

Subsidy Reform, Cash Payments, and Welfare of Iranian Households

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Abstract

This study reviews the direct and indirect effects of higher energy and bread prices (due to removing their subsidies and paying their equivalent in cash instead). Therefore, all consumer goods were classified into 6 groups and a linear expenditure system was estimated based on households' budget data of 2009 and 2011 for urban and rural areas separately. The results indicate that high-income households have lost more welfare than the low-income households; in other words, the cash subsidies for low-income households are more adequate to compensate for higher costs of living but severely inadequate for high-income households. These cash subsidies are very important for low income families.

Keywords: Compensated Income, Energy Subsidy, Households Utility, Linear Expenditure System (LES)

1. Introduction

Until Nov. 2009, the energy and bread prices were kept low by the government of Iran, as part of a plan to support Iranian households. In 2009, it was argued that this subsidy plan is not in compliance with its goals anymore, since its effectiveness has reduced drastically and sometimes even acted in the opposite direction; in other words, it is becoming more favorable for the rich instead. In addition, because of its wide coverage (including almost all households unanimously and uniformly), its financial burden on government budget had become almost intolerable imposing a huge deficit. Therefore, the government proposed a program of cash payment instead of keeping prices low, letting the prices of energy and bread rise. Implementing this program would generally have 2 contrasting effects on households'

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2/ Subsidy Reform, Cash Payments, and Welfare of Iranian Households

welfare (higher prices increase cost of living and decrease welfare while cash payments increase purchasing power and welfare).

It is also argued that paying cash subsidy is much more appropriate, since it would give households a chance of buying goods in accordance with their desires or needs. Therefore, a new subsidy program was drafted and implemented since Dec. 2010, in which, prices of bread and energy (electricity, gasoline, kerosene, gas oil, fuel oil, liquid gas, and natural gas) were increased sharply. Table 1 below, shows the price of each energy product just before and after reform and Table 2 in shows the percentage change (in a month) in energy prices and bread price, as a result of subsidy reform. At the same time, a monthly cash payment of IRR 455,000 per person was paid to the households' heads who had registered for it. It was thought that only the needy or at most non-upper class households would register, but actually almost all households registered.

Table 1. The price of energy products (liter/IRR)

	Liquid gas	Gasoline	Kerosene	Gas oil	Fuel oil	Electricity	Natural gas
Before	57.2	1000	165	165	94.5	165	104.5
After	1800	4000	1000	1500	2000	409.5	1200

Source: Energy Ministry of Iran

Table 2. The percentage change in the prices of energy and bread due to subsidy reform

	Liquid gas	Gasoline	Kerosene	Gas oil	Fuel oil	Electricity	Natural gas	Bread
Percentage change	3046.9	300	506.1	809.1	2016.4	148.2	1048.3	119.6

Source: Energy Ministry of Iran and Central Bank of Iran

Now, one of the important and concerning issues is the effect of this subsidy reform on households' welfare. It is necessary to make 3 points: (1) Higher prices of mentioned goods would increase the cost of living (directly and indirectly) and would reduce welfare of the households while cash subsidy would increase it. (2) Since energy is an important input for all goods and services, its higher price leads to higher cost of production and higher prices of all goods, including consumer goods. (3) Although the cash amounts being paid to all people is the same, but its importance for vulnerable groups is much higher than other segments of society (which is obvious from the ratio of cash subsidy to their total expenditure) as shown for urban and rural households in Table 3. As an example, this ratio is 54% of total expenditure of 1st deciles in urban areas (80% for rural) but only 6% for 10th deciles.

Table 3. Ratio of cash subsidy to expenditure in the expenditure deciles (2011)

Deciles	urban	Rural
First	0.54	0.82
Second	0.35	0.52
Third	0.28	0.42
Fourth	0.24	0.36
Fifth	0.20	0.31
Sixth	0.17	0.27
Seventh	0.15	0.23
Eighth	0.12	0.19
Ninth	0.10	0.15
Tenth	0.06	0.10

Source: our calculations

As we know, Iran's economy has been in inflationary era for the last three decades, so, even without implementation of this subsidy reform, one would have expected inflation. In other words, the total increases in consumer's price index is not duo to subsidy reform. Therefore, we should first distinguish between the inflation caused by this reform and that is caused by other events (for example, general conditions of the country). There is another point to consider in this study; higher energy prices have two kinds of price effects on households' welfare directly (as a consumer good) and indirectly (as an important input for all goods and services), which makes our analysis more complex.

Now, a few years after implementing the reform, the major question to be asked is whether this reform has reached its goals of supporting the needy? This paper seeks to answer this question. In general, there are two ways of measuring the price hike impacts on households' cost and welfare: measuring (1) the amount which should be paid to a household to keep her utility constant, and (2) the amount which should be paid to a household to keep her ability to buy the same basket of goods as before the price hike. In this paper we approach the first.

The structure of the paper is as follows: in the following section (section 2), we review empirical evidence, especially for Iran. In section 3, the research method, theoretical foundations, and how subsidy reform's price hikes is differentiated from general inflation is explained. These are followed by the formulation of the model and description of data. In section 4, we estimate the model, calculate the compensating cash payments required, and compare it with the amount actually being paid to households. The final section of the paper is its conclusion.

2. Literature review

Tiezzi (2005), in his study, reviewed the welfare effects of carbon taxation (in form of increasing the price of energy products) on the Italian families. They classified all goods into seven different groups of goods: (1) food and beverages, (2) outdoors meals and drinks, (3) domestic fuels, (4) transport fuels, (5) public transports and services, (6) transportation and public services, and (7) others and measured commodity price and income elasticity. Households are also categorized into five groups and a system of almost ideal demand function was estimated for each group. His results show that the annual welfare loss for high-income households is more than that of the low-income households.

Davoodi and Salem (2006) investigated the effect of gasoline price rise on consumer welfare in Iran urban areas by the data for households classified according to income deciles and estimating an AID system for all 10 deciles income groups for 5 commodity groups (food and beverages, gasoline, transportation and communication, vehicles, and other goods). They measured the impact of a hypothesized 30% increase in gasoline price on household welfare by equivalent variation and compensated variation indices and concluded that in order to compensate for a higher gasoline price, more should be paid to higher income groups, although it is relative (with respect to their total expenditure).

Khosravinezhad (2009) studied the welfare effect of subsidy removal on basic commodities (such as of bread, vegetable oil, and sugar) on Iranian urban households under 2 hypothetical price increases of basic commodities by 50% and 100%. He classified households into 5 groups and used almost ideal demand system, defined and measured 3 different welfare indices of cost of living index, and compensated variation index and equivalent variation index. He conclude that suitable goods for subsidy elimination or reduction (between basic goods) are vegetable oil, then sugar, and at last bread.

Koch and Bosch (2009), in their paper, studied the effect of increase of goods prices on family welfare in South Africa. They identified 10 commodity groups of grain products, protein and dairy products, fruits and vegetables, other foods, clothing and shoes, housing, other housing-related consumer goods (such as fuel and electricity), communications and transport, entertainment expenditures, general expenditures, and investment on family members (including health and education). They used the head of the households' characteristics such as race, sex, education, and employment to categorize them into 50 more homogenous subsets. Then, they estimated the almost ideal demand system for each income group (that is, least 40%, medium 30% and upper 30% households) and calculated the welfare effects

of a 10% price increases, using CV index. Their results indicate that: (1) high income families would lose most (having a higher CV index) and need more money to compensate the lost money, (2) the negative impact of rising food prices on welfare of low-income households is more than welfare loss of high-income households.

Shahmoradi et al. (2010) investigated the effect of 3 different hypothesized scenarios of 100%, 200%, and government's proposed energy (gasoline, kerosene, diesel, fuel oil, liquid gas, electricity, and natural gas) price increases on welfare of households for income deciles in urban and rural areas of Iran, separately. They calculated the subsequent increases of prices of all other goods and services under each scenario and used the coefficients of Iran's input-output table of 2004 and concluded that all rural income deciles suffered more pressure than the same urban income deciles.

Nelson et al. (2011) investigated the impact of rising food (breads, cereals, meat, dairy, fruits and vegetables, and other foods) prices on the welfare of Mexican households by estimating almost ideal demand system for poor and non-poor households in rural and urban areas separately. Then, they calculated compensated variation index (CV) as a result of such an increase in food prices. Their results indicate that reduction in the welfare of urban households is more than that of rural households.

Behboudi and Hekmatifarid (2012) studied the impact of higher energy prices on welfare of urban households in Iran. Energy is divided into three groups: electricity, natural gas, and other products. An almost ideal demand system is estimated for each income deciles and then the compensated variation and equivalent variation welfare indices for two scenarios of 50% and 100% increases of energy prices for all income deciles is calculated. They conclude that although higher income households will lose more revenue, the lowest income deciles would lose a greater share of their income.

3. Research method

As we all know, a price increase would turn the household's budget line inward and force her to pick an inferior basket (lower than her previous choice) and have a lower utility. For keeping households on the same indifference curve (making them capable of buying the same bundle of goods), the governments usually pay cash or supply specific goods (in kind) to the selected or needy groups. Usually, a cash payment of the same amount is preferable since the household could choose her most preferred basket of goods. Therefore, in most cases they pick a basket which is very different from the previous one. In this case, the demand for subsidized goods would reduce (of course this reduction may not be desirable as far as the country is

6/ Subsidy Reform, Cash Payments, and Welfare of Iranian Households

concerned). The amount of cash payment is called Compensated Variation (CV) in the literature.

3.1. Theoretical foundations of linear expenditure system

At the first stage, we should identify the households' utility and demand functions. Klein and Rubin (1947-8) introduced a utility function which then was used by Geary (1954) and Stone (1954), separately, for extracting what is being known in the literature as Linear Expenditure System (LES) and estimating with British data. This Geary-Stone utility function is additive and is defined as follows:

$$U = \prod_{i=1}^n (q_i - \gamma_i)^{\beta_i} \quad (1)$$

where U is total utility of a household, q_i is the amount of goods i ($i = 1, 2, \dots, n$) being bought and consumed by household, γ_i is the necessary amount of good i (minimum subsistence level), and β_i is the marginal propensity to over-subsistence expenditure for commodity i (marginal propensity to expenditure out of excess demand over subsistence level). Therefore, based on this utility function, only excess consumption over a certain amount (called minimum subsistence) would create or increase utility. Taking logarithm of this function would produce the following:

$$R = \log(U) = \sum_{i=1}^n \beta_i \log(q_i - \gamma_i) \quad (2)$$

This function has 2 reasonable restrictions ($\forall i$):

$$\left. \begin{array}{l} (q_i - \gamma_i) > 0 \\ \beta_i > 0 \end{array} \right\} \quad (3)$$

By imposing a 3rd constraint ($\sum_{i=1}^n \beta_i = 1$), a CES type quasi-concave function is obtained. The Lagrange expression for a utility maximizing household subject to his budget constraint ($Y = \sum_{i=1}^n p_i q_i$) would be as follows:

$$L = \sum_{i=1}^n \beta_i \ln(q_i - \gamma_i) + \lambda \left(Y - \sum_{i=1}^n p_i q_i \right) \quad (4)$$

where Y represents income of household and p_i is the price of i^{th} good.

Its 1st order conditions would define the following consumer's expenditure for good i relations;

$$C_i = p_i q_i = p_i \gamma_i + \beta_i (Y - \sum_{i=1}^n p_i \gamma_i), \quad \forall i \quad (5)$$

So, the amount each consumer would spend on good i (C_i) depends on prices of all goods as well as the household budget. This system of equations is called linear expenditure system (LES) and can be rewritten as follows:

$$C_i = (1 - \beta_i)\gamma_i p_i + \beta_i(Y - \sum_{j=1}^n p_j \gamma_j), \quad \forall j \neq i \quad (6)$$

Compensated Variation (CV) is defined as the amount which should be paid to (or taken from) a consumer when the price of good i is changed to keep his utility constant. So, if the price vector of goods changes from P_0 to P_1 for any reasons such as a change in tax law or subsidy, the compensated variations, according to Creedy and Sleeman (2006), will be as:

$$CV = E(P_1, U_0) - E(P_0, U_0) = \sum_{i=1}^n p_{i1} \gamma_i + \prod_{i=1}^n \left(\frac{p_{i1}}{\beta_i}\right)^{\beta_i} \left(\frac{Y_0 - \sum_{i=1}^n p_{i0} \gamma_i}{\prod_{i=1}^n \left(\frac{p_{i0}}{\beta_i}\right)^{\beta_i}}\right) - Y_0 \quad (7)$$

where U_0 and Y_0 respectively refer to household's utility and income before price changes in time zero.

As we mentioned before, because of our country's inflationary condition, only a part of CPI rises is due to subsidy reform (due higher energy price). So, before we measure the CV index defined above, we should calculate the price effect of higher energy and bread prices on CPI. We should keep in mind that the energy price changes have two direct and indirect effects and both should be considered. We calculate CPI as if only energy and bread prices have risen (all other things remain constant), so the effect of higher prices of other consumer goods and services due to the inflationary situation of Iran's economy will be dismissed. For our purpose, it seems appropriate to use input-output (IO) coefficients because of its ability to reflect the relationship between goods prices.

3.2. Leontief price system

The Leontief price system is applied for analyzing the effects of prices using the IO model as explained in Miller and Blair (2009). Direct (technical) coefficients matrix in the input-output table introduced by W. Leontief shows the amount of different inputs necessary to produce one unit of each output and is defined as the ratio of the amount of goods i (X_{ij}) used for the production of a specific amount of goods j (X_j);

$$a_{ij} = \frac{X_{ij}}{X_j}, \quad \forall i, j \quad (8)$$

a_{ij} is the technical coefficient of output goods j for the input (or intermediate) goods i . Based on this framework, the relation between goods prices can be found by input-output coefficient table which is known as Leontief Price system (Miller and Blair, 2009);

8/ Subsidy Reform, Cash Payments, and Welfare of Iranian Households

$$\begin{bmatrix} p_1 \\ \vdots \\ p_n \end{bmatrix} = \begin{bmatrix} a_{11} & \cdots & a_{n1} \\ \vdots & \ddots & \vdots \\ a_{1n} & \cdots & a_{nn} \end{bmatrix} \times \begin{bmatrix} p_1 \\ \vdots \\ p_n \end{bmatrix} + \begin{bmatrix} v_1 \\ \vdots \\ v_n \end{bmatrix} \rightarrow P = A'P + V \quad (9)$$

P is the price vector of all goods and services, \hat{A} is the transposed coefficient matrix of IO table, and V shows value added vector of one unit of all goods. In order to figure out the relation between each commodity price with the energy and bread prices, first, we partition the matrix equation (9) into 2 parts, energy and non-energy goods and rewrite it as follows;

$$\begin{bmatrix} P_e \\ P_n \end{bmatrix} = \begin{bmatrix} A'_{ee} & A'_{ne} \\ A'_{en} & A'_{nn} \end{bmatrix} \times \begin{bmatrix} P_e \\ P_n \end{bmatrix} + \begin{bmatrix} V_e \\ V_n \end{bmatrix} \rightarrow P_n = A'_{en}P_e + A'_{nn}P_n + v_n \quad (10)$$

$$P_e = A'_{ee}P_e + A'_{ne}P_n + v_e$$

“e” indicates energy and bread goods and “n” indicates all other goods. v_e is a vector that its elements are equal to the ratio of value added per energy sector to the output of the same sector. v_n is a vector that its elements are equal to the ratio of value added per non-energy sector to the output of the same sector.

Since energy and bread prices are determined by the government, 1st set of Eq. (10) becomes redundant and, therefore, dropped. Taking difference from 2nd set of equations and solve it would results in;

$$\Delta P_n = (I - A'_{nn})^{-1} A'_{en} \Delta P_e \quad (11)$$

It shows the relationship between energy and bread prices and other prices, where ΔP shows higher prices of goods and services (due to increasing energy products prices).

3.3. Model

As mentioned before, the aim of this paper is to find out the effect of higher energy and bread prices (as a result of 2009 subsidy reform) on households welfare and also the sufficiency of the amount paid for compensation. We use a linear expenditure system and define some of social and demographical characteristics of households (such as head of household's age, number of household's member with income, age of children, and the month of questionnaire completion) as well as usual economic variables of income and prices because their effectiveness on demand has been verified in the theoretical and empirical literature and also their data available (in the household's cost-income statistics, gathered and published by the statistical center of Iran).

Because of Iran's inflationary era, increases in the prices of all goods and services are expected by almost everyone, even if government keeps the energy and bread prices constant. Consequently, the subsidy reform of 2009 only could intensify the inflation. In order to separate these 2 effects, we use the Leontief's price system to measure the inflationary effect of this reform. Then, we classify all goods and services into six different groups: food and beverages, housing, house appliances, transportation and communications, energy and, others, based on their share in household budget. Because rural households have different a lifestyle from the urban ones and this would affect their demand behaviors, we estimate the demand systems for each group separately.

We estimate system of demand functions in four modes of (1) with all demographic and economic variables, (2) without demographic variables (only economic variables), (3) with all economic variables and only the demographic variable of age of households' head, and (4) with all economic variables and only demographic variable of age of children in the household. Unfortunately, as none of the demographic variables showed a statistically significant impact on demand in all the models, we removed them from the equations according to the step by step regression method.

3.4. Data

We use raw data from households' expenditure-income statistics (gathered and published by the Statistical Center of Iran) for 1388 (2009) and 1390 (2011) for rural and urban areas, separately. This center uses a cluster sampling survey technique of almost 37000 households from all cities and villages throughout the country (18665 urban and 18203 rural households), divide the households into 12 groups, and interview each group in a specific month. The data on prices of goods and services (for rural and urban areas separately) are also obtained from SCI.

All consumer goods and services are divided into 6 groups of (1) foods and beverages, (2) housing, (3) energy, (4) house appliances, (5) transportation and communications, and (6) others. But, since households' expenditures are classified into thirteen sectors according to Classification of Individual Consumption by Purpose (COICOP), we first had to adjust them into our 6 expenditure groups and do all calculations afterwards. Therefore, two cross section data are used to estimate the six equations model for each area (rural and urban) for years 2009 and 2011 (a year before and the year after) separately and the results are compare. Based on the estimations, we measure the effects of increasing energy products and bread prices on (1) prices of consumer goods and services and on (2) the expenditures and

10/ Subsidy Reform, Cash Payments, and Welfare of Iranian Households

welfare of households in each income deciles in rural and urban areas separately.

4. Results

4.1. The effects of increasing energy products and bread prices on

4.1.1. Prices of consumer goods and services

As we noted before, to measure the effects of energy and bread price increases on households' expenditure and their welfare, we are to follow two steps. In the first step, we calculate their effects on prices of all goods and then, in the second step, on the costs and welfare of the households. The first step is done by considering energy and bread goods as intermediates or inputs for all goods and services by the use of input-output table of 2004 (supplied by Central Bank of Iran). The results shown in Table 4 represent a heavier effect on the prices of energy products and transportation and communication (as expected), although other commodity groups are also affected considerably as well. Our findings also show that the percentage change in the prices of commodity groups is higher for rural than urban areas of the country (which could be an indication of more costliness of this reform for the rural areas). Next, we take these price changes to estimate households' demand functions.

Table 4. The percentage change in the prices of six commodity groups due to subsidy reform

Area	commodity groups					
	food and beverage	Housing	Energy	house appliances	transportation and communication	Others
Urban	21	18	439	17	107	12
Rural	22	20	470	17	98	13

Source: our calculations

4.1.2. Demand and welfare of households in rural and urban areas

Based on the theoretical foundations presented before, a linear expenditure system is used to estimate the effects of subsidy reform on households' welfare of rural and urban areas separately. As before, expenditure data for all commodity groups, price indices of all commodity groups for urban and rural areas, and households' characteristics are taken from raw data in the households' expenditure-income sample survey statistics (gathered and published by the SCI) for all the almost 37000 households in the sample (for urban and rural areas separately). Data on price index of energy products for all income deciles (rural and urban areas) in two years of 1388 and 1390 were taken from Energy Ministry of Iran. As it is usual in this kind of studies, we

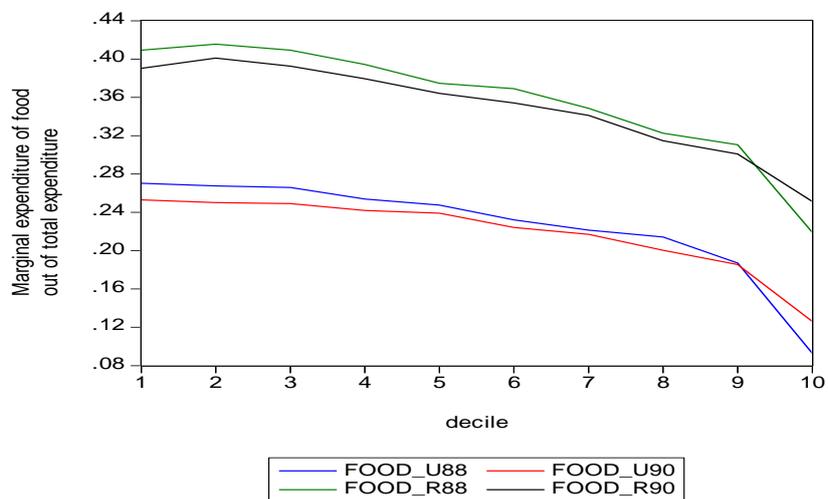
use total expenditure of each household as her income because of lower confidence to income data in these surveys. A linear expenditure demand equation is estimated for each area, each income deciles of households, and for each year separately, with a seemingly unrelated regression method.

Our findings indicate that none of the social variables have any effects on the demand for goods and services. To make sure that this result is liable, we re-estimate this system of equations without any of the social variables again. Comparing the 2 estimated system of equations by the use of a maximum likelihood test would verify the above mentioned result. Since the deletion of these social variables have no effect on the coefficients of all other variables and therefore change fortunately nothing in the equation, we can conclude that the social variables of “age of head of household”, “number of household’s members with income”, “age of children”, and “the month of questionnaire completion” in all areas and for both rural and urban areas would not change the consumption behavior of households.

One of the main coefficients of this estimated system of equations is income’s (or total expenditure’s) coefficient- known in the literature as marginal propensity to over-subsistence expenditure (MPE)- which is actually the ratio of expenditure on each goods (or commodity groups) to total expenditure of household (or income) after paying for the subsistence level of consumption. While the MPE coefficients for food, housing, and energy decline, they incline for house appliances, transportation, and others as we move from low income deciles to the high incomes (for both rural and urban households) in both years of 2009 and 2011. Although the subsidy reform has not changed this trend, it has changed their magnitude and therefore their order in all deciles between 2 years.

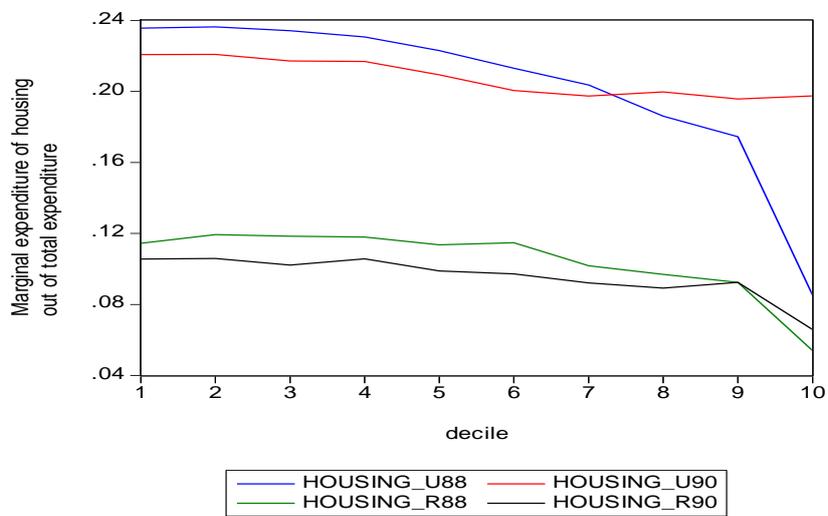
MPEs for energy group for all urban and rural deciles in 2009 is the smallest among 6 commodity groups, but in 2011 (after subsidy reform) energy MPEs for the first five rural deciles and first eight urban deciles is fifth. It means the subsidy reform has increased MPE for energy for the above mentioned deciles, but it is the same for the last five urban deciles and the last two rural deciles and it is still the smallest MPE. Also the share of household's expenditure patterns in all commodity groups (after paying for the minimum subsistence) in all but sixth, seventh, and eighth urban deciles and ninth and tenth of rural has changed. Thus, increasing energy prices has changed the household’s behavior. The calculated MPEs for all rural and urban deciles are shown in the following graphs; blue curves are for urban households in 2009, red curve shows urban households in 2011, green curve indicates rural households in 2009, and black curve represents rural households in 2011.

12/ Subsidy Reform, Cash Payments, and Welfare of Iranian Households



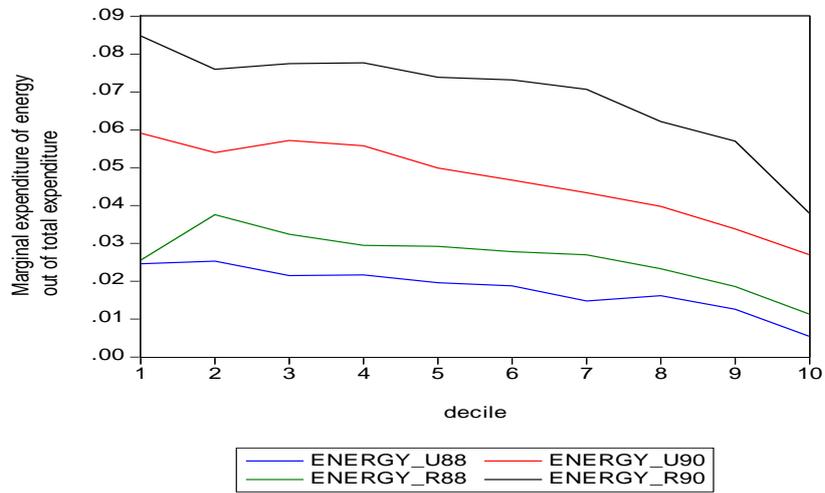
Source: our calculation

Fig. 1. MPE for food and beverage



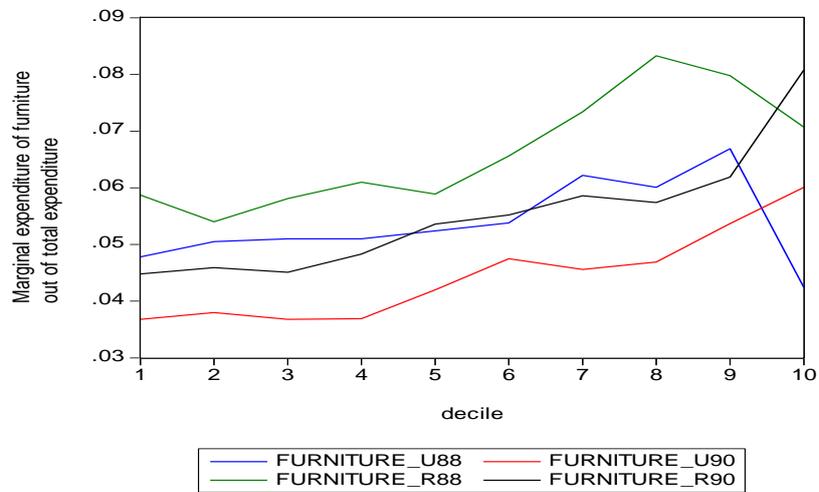
Source: our calculations

Fig. 2. MPE for housing



Source: our calculations

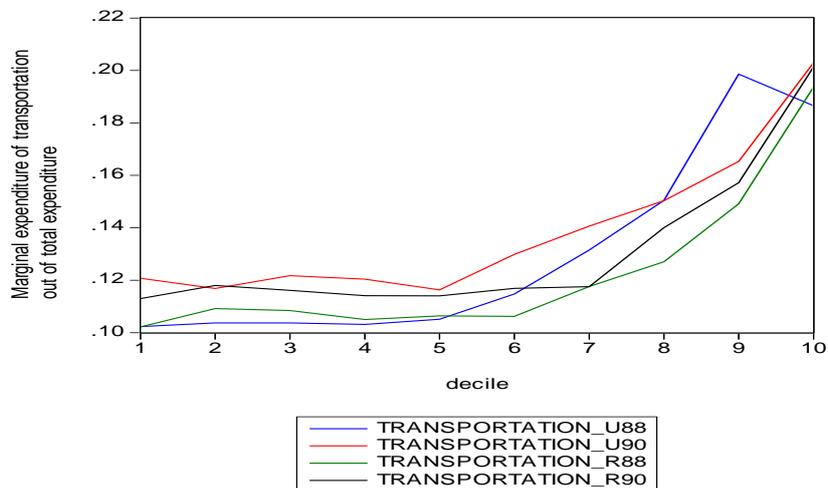
Fig. 3. MPE for energy



Source: our calculations

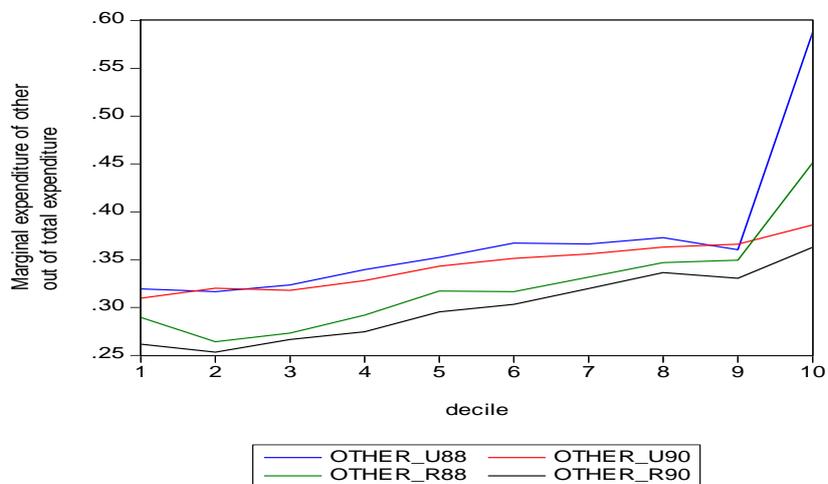
Fig. 4. MPE for house appliances

14/ Subsidy Reform, Cash Payments, and Welfare of Iranian Households



Source: our calculations

Fig. 5. MPE for transportation and communication

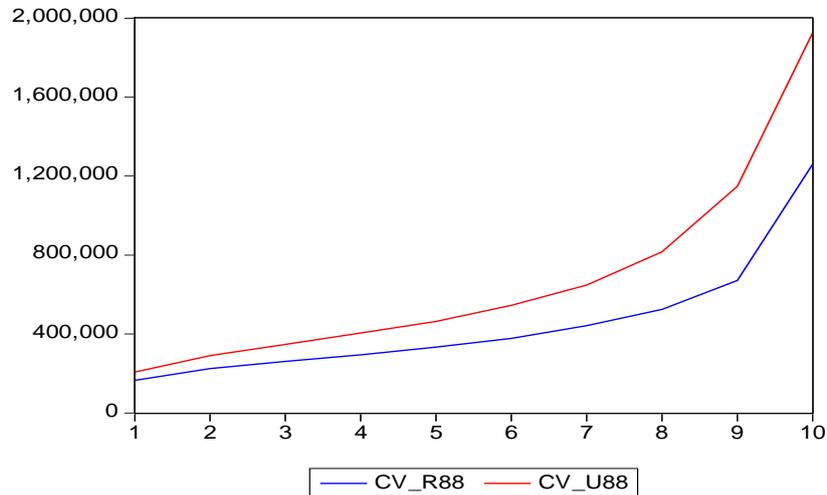


Source: our calculations

Fig. 6. MPE for others

4.2. Compensated Variations

Compensated income for maintaining utility per person for both urban and rural areas were calculated for all deciles and shown in Figure 7. The blue curve is the compensatory income based on the utility of 2009 for rural areas, and red curve is for urban areas.



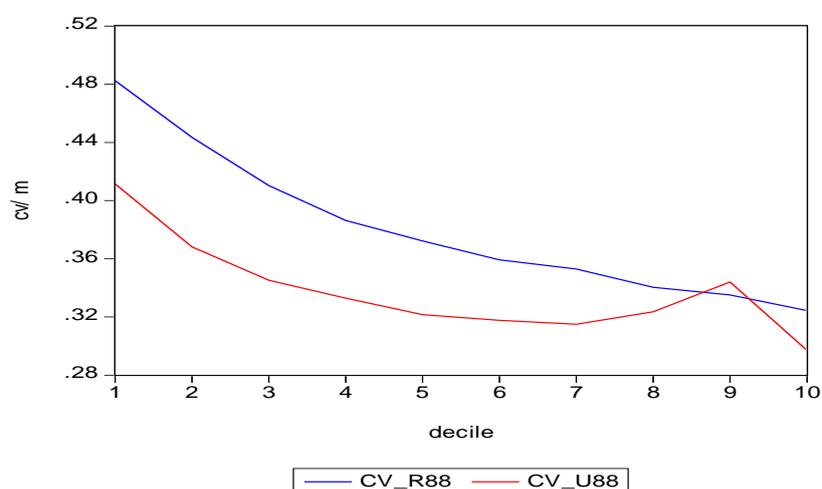
Source: our calculations

Fig. 7. Compensated variations

Going from the first income deciles to the tenth, compensation gets bigger for both rural and urban areas; a quite logical result since people with higher income usually spend more, and the amount of compensation needed to maintain their utility as before is higher. The compensation payment needed for the urban households is more than that needed for the rural families, which means that the urban households have lost more welfare than rural households and their costs have increased more too. This result is in line with the objective of this law. The important and necessary question is whether the increase in expenses due to subsidy reform has risen its ratio to the total expenditure for high income households and therefore lost more utility or not.

Our calculations show that the ratio of households' compensated payment needed for low income deciles is more than that of high-income households. So the importance of this compensated income is more for low than for the high income households. On the other hand, as it is usual, we assume that each household's expenditure and income is the same, in other words, nobody saves. But, in reality, we expect income and expenses to be close together for low income households and, as we move to upper deciles, savings rise. Therefore, adding the amount of savings to total expenditure of households, the importance of these subsidies for lower income households becomes more.

16/ Subsidy Reform, Cash Payments, and Welfare of Iranian Households



Source: our calculations

Fig. 8. Ratio of compensated income to expenditure

Table 5 represents the monthly amount of cash subsidies needed for all deciles in urban and rural areas. Then, comparing the compensation payment to the government payments of IRR 455,000, we could evaluate the government program. If the calculated subsidy is more than government's pay, it means that IRR 455,000 is not sufficient. On the contrary, if the subsidy calculated in this study is equal or less than IRR 455,000, it means that the government's paid subsidy is sufficient or even more. Our results show that the government's payment of IRR 455,000 is only sufficient for some of the deciles, in fact it is enough for the first four urban and the first seven rural deciles and not sufficient for other deciles.

Table 5. Adequacy of cash subsidies for all deciles (IRR)

Deciles	Urban		Rural	
first deciles	207254	Sufficient	164547	Sufficient
second deciles	290495	Sufficient	224462	Sufficient
third deciles	346871	Sufficient	260841	Sufficient
fourth deciles	405352	Sufficient	294491	Sufficient
fifth deciles	464197	Insufficient	333981	Sufficient
sixth deciles	544687	Insufficient	377756	Sufficient
seventh deciles	647694	Insufficient	442692	Sufficient
eighth deciles	816666	Insufficient	524875	Insufficient
ninth deciles	1147909	Insufficient	671846	Insufficient
tenth deciles	1926133	Insufficient	1260123	Insufficient

Source: our calculations

Table 6 presents the calculated total subsidy amount paid to all households in the sample study and its adequacy for both rural and urban

areas. Current subsidy payment to these urban families is equal to IRR 28,859,285,000, while if the subsidy is paid according to the findings of this research (for example for maintaining the primary utility), the total sum of subsidy would be IRR 38,676,887,709. The total amount of subsidy paid by the government to the number of households in the sample is only adequate in rural areas. Significant differences between the figures in the table show the correct assumption of the legislators. It means that high-income households are more benefited with energy and food low prices than the low-income households and in fact the low price of those goods leads to unequal distribution of income.

Table 6. Total amount of subsidy in the sample study (IRR)

Subsidy	Urban	Rural
Current subsidy (governmental)	28859285000	33219550000
Calculated subsidy	38676887709	30563098321

Source: our calculations

5. Conclusion

1. Although the compensated income for each rural income group is always less than the same urban group, but the ratio of this compensated income to the expenditure of rural households is more than urban households. In addition, although the compensated income is much larger for the higher income households, but unless two cases, the ratio of this compensated income to the expenditure of household is more for the lower deciles, therefore it is more important.
2. Due to the use of expenditure data instead of income data, it is expected that the distance between expenditure and income in reality to be zero or approaching zero for low income deciles and get bigger as we go toward high income groups, therefore the importance of these subsidy is less for upper deciles.
3. Since the calculated CV or required subsidy payment to the high income households is more than that of low income households, one can conclude that this subsidy reform is working against high income households and, therefore, it is in line with its goals. So the subsidy reform has not lowered the purchasing power of low income households or their utility, higher income households lose more purchasing power and experience further utility reduction.

18/ Subsidy Reform, Cash Payments, and Welfare of Iranian Households

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