ASSESSING THE SUCEPTIBILITY of ELIMINATION IN ENERGY SUBSIDIES ON THE LIVING STANDARD OF HOUSEHOLDS IN IRAN

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Abstract

Recent works indicate that the Iranian economy has the highest energy intensities among the other economies. Many analysts reached the conclusion that the existence of high energy subsidies could be the main factor responsible for such high energy intensities. As a remedial measure and also in order to compensate the budget deficit in the current fiscal year (2009 – 2010), the government opted to eliminate all energy subsidies. To what extent , implementing such a policy would affect the living standards of different socio – economic groups of The household in Iran is not clear to the policy makers. In this paper we intend to use a standard SAM – based price model and also path decomposition of price influence to quantitatively analyses these issues. For this purpose, we use 2001 SAM of Iran.

The 2001 SAM which is specifically designed for this purpose, has many features: The 46 commodity groups in production account, contains both subsidized energy commodities and
Non – energy commodities. Household are grouped into rural and urban , and then further broken down into deciles. The overall results reveal that the susceptibilities of eliminating energy subsidies raise the cost of Living standard of rural households than urban households, and also more noticeable in the case of poor households than rich households.
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INTRODUCTION

On account of highly subsidized energy products, reform in energy prices and elimination of subsidies on energy products has been the main concern of the Government in Iran. The government has always controlled the price of fuel products such as petroleum, gasoline, natural gas, and also non – fuel products, Like electricity. According to the recent estimates of the World Bank, the price of fuel products in Iran are only 10 percent of the world prices, and fuel product subsidies are 18 percent of the GDP (World Bank, 2002). As a remedial measure like to promote better and more efficient use of energy and also to compensate the budget deficit in the current fiscal year (2009-2010) , the government has opted to eliminate fuel product subsidies , which in fact imply increasing the prices of fuel products to encourage household and industries to be more efficient in using energy (or to save energy). The following information reveals the increase prices of fuel and non – fuel product which has been suggested by the government.

Table 1- Suggested Increase in prices of Energy Commodities

	Rials / per Litter , per cm^3 and per kwh	Increase price: Rial and % increase in scenario , one	Increase price: Rial and % increase in scenario two
Petroleum	1000	4000 (300%)	4000 (300%)
Gasoline	165	2700 (1536%)	3500 (2021%)
Natural Gas	120	750 (525%)	1300 (983%)
Electricity	167	800 (379%)	1000 (448%)

Source: Etamad Melli (Daily News Paper, 2008)

From the above table, we observe that the suggested increase in the prices of four energy products varies between 300% in the case of petroleum and 2021% in the case of Gasoline. To what extent the implementation of such policy would affect the living standards of the different socio – economic groups of the households is not clear to many analysts as well as to policy makers in Iran. The main objective of this paper is to quantitatively analyses this issue , using SAM – based price model and path – decomposition of price Influence. For this purpose, the contents of the paper is organized as follows: In section 1 , we present a brief literature review . The methodology of SAM – based price model and path-decomposition of price influence are discussed in the section 2 . Data based and empirical results are highlighted in sections 3 and 4 . The last section will end up with summary and conclusions:

1-Literature Review

There are many previous studies on the economic - wide. impact of energy policy on the economy . Generally, these empirical studies can be classified into five main categories: (1) decomposition approach , (2) linear programming , (3) input -output (I-o model) , (4) macro – economic model and (5) general equilibrium model . The decomposition technique decomposes sectoral output production into various inputs energy and technology, then analysis the contribution of energy efficiency on the output changes . Example of works in this category include those by Newell , et.al. (1999) and by koop (2001). The liner programming approach typically minimizes the cost of production output to meet certain levels of demand under a certain energy policy regime (pacudan and de Gumzman , 2002). The I-O model and I-O multiplier matrix are used for sectoral price changes due to changes in given exogenous increase in the primary input coefficients (valadkhani and Mitchell , 2002). Meanwhile , the macro economic model is a set of macro economic equations representing an economy that are used to predict the impact of abolishing economic distortion , such as tax , to induce a more efficient use of energy (khanna and zilberman , 2001). Works in the four categories mentioned above typically are not able to determine the impact of elimination of the energy subsidies on the living standards of the different strata of the households. A general equilibrium model with multi-householld groups such as those of Ronald-Holsta and Sancho (1995) and Perra and Wodon (2008) does.

With respect to previous empirical works in Iran, we observe that most of researchers [1] , International Agencies [2] and also government Institutions [3]
used I-O model to assess the impact of reform energy prices on the changes on the sectoral price indices. In the following section, we maintain that typically these models are not able to capture the impact of implementation of such policy on the susceptibilities of the different households groups.

2- Methodology of SAM- base price model

A standard SAM represents a disaggregate picture of value flows in a given base based period , detailing direct linkages among its component sectors , factor of production and domestic institutions , but also pointing out the scope of existing indirect interactions. Table 2 portrays a partitioned simplified macro SAM with three endogenous and one combined exogenous accounts.

Table 2- Macro SAM in Terms of Endogenous and Exogenous Accounts

		Endogenous Accounts			Exogenous Accounts	Total (6)
		Production (1)	Factor (2)	Institutions (Households) (3)	Combined Accounts (rest) (4)	
Endogenous Accounts	(1)	T_{11}	O	T_{13}	T_{14}	Y_1
	(2)	T_{21}	O	O	T_{24}	Y_2
	(3)	O	T_{32}	T_{33}	T_{34}	Y_3
Exogenous Accounts	(4)	T_{41}	T_{42}	T_{43}	T_{44}	Y_4
Total (6)		Y_1	Y_2	Y_3	Y_4	

From the table 2 , we observe that the three accounts , namely production , factors , and households are classified as endogenous accounts , whereas a combined account (government , capital and rest of the world) is considered as exogenous account. Columns of the SAM reveal payment and rows show receipts. For each account (groups and or classes) spending is necessarily equal to total receipts , i.e. column and row totals of the matrix are equal. From the Table 2 , a SAM-based quantity model is derived by distinguishing endogenous and exogenous groups and assuming activity level may vary while prices are fixed. This assumption which has prvailed in I-O model (Oosterhaven , 2001 , Dietzendacher m 2002) , is justified in the presence of excess capacity and unused resources in the production activities. Suppose, account 1 (production activities) is chosen as endogenous and 2 , 3 and 4 as exogenous. Let A_{ij} denote the matrix of normalized column coefficients obtained from T_{ij} and let $\overline{y}_i$. represents the incomes of accounts i = 2 , 3 , 4 are given as exogenously. Then the income level of account 1 can be written as follows :

$Y_1=A_{11}Y_1+A_{13}\,\overline{Y}_3+A_{14}\overline{Y}_4=(I-A_{11})^{-1}\,(A_{13}\overline{Y}_3+ A_{14}\overline{Y}_4)=M_{11}x$ (1)

Where $M_{11} = (I – A_{11})^{-1}$ is the inter industry Leontief inverse and x is a vector of exogenous income levels. Since (1) implies

$y_1= M_{11}\square x$, matrix M_{11} is also termed the multiplier matrix. Column i of M_{11} shows the global effects on all endogenous activity levels induced by an exogenous inflow of i. consider now the alternative polar case in which prices are responsive to the primary in puts (primary costs), but not to the activity levels. This is situation where classical dichotomy between prices and quantities holds true and prices can be computed independently of activity levels. Let p_i now represent a price index for the ith activities. We should remember that the notion of price should be taken in the same broad sense that the notion of income of a sector or institution has in a SAM framework. With the same classification of accounts, reading down column 1 of the SAM , gives us

$$P_1=P_1A_{11}+\overline{P}_2A_{21}+\overline{P}_4A_{41}=(\overline{P}_2A_{21}+\overline{P}_4A_{41})(I-A_{11})^{-1}= v_1M_{11} \quad (2)$$

Where v_1 is a row vector of exogenous costs (i.e. factor payments, subsidies , taxes , tariff and import costs) and M_{11} is the same multiplier matrix as in (1) . Notice that from (2) we have

$p_1=$ □v_1 M_{11}. Row j of M_{11} displays the effects on prices due to a unitary exogenous change in sector j costs. Equations (1) and (2) above reveal the workability of quantity and price models in the standard I-O model. SAM based quantity and price models are in fact extension of I-O model, as they capture a larger and more complete view of the income generating process , production , income and consumption. This links can be meaningfully integrated into a model by considering producers, factors and

Households as endogenous and taking the combined account as exogenous. Using the column normalized expenditure coefficients and reading down the SAM column for endogenous accounts , we obtain three prices for three endogenous accounts as follows:

$$P_1=P_1A_{11}+P_2A_{21}+\overline{P}_4A_{41}$$
$$P_2=P_3A_{32}+\overline{P}_4A_{42} \qquad (3)$$
$$P_3=P_1A_{13}+\overline{P}_3A_{33}+\overline{P}_4A_{43}$$

Let $p = (p_1 , p_2 , p_3)$ be the vector of prices for the endogenous sectors of the SAM , express the vector of exogenous costs (taxes , tariff , subsidies and import costs) as $v=P_4A_{(4)}$, where $A_{(4)}$ is the sub matrix of the SAM composed by column adjoining A_{41} , A_{42} and A_{43}. Therefore , similar to the Leontief standard price model (eq. 2) . the SAM-based price model can be expressed as follows:

$$P = PA+v = v(I-A)^{-1} = vM \qquad (4)$$

Where M is the multiplier matrix, for the same classification of endogenous and exogenous accounts M is also the multiplier matrix of endogenous income determination model:

$$y = (I-A)^{-1}x = Mx \qquad (5)$$

From equations (4) and (5) the interpretation of M is different and depends on whether we read its entries across the rows or down the columns. To clarify this distinction, M will be referred as the standard multiplier matrix where as its transpose M' will be termed the price-transmission matrix.

Therefore, (4) can be express as:

$P' = M'V'$ and $\Delta P' = M'\Delta V'$ (6)

And $M' = m_{ji}$

Which suggests the effect on prices of three endogenous accounts due to a unitary exogenous change in combined accounts.

2-1- Decomposition of SAM-Price Model

In previous section, we noticed that the SAM offers a suitable accounting structure for modeling price formation. Since these prices are obtained in terms of global effects, are unable to provide us with a detailed complexities of cost – linkages. Therefore, in order to obtain a more comprehensive description of the effect of cost – linkages (as shown in M') on prices, one needs to go one step further and analyses the intersect oral cost – linkages between individual accounts of the SAM by identifying the paths through which cost effects travel from pole of origin to pole of destination Defourney and Thorbecke (1984) were the first analysts to introduce this method and called it structural Path Analysis. Since then the mentioned method has been used by many researchers for different analytical purposes (Azis, 2002, khan and Thorbecke, 1989, Thorbecke, 1997). The use of path analysis to investigate cost linkages is in fact a natural extension of decomposing the aggregate effects of cost linkages in M' on prices. Therefore to understand the price formation mechanism – based on the path analysis, one need to elaborate the following concepts and equations. Each pair (i , j) of indices in the SAM accounts is called an arc. A path is a consequence of s of indices (i , k , l , … , m , j) which can be decomposed into consecutive arc s <i , k> , <k , e> , … , <m , j> . Each of this pair can be considered as pole of origin to pole of destination of one account to the other account. The influence of account i as a pole of origin on account j as a pole of destination through a path s will be represented by (i□j) s. To estimate the cost influence of account i , say the elimination of energy subsidies on account of j , say , the different households along <i , j> , starts from direct coefficient matrix , A'=[a_{ji}] , prior to any of ensuing general equilibrium feedbacks , i.e M'=[m_{ji}] , as follows:

$$\Delta P_j / \Delta P_i = a_{ij} \qquad (7)$$

Equation (7) shows that any exogenous price increase affecting p_i , gives rise to a direct increase in j measured by entry (j , i) of the transpose of the column normalized matrix A. due to the linear structure of the model , the direct price influence along an elementary path s = <i , k , … m , j> is the composite effect of the direct influences along the constituent arcs , i.e.

$$DI(i\square j)_s = a_{ki} \ldots\ldots a_{jm} \qquad (8)$$

In any given paths, there may exist feedback effects along its indices. Account i influences k , but k in turn may influence i , either directly or through other intermediary indices. In addition to that , accounts influence themselves through loop as well. All of these feedback effects taking place along circuit in the path work to amplify the magnitude of the direct influence being transmitted over the path. The expanded influence will be called total price influence, and the ratio of total to direct price influence is called the price path-multiplier :

$$TI\ (i \square j)_S = DI\ (i \square j)_S\ us \qquad (9)$$

us in (7) is the price path-multiplier. Each elementary path with its respective feedback circuits, may span two indices i , j. Therefore, the total price influence along a path does not capture the full or global price influence in the network of itineraries linking i and j. Let s = {s/i,j} be the set of all elementary paths joining i and j , then using additives method , the global price influence is defined as follows:

$$GI(i \to j) = m_{ji} = \sum_{SES} TI(i \to j)_s = \sum_{ESE} DI(i \to J)_s us \qquad (10)$$

From (10) , m_{ji} is the $(i \square j)$ entry in the price-transmission matrix M' , following from the fact that s includes all connecting paths between accounts i and j. Therefore , direct, total and global price influence are three distinct but related concepts of influence that provide us precise information on the transmission mechanism underlying price formation.

3- Data Base

Fore the operational purposes , we have used 2001 SAM of Iran. 46 commodity groups are classified in the production account , out of which six energy products are taken separately:

Petroleum, gasoline, kerosene, fuel oil other unclassified fuel products and natural gas. Factor account , constitutes 8 categories: labour income , mixed income , capital income , depreciation , tax on production and imports , net tax on production and imports , tax on import and subsidies on production and imports. In the institutional account, a separate row and column has been considered for companies and government respectively. Households are grouped into urban and rural, and then further broken down into deciles. Capital and rest of world are taken as two separate accounts. Therefore, the size of SAM is 80×80.

4- Empirical Results and Analysis

4-1- Price Multipliers and the Cost of Living Index

The effects of one unit reduction of subsidies in electricity , petroleum and the road transport action on the charges in the cost of living index of households has been computed and the results are organized in the Table 3. On the basis of the results of Table, we can make the following observations:

One-the susceptibilities of the elimination of subsidies of electricity and road transportation on the cost of the living of the rural households are more than the urban households. For example,the effect of one unit elimination of subsidy of electricity, will increase the cost of living of rural households on an average 0.037 unit whereas the corresponding figure for urban households is 0.034 unit. Out of ten urban household deciles , the cost of living index of at least first five deciles are above the average cost of living whereas , in the case of urban households , we find that out of ten rural households deciles , the cost of living index of first six deciles , are above or equal to the average cost of living index.

Table 3- The Direct and Indirect Effects of one Unit Reduction in Electricity, Petroleum and road Transportation on the living standards of households

Households	electricity	petroleum	Road

Deciles				Transportation
Urban households	u.h.1	0.037	0.015	0.120
	u.h.2	0.036	0.017	0.182
	u.h.3	0.034	0.018	0.217
	u.h.4	0.034	0.020	0.176
	u.h.5	0.035	0.019	0.126
	u.h.6	0.033	0.022	0.142
	u.h.7	0.033	0.023	0.132
	u.h.8	0.033	0.025	0.131
	u.h.9	0.033	0.024	0.117
	u.h.10	0.032	0.024	0.106
Rural households	R.h.1	0.042	0.016	0.167
	R.h.2	0.038	0.019	0.183
	R.h.3	0.039	0.021	0.169
	R.h.4	0.037	0.020	0.170
	R.h.5	0.037	0.021	0.171
	R.h.6	0.037	0.021	0.153
	R.h.7	0.035	0.022	0.153
	R.h.8	0.034	0.022	0.149
	R.h.9	0.034	0.023	0.151
	R.h.10	0.034	0.021	0.132

Two – Almost similar results one can discern from the road transportation. The average cost of living index for rural and urban households from one unit decrease in road transportation subsidy are 0.145 unit and 0.160 units respectively. These results show that the susceptibilities (increase in cost of living index) of reduction in subsidy in road transportation, on an average will increase the cost of rural households more than urban households. Besides that, out of ten urban households, the cost of living index of the first four deciles (the poorer groups of households) are above the average and the remaining six deciles are below the average. In case of rural households, we find that out of ten groups of rural households, the cost of living index of the first five deciles are above the average whereas the remaining five falls below the average.

Three-the effect of subsidy cut in petroleum on the cost of living index of households provides us with different picture. First of all , we find that the susceptibilities of subsidy cut in petroleum , on an average increases cost of living index of urban households more than the rural households , 0.021 and 0.020 respectively. The results also show that as we move from the ladder of poor households to rich households, the cost of living index shows increasing trends. This is true for both urban and rural households as well. These results are contrary to the cases of electricity and road transportation.

4-2- Path Decomposition of Price Multipliers

All the above results and observations which have been derived from the price transmission matrix M' and presented in the section

4.1, provide a global summary of the composite cost feed backs in the economic structure represented by SAM. As such it does not unveil the constituent elements corresponding to linkages in the multiplier process. By using the path decomposition technique, we obtain a measure of how sectoral linkages contribute to the global multipliers, thus yielding valuable insights on cost transmission. The decomposition techniques have been applied to the SAM for Iran and same of results appear in Table 4. Before analyzing the results, we need to clarify two following points: one-unless otherwise stated, only those paths contributing 0.001 or more of the direct influence have been considered. Two – only the effects of reduction of subsidies in electricity, petroleum and road transportation on the cost of living index (household's welfare) for the two deciles households (poorest, deciles 1 and richest deciles 10) for both urban and rural households have been presented. Therefore, we have not considered the effects on production prices of changing production costs and effects of production costs on the factor prices. Therefore, the empirical part of this section is confined only to the impact on the cost of living index or the susceptibilities on consumer welfare of a change in the exogenous costs of electricity, road transportation and petroleum. As before, these changes can originate in reduction in subsidies or increase in output taxes or in the prices of imported goods. For each household type, its consumer price index measures the implicit cost of acquiring the benchmark basket of goods. An increase in the index reflects, therefore, the additional income needed to keep purchasing the original basket and as such provides a simple measure of the welfare impact on individual.

The results of the cost of production originate from subsidies reduction in electricity, road transportation and petroleum on the poorest (deciles 1) and the richest (deciles 10) urban and rural households are organized in the Table 4. On the basis of the results, we can make the following observations:

One: - cases 1 to 4 reveal the increase cost of production in electricity as pole of origin to the poorest and richest urban and rural households as recipients of prices. At the global level, the price indices (cost of living indices) for the deciles 1 urban households (poorest urban households) is 0.037 whereas for the richest households is 0.032. The corresponding figures for poorest and richest rural households are 0.042 and 0.034 respectively. The ratio of poorest to richest urban households is 1.16 times whereas for rural households gives 1.23 times. These results suggest that the additional income needed to keep purchasing the original basket for rural households 1.23 times more than rural households of 1.16 times.

Table4- Path Decomposition Price Influence

Pole of Origin	Pole of Destination	Paths	Price Influence				
			Global	Direct	Path	Total	T/G 0/0
i	j						

1- Elect u.hous.1	Elect. u.h.1	0.037	0.007	1.348	0.009	26.5
	Elect. hous.ser u.h.1		0.003	1.547	0.005	40.3
2- Elect u.hous.10	Elect.□ u.h.10	0.032	0.003	1.681	0.003	10.7
	Elect. W.R.T uh.10		0.004	1.889	0.007	21.0
	Elect. hou.ser. u.h.10		0.001	1.84	0.002	6.9
3- Elect. R. hous.1	Elect.□ R.h.1	0.042	0.013	1.344	0.007	40.8
	Elect.□ hou.ser. R. h.1		0.002	1.549	0.003	6.1
4- Elect. R. hous.10	Elect. R.h.10	0.034	0.003	1.467	0.004	10.7
	Elect.□W.R.T□ R. h.10		0.002	1.716	0.003	8.9
5- R.Tran□ u. hou.1	R.Tran u. h.1	0.120	0.031	1.167	0.036	29.8
	R.Tran oth.for u.h.1		0.001	1.33	0.002	1.5
	R.Tran me,meprod. u.h.1		0.003	1.273	0.003	5.8
	R.Tran miprod. u.h.1		0.002	1.209	0.002	1.5
	hou.ser u. h.1		0.002	1.337	0.003	2.3
	R.Tran oth.Ag me,meprod. u.h.1		0.001	1.521	0.002	1.4
	R.Tran□ hou hou.se u.h.1		0.001	1.354	0.002	1.4

Table 4- cont…

Pole of Origin i	Pole of Destination j	Paths	Price Influence				
			Global	Direct	Path	Total	T/G 0/0
6- R.Tran	u. hou.10	R.Tran R. h.10	0.106	0.015	1.43	0.022	20.6
		R.Tran mach. R. h.10		0.001	1.735	0.002	1.6
		R.Tran W.R.T R. h.10		0.009	1.591	0.014	13.1
7- R.Tran	R. hou.1	petro. R.h.1	0.167	0.007	1.165	0.083	49.5
		R.Tran oth.for R.h.1		0.002	1.33	0.003	1.6
		R.Tran oth.Ag R.h.1		0.002	1.436	0.002	1.5
		R.Tran me,meprod. R.h.1		0.003	1.273	0.003	2
		R.Tran miprod. R.h.1		0.001	1.208	0.001	0.8
		R.Tran oth.fod R.h.1		0.002	2.294	0.002	1.2
		R.Tran hou.ser R. h.1		0.001	1.340	0.001	1
8- R.Tran	R.hou.10	petro. R.h.10	0.132	0.031	1.259	0.039	29.4
		R.Tran me,meprod. R.h.10		0.001	1.363	0.001	1.1
		R.Tran W.R.T R. h.10		0.012	1.473	0.018	13.5
9- Pedro	u. hous.1	Petra u.h.1	0.015	0.002	1.049	0.002	15.1
10- Pedro	u.hous.10	Petra u.h.10	0.024	0.009	1.308	0.012	51.6
11- Pedro	R.hous.1	Petra R.h.10	0.016	0.002	1.048	0.002	12.2
		petro R.tran R.h.1		0.002	1.178	0.002	11.7
12- Pedro	R.hous.10	Petro R.h.10	0.021	0.006	1.141	0.007	32.9

Elect = Electricity , u.hou = urban households , W.R.T=
Wholesale and retail trade, hou.ser hos = housing services, R.hous. = Rural households, R.Tran = Road transportation oth.far = other farming, me , mepord = meat and mead products , petro = petroleum , oth.Ag = other agriculture.

Two-out of 0.037 unit of global effect, 26.5% revealed on the direct influence whereas 40.3% is in direct which transmits cost through electricity residential housing urban households 1. For rich urban households, we find that out of 0.032 unite of global effect, 21% of overall cost passes through direct influence, whereas indirect influence is only 6.9%. In the case of rural households, we find that, 40.8% of global effect is visualized on the direct influence for the poorest rural households and corresponding figure for the richest rural households is 10.7% . These findings suggest that the significance of indirect influences for the poor urban households is more than the direct influence, whereas opposite trend is true for the poor rural households. Three- the subsidy cut in the road transportation at the global level affects more on poor households than the rich households. The cost of living indices for poor urban and rich urban households are 0.120 and 0.106 respectively. The corresponding figures for respective rural households are: 0.167 and 0.132 . The ratios of poor to rich for urban and rural households are: 1.13 and 1.27 . These figures show that the degree of susceptibilities of the poorest urban households is 1.13 times more than the richest urban households whereas for rural households it is 1.27 times.
Four : For the poorest urban households , we observe that out of 0.120 global

effect, the direct influence is 29.8% whereas for the richest urban households , the mentioned influence is 20.6% the corresponding results for the poorest and richest rural households are 49.5% and 29.4% (cases 5 to 8) .

Five: cases 9 to 12 reveal the cost of living indices of urban and rural household which arises due to the subsidy cuts in petroleum. As com pared to the effects of subsidy cuts in electricity and road transportation on the cost of living standards, the effects of subsidy cut in petroleum give a different picture. First of the results show that the susceptibilities of richest urban and rural households at the global level are more than the poorest urban and rural households. For instance , the effects of in crease in cost of production in petroleum due to subsidy cut , raises the cost of living indices for the poorest and richest urban households 0.015 and 0.024 respectively , whereas the corresponding situation for the poorest and richest rural households are 0.016 and 0.021. (Cases 9 to 12). For the poorest urban households we find that only 15.1% of the global effect is transmitted through direct influence whereas for the richest urban households it is 51.6% (cases 9 and 10). The results for the poorest and the richest rural households show that. Only 12.2% of the total global effect is revealed through direct influence whereas for the richest rural households it is 32.9% (cases 11 and 12).

5- Summary and conclusions.

On account of highly subsidized energy products, reform in energy prices and elimination of subsidies on energy products has been the main concern of the Iranian government. As a remedial measure like to promote better and more efficient use of energy and also to compensate the current budget deficit , the government has opted to increase the price of energy products. To what extent the implementation of such policy would affect the cost of living standards of the different socio-economic groups of the households is not clear to many analysts as well as to policy makers in Iran. Our main intention is this paper is to quantitatively clarify some of these issues. For this purpose, we have used SAM-based price mode and path decomposition of price influence. The data which is employed here , is SAM 2001. The elimination of subsidies on the cost of living index for two energy products (electricity and petroleum) and one non-energy, i.e . road transportation have been worked out. With respect to the subsidy cut in electricity, read transportation and petroleum, the results on the basis of the SAM-based price model show that the effects of one unit reduction of subsidies in electricity and road transportation raise the cost of living index of rural households more than urban households. The ratio of the poorest to the richest households for electricity are 1.116 times for urban households and 1.23 times for rural households. In the case of road transportation, we find that the ratios are 1.13 times and 1.27 times. Petroleum provides different picture. First of the ratios for both urban and rural households are less than one , 0.62 and 0.76 which suggest that the degree of susceptibility of the poorest urban and rural households caused by the reduction of subsidy in petroleum is less than the richest households and secondly these ratios for rural households are more than urban households. The main reason is the difference between the cost of living indices of richest urban and rural households. The results show that the ratio of the poorest urban households to the poorest rural households is 0.94 whereas corresponding figure for the richest urban and rural households is 1.14 . The results obtained on the basis of the path decomposition of price influence , we find that the direct influence of subsidy cut in electricity for the poorest rural households is more than the corresponding urban households , 40.8% and 26.5% respectively. The indirect influence of the poorest urban households appear to be much higher than the corresponding rural households, 40.3% and 6.1% respectively.

As compared to the effect of subsidy cut in electricity, the subsidy cut in road transportation appear to be more significant. First of all the direct effect for the poor households is more than the rich households and secondly, the direct transmission for rural households is higher than urban households. For example 29.8% of the poorest urban households is revealed through direct influence whereas corresponding figure for the poorest rural households is 49.5% . The similar figures for the richest urban and rural households are 20.6% and 29.4% .

The opposite trends we find for the subsidy cut in petroleum. The direct influence for the richest urban and rural households are 51.6% and 32.9% whereas for the poorest urban and rural households, they are 12.2% and 11.7%.

Notes

[1]- for more information , refer to (Ahmadvant , et.a1 , 2008)

[2]- The World Banks (1999 , 2002 and 2003)

[3]- Central Bank of Iran (2005) , Parliament Research center (2005) and Ministry of Commerce (2002)

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