintile, Welfare profile, Income share

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1. Introduction

The individuals who belong to the middle class may hold the key to a country's prosperity, strengthening prospects for economic growth and poverty reduction. The basic income, skills, and values that characterize the middle class may enable them to improve not only their own standards of living, but also that of others (ADB, 2010). In effect, the focus of the middle class, as opposed to the poor (with the poor defined as those having only enough to survive), is a valuable base that contributes significantly to the economic, social and political life of a country.

Over the last decade, the government of Mongolia has implemented a series of policy reforms designed to enhance economic growth and reduce poverty with a more pro-poor orientation.⁴ The Mongolian economy has grown considerably since 2003 however, social development and specifically living standards of the population, have not experienced the same progress, contributing to poverty and inequality. In Mongolia, the percentage of the population living in poverty has remained around 30 percent over the last decade. A recent Household Socio-Economic Survey (HSES) concluded that 29.8 percent of the total population of Mongolia was living in poverty in 2011. Inequality, as measured by the Gini Index, showed that the gap between the rich and poor has widened, with a coefficient of 0.33 in 2011. The richest 20% of the population consumes 5 times the amount consumed by the poorest 20% of the population.

Increasing inequality perpetuates the categorization and distinction of households as “wealthy,” “better-off,” “average,” “middle income,” “poor” and “very poor,” etc... In-depth research is required to explore who they are, how they differ, how group classifications have changed over time, and what role each group plays in economic, social and political life. Furthermore, analysis of the middle class and its role in society has become an important area of study in order to better understand and implement policies to reduce poverty and inequality.

The role of the middle class and population income distribution in Mongolia has drawn little attention in the literature. The existing studies that look at Mongolian income distribution are mainly concerned with cross-country analysis and therefore lack depth in terms of exploring national income trends. Moreover, they do not adequately control for the significant, underlying differences between individuals in urban and rural areas of Mongolia.

2. Objective of the study

The main objective of this research is to provide a preliminary analysis of the patterns of the middle class in Mongolia since no study has yet addressed this issue in the Mongolian context.

The study has the following objectives:

- ✓ To describe the profile of the middle class in Mongolia;
- ✓ To estimate the percentage of middle class in the Mongolian population;
- ✓ To assess the role of the middle class in the society;
- ✓ To make policy recommendations based on the results of the research.

⁴ Action Plan of the Government of Mongolia for 2008-2012, and The Economic Growth and Poverty Reduction Strategy (EGPRS).

3. Methodology

There is no universally accepted definition of the middle class. However, numerous household surveys have been done around the world and from each of these surveys information can be extracted on groups of households based on consumption or income level.

This research was conducted from 2012 to the end of 2013, covering a period of approximately one year. This time frame allowed the research team to first define the middle class using a relative approach at the beginning of the research period, and then to more definitively define the profile of the middle class using an absolute approach by the end of the research period.

There are two reasons why the absolute definition was not immediately applied at the research's onset. First, measuring the middle class using an absolute definition is generally more appropriate for comparisons across countries or regions. Second, it is difficult to define the appropriate absolute income or fixed cutoff points for the thresholds which classify households as "middle class" without prior research on income distribution.

The datasets used for this study were obtained from comprehensive surveys of households in Mongolia, specifically the Household Socio-Economic Surveys (HSES) conducted in 2007/08, 2011 and 2012. The latter dataset, HSES 2012, was used for the more detailed analysis of the middle class.

HSES is a nationally representative survey; the main objectives are to evaluate and monitor the income and expenditure of households and to profile poverty in the country. The survey has the following components: basic socio-economic information about household members, education, health, migration, employment, payment of jobs and other income, savings and loans, housing and energy, durable goods, non-food expenditures and food consumption.

The sampling frame of the HSES 2012 was developed by the National Statistical Office of Mongolia (NSO) based on the 2010 population census, while HSES 2007/08 and HSES 2011 were developed based on population figures for the current year from local civil registration offices. The design of the survey recognizes three explicit strata: 1) Ulaanbaatar-capital, 2) aimag-prefecture centers, and 3) rural areas and small towns/villages. The selection strategy was different in each stratum with a two-stage process in urban areas and a three-stage process in rural areas. The total sample size was 11,232 households for 2007/08 and 2011 and 12,811 households for 2012.

Our research was carried out using both qualitative and quantitative methods with specific purposes:

- ✓ The dataset of HSES 2011 was used to define the characteristics of the middle class in Mongolia. The study defines the middle class as those households that belong to the 3rd and 4th income/consumption quintile groups. Average monthly per capita consumption for these quintiles is in the range of MNT 132.578 and MNT 178.260. This definition is also consistent with the international definition of the middle class as those individuals or households that fall between the 20th and 80th percentile of the consumption distribution.⁵
- ✓ The findings of this analysis defined the sampling frame for the qualitative study. Around 300 screening interviews were conducted in order to select representatives of

⁵ Birdsall et al, 2000.

the “middle class” for focus group discussions. The screening interview questionnaire focused mainly on income, family size, education and employment status, housing conditions of the households, and number of livestock (in rural areas). Out of 300 interviews, 120 representatives were selected for focus group discussions. In total, 12 groups, of which 6 were in urban and 6 in rural areas, were conducted (Uvurkhangai aimag were selected based on average per capita consumption level). Participants included both women and men, with around 10 people per focus group.

- ✓ The income level determined through the qualitative study was also used to define the middle class. When we asked focus group participants to estimate how much money/consumption it takes for an average family (four members) to live a middle class lifestyle in their community, the median of all responses was MNT 12.000.000 – maximum MNT 16.800.00 and minimum MNT 7.200.00 for a 4 member family, which translates into a monthly consumption distribution of between MNT 150.000 and MNT 350.000 per person. This was determined by presenting respondents with a list of high-end consumer goods and services (housing, education, family trips, social insurance, other cost and tax), asking whether they have them and whether they believe most other people have them. This estimate was later used to estimate the middle class profile using HSES 2012.

4. Profile of middle class

This chapter gives a detailed profile of the middle class by reviewing the income and consumption patterns of the population and displaying the association between being middle class with characteristics of the head of household. As mentioned above, this more detailed analysis was carried out using results from the 2012 HSES.

Distribution of middle class group and basic demographic indicators

According to the parameters defined for this analysis, the middle class in Mongolia constituted 49.2 % of the population in 2012. The middle class is largest in soum centers at 54.5% of the population and lowest in the countryside at 42.0%. However, soum centers are home to only 12.1% of households of which 11.2% are above middle class and 34.3% are below middle class. Moreover, the countryside has 22.2% of total households, of which only 7% are above middle class and more than half of which are below middle class. Ulaanbaatar, the capital, has 44 % of households and almost half of those households belong to the middle class, with the remainder evenly split above and below middle class.

TABLE 1: DISTRIBUTION OF HOUSEHOLDS, BY ANALYTICAL REGION

Welfare group	Ulaanbaatar	Aimag center	Soum center	Countryside	Total
Below middle class (%)	25.2	39.2	34.3	51.0	35.0
Middle class (%)	51.7	48.6	54.5	42.0	49.2
Above middle class (%)	23.2	12.2	11.2	7.0	15.8
	100.0	100.0	100.0	100.0	100.0
Number of households	325 553	159 601	89 748	164 156	739 058
Household share (%)	44.0	21.6	12.1	22.2	100.0

Source: Survey team calculations from HSES 2012.

Table 2 shows how the middle class is distributed across the country by analytical region. The largest percentage of middle class households (46.3%) lives in Ulaanbaatar, followed by aimag

centers (21.3%) and the countryside (19%). Only 13.5% of middle class households are located in soum centers.

TABLE 2: DISTRIBUTION OF MIDDLE CLASS HOUSEHOLDS, BY ANALYTICAL REGION

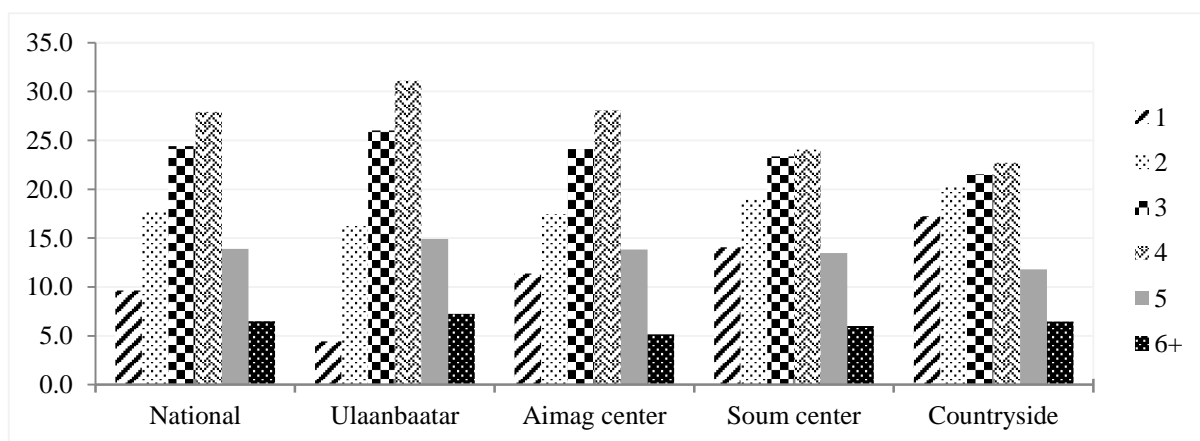
Welfare group	Ulaanbaatar	Aimag center	Soum center	Countryside	Total
Below middle class	31.6	24.1	11.9	32.3	100.0
Middle class	46.3	21.3	13.5	19.0	100.0
Above middle class	64.7	16.7	8.6	9.9	100.0

Source: Survey team calculations from HSES 2012.

Several variables, including household size and number of children, were chosen as demographic indicators due to data availability.

Figure 1 shows the percentage of middle class by household size from 1 up to 6+. The likelihood of being middle class if one lives in households with 4 members is highest in the countryside. The percentage of middle class households with 4 members is approximately 27.9 percent in national level,⁶ 31.1% in Ulaanbaatar, 28.1 % in aimag centers, 24.1% in soum centers and 22.7% in the countryside.

FIGURE 1: PERCENTAGE OF MIDDLE CLASS HOUSEHOLDS BY HOUSEHOLD SIZE

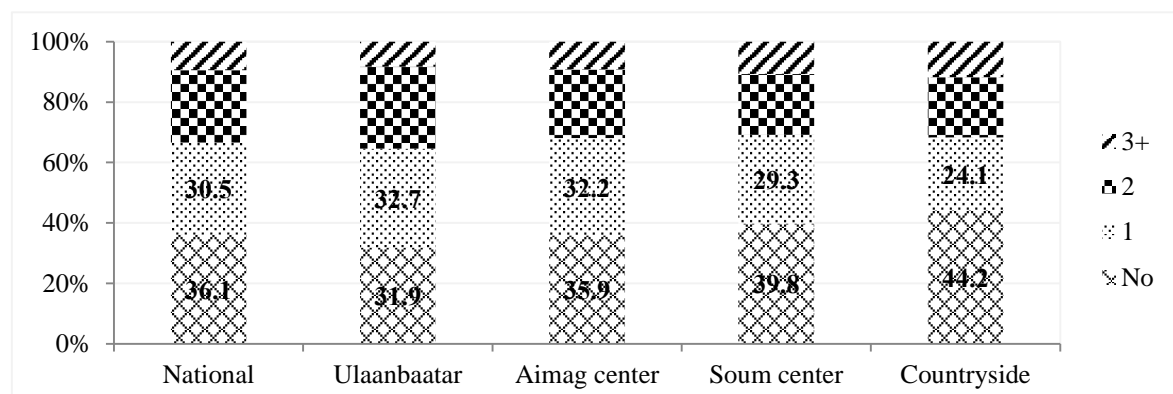


Another way to analyze the demographic composition of households is through the dependency burden or number of children in the household. Figure 2 demonstrates that most middle class households tend to have no children or fewer children.⁷

⁶ Detailed statistics of share among the different household size are in Table A1 in Appendix

⁷ Detailed statistics of household share are in Table A2 in Appendix

FIGURE 2: PERCENTAGE OF MIDDLE CLASS HOUSEHOLDS BY NUMBER OF CHILDREN



Nationally, almost two in five middle class households have no children. In urban areas, two in five middle class households have only 1 child, as compared to one in five households in rural areas. However, as expected, the likelihood of having more children is higher in rural than in urban areas.

Characteristics of head of household

A common practice when doing welfare analyses is to classify households according to the characteristics of the head of household. Often living standards are linked to certain characteristics of the head of household, who is likely to be the main source of economic support within the household. This section examines the relationship between middle class households and the age and education of the head of household.

Table 3 presents the percentage of households according to 10 age cohorts of the middle class heads of households by analytical regions.⁸ The data shows that the largest percentage of middle class households are headed by individuals aged 30-49 years. In Ulaanbaatar and the countryside, approximately one in four middle class households are headed by individuals aged 30-39 years, while in aimag and soum centers almost one in three households are headed by individuals aged 40-49 years. Additional findings show that more lower-middle class households have a younger head, while more upper-middle class households have an older head. The findings further show that the percentage of middle class households with younger heads (<30) is lower than those headed by more aged individuals (60+).

TABLE 3: PERCENTAGE OF HOUSEHOLDS, BY AGE OF HOUSEHOLD HEAD

Domain	<30	30-39	40-49	50-59	60+	Total
National	14.0	23.7	25.3	19.4	17.6	100.0
Ulaanbaatar	15.5	24.7	23.6	18.8	17.3	100.0
Aimag center	11.4	22.0	29.7	18.9	18.1	100.0
Soum center	13.3	19.8	26.0	25.3	15.7	100.0
Countryside	13.6	25.7	24.0	17.3	19.3	100.0
Total	14.3	25.5	25.3	18.9	16.0	100.0

⁸ Detailed statistics by all strata are in Table A7 in Appendix

The positive relationship between education and social class is widely accepted, with education acting as a main determinant in increase in social class at the population level.

FIGURE 3: PERCENTAGE OF MIDDLE CLASS HOUSEHOLDS BY EDUCATION LEVEL OF HEAD OF HOUSEHOLD

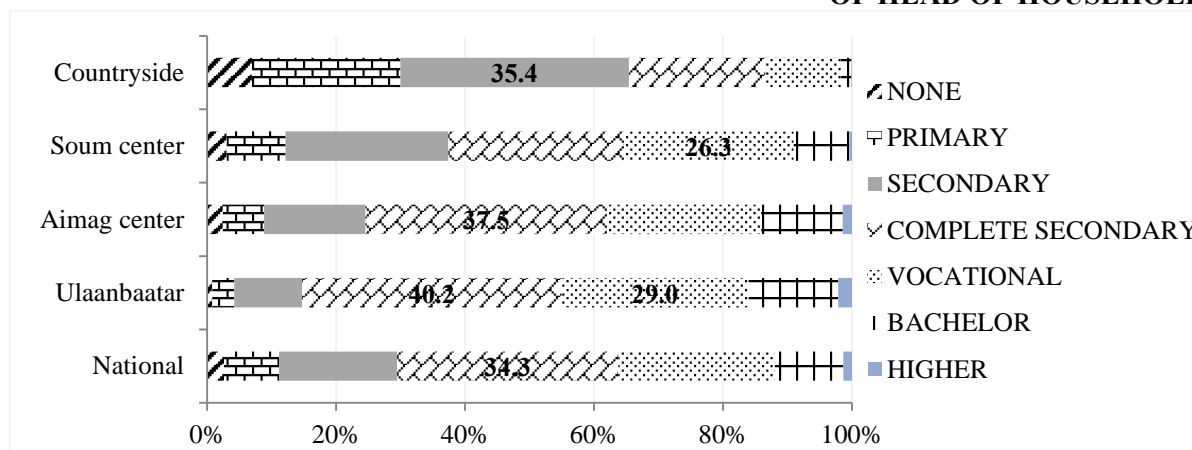


Figure 3 displays percentage of middle class households according to the highest level of education obtained by the head of household.⁹ As expected, the higher the level of instruction completed by the head of household, the more well off the household. For middle class households in urban areas, the returns on education seem to increase considerably if the head has completed secondary education or higher. However, in rural areas, the effect of education level attained is less pronounced.

Populations living in households where the head of household is currently working have higher living standards. Table 4 shows the employment status of heads of household. At the national level, the employment rate is 70.3 % and the unemployment rate is 7.3%. As expected, the unemployment rate is higher in households below middle class across regions. The findings also show that the unemployment rate of middle class households is lower in rural areas. This table also separates employed household heads by those working in the private sector, in the public sector, and as herders.

⁹ Detailed statistics by all strata are in Table A8 in Appendix

TABLE 4: PERCENTAGE OF HOUSEHOLDS, BY EMPLOYMENT STATUS OF HOUSEHOLD HEAD

National	Employed					Unemployed	Out of the labor force	Total
	Total	Herders	Private	Public	Unpaid			
Below middle class	69.8	36.3	48.2	14.1	1.3	12.1	18.0	100.0
Middle class	70.3	19.3	58.0	22.0	0.7	7.3	22.4	100.0
Above middle class	73.3	9.2	65.4	24.5	0.9	3.7	23.0	100.0
Total	70.6	23.5	55.8	19.7	1.0	8.4	21.0	100.0
Ulaanbaatar								
Below middle class	63.4	2.1	82.5	13.3	2.1	14.4	22.1	100.0
Middle class	67.3	1.2	79.7	18.9	0.2	8.2	24.5	100.0
Above middle class	71.5	0.7	77.6	21.4	0.3	4.0	24.5	100.0
Total	67.3	1.3	79.9	18.2	0.7	8.8	23.9	100.0
Aimag center								
Below middle class	62.1	9.2	65.8	23.9	1.1	14.9	23.0	100.0
Middle class	69.1	5.1	64.3	29.1	1.5	6.7	24.2	100.0
Above middle class	74.5	5.1	62.8	30.3	1.8	3.5	22.0	100.0
Total	67.0	6.6	64.6	27.4	1.4	9.5	23.5	100.0
Soum center								
Below middle class	64.0	20.7	47.3	30.1	1.8	17.0	19.0	100.0
Middle class	70.4	14.5	40.6	43.3	1.6	8.9	20.8	100.0
Above middle class	76.3	7.6	42.4	46.4	3.7	3.5	20.2	100.0
Total	68.8	15.6	42.9	39.5	1.9	11.1	20.1	100.0
Countryside								
Below middle class	84.0	80.9	13.5	4.8	0.8	5.9	10.0	100.0
Middle class	79.1	73.8	17.8	7.8	0.6	4.6	16.3	100.0
Above middle class	80.1	66.9	17.5	15.1	0.5	2.8	17.2	100.0
Total	81.7	77.0	15.5	6.7	0.7	5.2	13.1	100.0

Source: Survey team calculations from HSES 2012.

Welfare profile: consumption and income

To construct a household welfare profile, income and consumption were selected as comparable monetary indicators. In other words, these two variables are used as proxy estimates of household welfare for the purposes of this study.

Income pattern

Household income consists of all receipts, whether monetary or in-kind, that are received by the household or by individual members of the household on an annual basis. This section will present household monetary income which is defined¹⁰ to include: (i) income from employment

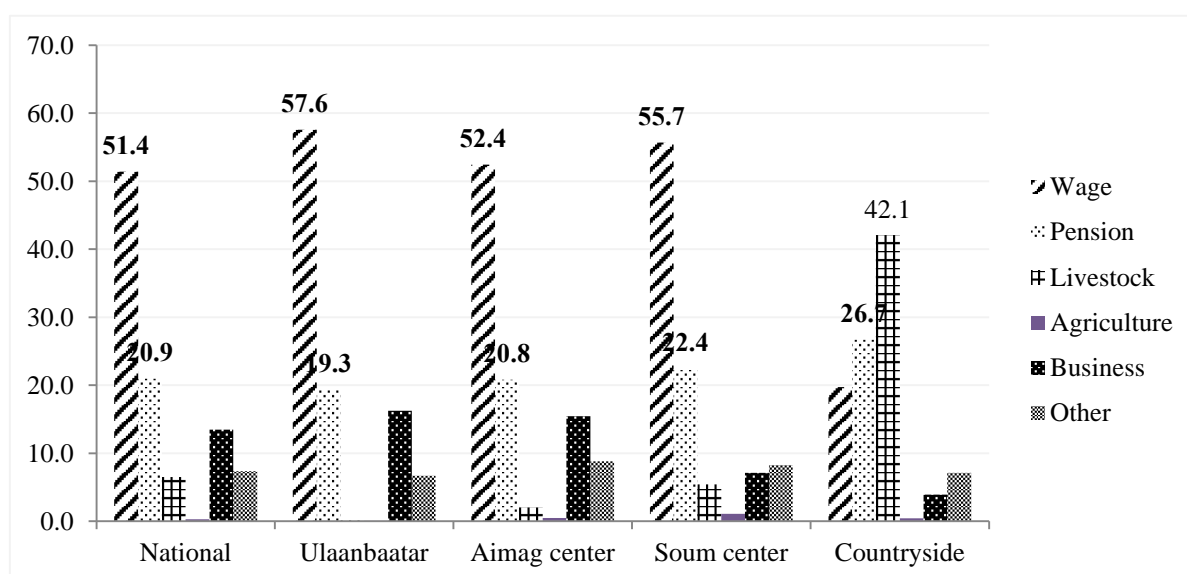
¹⁰ Handbook on Household Income statistics, UN, 2011

(both paid and self-employment); (ii) transfers (pension, allowance and private transfer) and (iii) property income. Because of data availability, income from the production of household services for personal consumption is not included.

Monthly household monetary income of the middle class is estimated at MNT 753,555 at the national level.¹¹ Across regions, the same group in Ulaanbaatar is at MNT 886,577, in aimag centers at MNT 759,811, in soum centers at MNT 631,592 and in the countryside at MNT 508,370.

The distribution of all income sources¹² is displayed in Figure 4. Wage is the main category of income for the middle class, accounting for more than 50 % of total income in all regions except the countryside. Public transfers such as pensions and other allowances are the second highest income source for all regions, accounting for 26.7 % of income in the countryside and approximately 20 % in the remaining regions. Not surprisingly, livestock business income is the core income source in the countryside.

FIGURE 4: HOUSEHOLD MONTHLY INCOME COMPOSITION, BY MAIN INCOME SOURCE



Consumption patterns

The creation of consumption aggregates is guided by theoretical and practical considerations. First, consumption aggregates must be as comprehensive as possible given available information. Omitting components assumes that they do not contribute to people’s welfare or that they do not affect the rankings of individuals. Second, market and non-market transactions are to be included, which means that purchases are not the sole component of the indicator. Third, expenditure is not consumption. For perishable goods, mostly food, it is usual to assume that all purchases are consumed. However, for other goods and services, such as housing or durable goods, adjustments must be made. Lastly, the consumption aggregate is comprised of five main components: food, non-food, housing, durable goods and energy.

¹¹ See Table A14 in Appendix. This table displays the average income by main sources

¹² Detailed statistics by all strata are in Table A15 in Appendix

According to the HSES 2012, monthly per capita consumption in Mongolia during 2012 was MNT 207,235, while monthly per capita consumption for the middle class was MNT 223,332. Middle class groups display consumption levels that are significantly higher than poorer groups by a factor of almost 2. Table 5 shows the average consumption of the middle class by main expenditure groups and across analytical regions. Ulaanbaatar displays the highest consumption levels, followed by soum centers, aimag centers and the countryside. However, it is noted that the difference in total consumption levels between regions is relatively small.

The distribution of consumption groups is presented in the bottom section of table 5. Food is the largest category and accounts for 35.6 % of total consumption, with significant difference across regions. In aimag centers, food accounts for 30.4% of total consumption, the lowest percentage across regions. By comparison, food has the highest share of total consumption in the countryside with 44.0%.

With regard to consumption, food is expected to constitute a lower percentage in a rich household as compared to a poorer household.¹³ In the below middle class group, food accounts for 45.6% of total consumption, while it accounts for only 24.0 % in the richest group.

Among non-food categories, clothing is the next most important category and accounts for 16.1% of total consumption at the national level, though percentages vary by region, with the highest percentage found in soum centers. Transportation and communication accounts for 12.8% of total consumption nationally and is highest in Ulaanbaatar. Rent is the third highest category of consumption and accounts for 6.9 % of total consumption and is also highest in Ulaanbaatar. Education accounts for 5.4% of consumption nationally and is highest in aimag centers, followed by soum centers and the countryside.

TABLE 5: CONSUMPTION OF MIDDLE CLASS, PER CAPITA PER MONTH BY MAIN CONSUMPTION CATEGORIES

	National	Ulaanbaatar	Aimag center	Soum center	Countryside
Consumption, Tugrug					
Food	79 500	78 581	67 426	82 798	94 161
Alcoholic beverages and tobacco	3 179	2 125	3 051	4 669	5 211
Education	12 079	10 455	16 618	15 009	9 063
Health	8 590	7 650	10 425	8 782	8 900
Durable goods	5 817	5 832	6 853	5 732	4 595
Rent	15 376	22 583	13 960	5 936	3 667
Heating	10 423	12 550	9 952	9 286	5 817
Utilities	6 031	7 822	6 531	4 384	1 585
Clothing	36 048	29 174	42 875	45 016	40 672
Transportation and communication	28 525	33 559	25 549	22 031	22 656
Others	17 754	17 614	18 737	19 364	15 788
Total consumption	223 322	227 944	221 978	223 008	212 115

¹³ Engel's law is an observation in economics stating that as income rises, the proportion of income spent on food falls, even if actual expenditure on food rises.

increase in these years, however, wage increased by only around 1 percentage point while pension increased by 4 percentage points from 2007 to 2011 and 2012. For the remainder of income sources, such as all types of household business, percentage changes were unstable, however the general trend for those income sources was downward.

With the relative income principle in place, it is possible to present data in a form that is even more stripped down. Both population and incomes can be expressed as shares of the total. The major advantage of this approach is that it enables us to compare income distribution for two periods that have different average income levels.

In Figure 6 we have divided the population into 3 groups; the same welfare groups that have been applied across this entire study, with a note for 2007-2011. As a result of the limitation of the utilized methodologies, the population was divided into different equalized groups ordered from poorest to richest. Therefore, those households belonging to the 3rd and 4th quintiles are considered middle class. For each group/quintile, we recorded the income share earned by that section of the population. As households have been ordered from poorest to richest, the share of income increases from the first through to the third group.

Figure 6 presents a comparison of income shares during the period from 2007- 2012. In 2012, the percentage of income earned by the middle class declined by 12 percentage points as compared to 2011. Moreover, there were also notable decreases in the below middle class group (10 percentage points). In contrast, income share increased significantly (by 22 percentage points) in the above middle class group.

FIGURE 6: INCOME DISTRIBUTION BY POPULATION AND INCOME SHARES, AT NATIONAL LEVEL

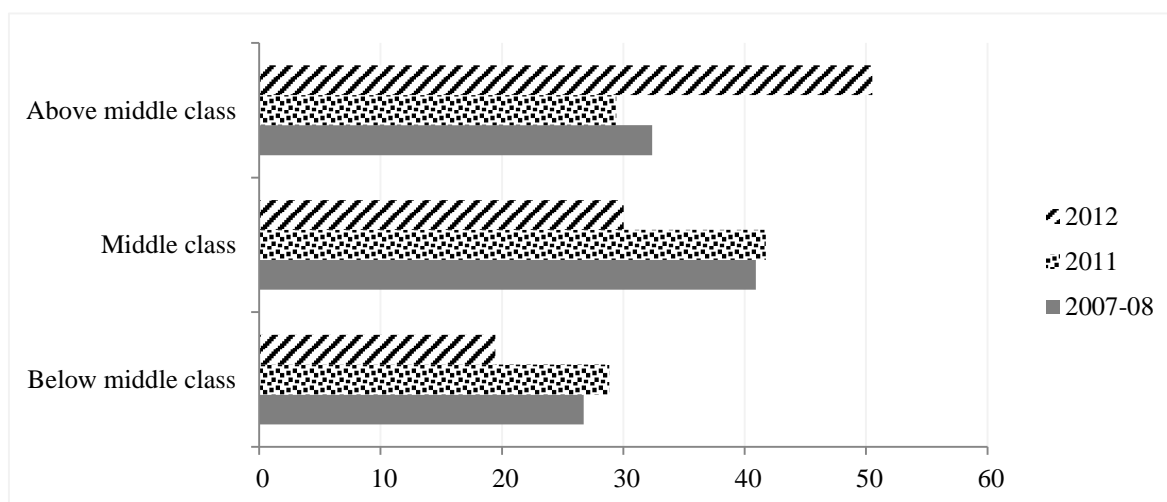


Figure 6 also shows that the above middle class income group earned 2.6 times more than the below middle class in 2012. This accounts around 1.0-1.2 times more in 2007/08 and 2011, respectively.

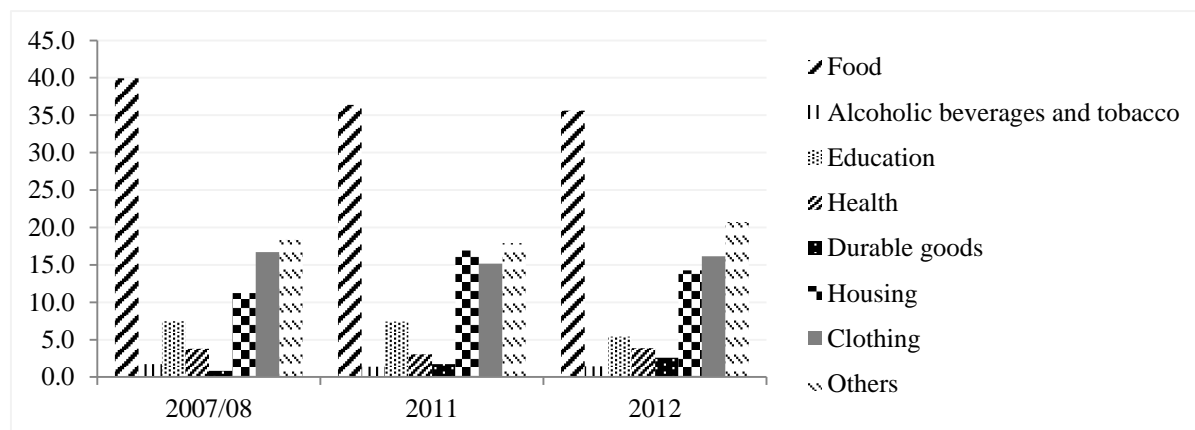
Consumption comparisons

The comparisons of the shares of main consumption categories of middle class households are displayed in Figure 7.

In 2012, the share of food, alcohol and tobacco as a percentage of total consumption decreased, accounting for about 4.3 and 0.3 percentage points, respectively, as compared to 2007/08.

Among non-food categories, the share of health consumption and clothing was fairly stable. In the same time frame, the share of education as a percentage of total consumption increased by 2.0 percentage points, whereas housing decreased by 3.0 percentage points.

FIGURE 7: COMPARISON OF CONSUMPTION SHARE OF MIDDLE CLASS, 2007-2012



Determinants of middle class

The intention of this exercise is to empirically check a set of determinants or variables that together can fit into a model to predict the indicator associated with being in the middle class. The parameters of the model are determined by fitting a logit regression with the middle class dummy identifier as the dependent variable and the determinant variables in the right-hand-side. The middle class dummy variable is determined by welfare group which was estimated using per capita consumption level. The model is convenient to use and easy to interpret but could be criticized because some explanatory variables are endogenous to consumption. This concern, however, does not undermine the results because the primary objective of the model is to predict the likelihood of being middle class rather than to explain it. In other words, the model implies conditional correlations but no causal relationships.

To measure the correlation, a standard model is drawn from the traditional consumption model. Although consumer theory is developed from the decision perspective of an individual consumer or consuming household, it is usually applied empirically in per capita or per household terms to aggregate market data (Timmer and Alderman, 2002). Determining a specific functional form from the general standard function is a matter of judgment and empirical fit. The equation below shows the form used throughout this analysis.

$$MC_{i,v} = \alpha_0 + \alpha_1 Z_{i,v} + \alpha_2 FE_v + \varepsilon_{i,v} \quad (1)$$

Where:

MC is the dummy for either households that are middle class or below middle class.

Z is a vector of explanatory variables such as:

- household demographic indicators: household size, number of children and dummy for the highest level of education among all members 18 years or older
- household head characteristics: age and dummy of education level

