International Journal of Developing and Emerging Economies

Vol.5, No.3, pp. 1-26, September 2017

Published by European Centre for Research Training and Development UK (www.eajournals.org)

ANALYSIS THE EFFECT OF ENERGY PRICE INCREASING ON ECONOMIC SECTORS IN IRAN'S ECONOMY

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ABSTRACT :*In this paper we used from social accounting model for analyzing the effects of energy carriers' price increasing on different part of economy. The effect of each of these seven carriers increasing is also analyzed separately and simultaneous. In this framework we showed that how increasing in energy's price causes the increasing in manufacturing price in manufacture sectors and this will increase the products' price.*

KEYWORDS: Subsidy, Energy Carriers, Energy Price Increasing, Social Accounting.

INTRODUCTION

Undoubtedly energy is considered as the one of the manufacturing advantageous inputs in Iran's economy. Presence of abundant and cheap energies caused that some of the economic and financial activities to be developed and justified. In creation of this advantage, subsidies payments have special importance. Subsidies are one of the important governmental supports which are paid for supporting from manufactures, consumers and exporters that don't have the ability for paying the real energy price. Subsidies affects the economy through relative prices changes (subsidy's goods relative price decreasing) and therefore with prices falsification will prevent from sources optimization allotment. In the other hand by creation of budget deficit and increasing social prices will have the macro effects on national economy. Regarding to this affair, this main question will be mentioned in relationship with the energy carriers' prices increasing (energy advantage elimination) which energy price increasing will have such effect on Iran's economy variables.

Especially goods inclusion range entitled for subsidy receipt, Serviostava and Rao (2002) believe that governments only pay the subsidy for public goods such as: water protection, soil, jungle, wild life, health services, education, research and development, floodwater control, drainage and ecology and subsidy payment is not seems to be logical for goods that have no external positive effect such as manufacturing subsidy (such as chemical fertilizers and poisons) and main goods. Serviostava and Sen (1997) also believe that there shouldn't be paying for private goods, but these are the public goods that related to their nature should entitled for subsidy payment. More ever all of the public goods are not considered for subsidy payment and in this area public goods are

ISSN 2055-608X(Print), ISSN 2055-6098(Online)

categorized in two entitled and non-entitled subsidy goods. Therefore according to the table 1-1, all of the public goods are not considered for subsidy payment, but goods that have external positive effect and also private sector that doesn't tend for investing in them, are known as the entitled goods for subsidy payment. Because subsidy payment to the non-entitled goods regardless from price loading can be destructive in several ways which environment destruction is one of the most important one. Granting subsidy to the water and irrigation will lead to water excessive consumption and consequently will destruct the soil's fertilizing in long period. More subsidies to the chemical fertilizer cause the inappropriate and indiscriminate consumption and soil's quality destruction.

Table 1: pubic goods categorization.

Subsidy entitled services and goods	Subsidy non-entitled services and goods	Subsidy entitled services and goods	Subsidy non-entitled services and goods
Primary education Public health Waste and health actions Water Working force Protection from water and soil Protection from jungle and wild life	Education, sport, art and culture (excepting primary education) Water providing Home Urban development Other social services Agriculture and related affairs	Agriculture research and education Floodwater and drainage controlling Roads and bridges Space researches Ocean researches Other researches Ecology and environment	Electricity Industry Transportation Urbanism services

Source: Servavetave and Sen (1997)

LITERATURE REVIEW

Subsidies through changes in relative prices (lower relative price of subsidized goods) have affected the economy and therefore, by prices distortion prevented the resource allocation. On the other hand subsidies by creating budget deficit and increase social spending have a major impact on the national economy. However, in some countries, it seems that consumers do not benefited from these subsidies (Because pay lower prices for subsidized products) But they will suffer indirectly. Because paying subsidies, increase public spending, reduced economic growth and budget deficit and consequently inflation. Furthermore some governments to finance the subsidies have to borrowing and printing money which would endanger economic stability.

By analyzing past performance of energy consumption and major economic indicators can be said that there is a significant correlation between energy consumption and economy as Supplies economic growth requires an increase in energy consumption. If this relationship extended to the future, the future growth of energy consumption will be very large especially in the Third World. It cannot deny that in order to achieve development, expansion of production capacities and increased consumption of raw materials and products is essential and lead to improvement the

ISSN 2055-608X(Print), ISSN 2055-6098(Online)

people lives and automation to enhance production efficiency and the rapid increase in energy consumption. On the other hand the positive results of increasing efficiency and saving energy show that with a small increases or keep energy consumption stable, potential economic growth is possible without rapid increase in energy. In recent years, many developed countries have used these potential.

In developing countries, lack of energy in economic development is an important deterrent. The per capita consumption energy in developing countries is less than one-sixth of per capita consumption of energy in developing countries. Developing countries to providing their growing needs should overcome technical issues such as low efficiency, limited investment resources and subsidized pricing organization. The recent organization prevents the formation of incentives for energy savings. Although energy consumption in developing countries has increased strongly, Rapid population growth has caused the consumption of energy per capita in these countries is low in comparison Compare with developed countries. In some developing countries, most of the energy essential needs of industrial and service provider are required. Although per capita energy consumption is different from country to country, but the average per capita consumption in developed countries are still 9 times more than developing countries.

Energy in economic activity has various applications and because of this changing in energy prices has a major effect on GDP. Pendik (1979) by the total cost function calculate and analysis of traction energy costs, labor and capital Compared to total cost that in this regard we can pointed the Brano and Saj study (1981 and 1979). In this study energy is considered as a raw material and one of the production factors and discuss about the effect of changes in energy prices by changes in the productivity of labor and capital and national production as a result.

By determining the energy role in structure industry, we can determine the effect of energy prices on economic growth. In industries that energy used as intermediate in production, increasing Price will be affected on economic production facilities and potential production. Increasing energy prices can result in scarcity of domestic energy and decrease gross domestic product. When energy gets expensive reduced the whole economy consumption. Furthermore, increasing in energy prices will increase the price index.

The effect of higher energy prices on inflation in terms of economic policy and also review these effects on production capacity are important. In short-term production cannot give an appropriate response to rapid increase in energy prices and because of this the restructuring of the energy industry, achieved more in the long term.

If we assume that all the used energy applied as an Intermediate input in the final production of goods and services, the cost of production goes up when the energy prices increase. But in that part of the cost production factors which are not energy alternative, the costs remain on the same amount before of increasing energy. In short term that manufacturers are not able to change the mode of production. By increasing the cost of factors less input were used and for this reason, real production reduced. We can use function of total cost as a measure to show the effect of increasing the price of energy in product. This effect simply is equivalent to the results of the increase in the

ISSN 2055-608X(Print), ISSN 2055-6098(Online)

fixed cost of production. Therefore increase in production costs is One percent in energy prices as a result which the price elasticity of energy production.

Macro-economic effects of the increase in energy prices to the manufacturing sector of the economy are dependent on energy. For example, assume that all consumed energy is domestic production. Increasing in energy prices, increase the production costs. In this case more sources of capital and labor are needed to produce the same amount of energy and this means reducing the available sources for production of other goods and services and reduce gross domestic product. In the case that all consumed energy is imported, High energy prices means an increase in import costs that in long term should offset it by increased the exports. And further allocation of capital and labor to produce export goods is the response to expensive energy. So far, was discussed about the impact of increasing energy prices on the decline in production. But alongside increasing energy prices may be applied monetary and fiscal policies that sometimes these policies have a greater effect on the recession and price increasing. It is quite simple increasing energy prices directly help to general inflation and the government trying to fight this inflation by taking tightens policy. This phenomenon was observed in 1974 in America with increasing energy prices. For example, in America, in 1974, 3 to 4 percent from 11 percent of inflation in that year were attributed to rising oil prices. 1.5 to 2 percent of inflation related to high food prices was as a result of increased demand for meat and other exported food products. And this means that between 5 to 6 percent of inflation in that year was related to demand changes. When most of the countries with strong monetary and fiscal policies were give a wrong answer to inflation, the Result of this was a sharp downturn in 1975 in America, Canada and European countries. So economic growth was came down in much of the world in the years 1974 -76.

METHODOLOGY

In order to better understanding of a social accounting matrix structure and Also interpretation each of the accounts and its sub-accounts, it is essential that macro accounts of each society recognized. For each society (National, regional and even village) independent of development degree has 4 specified accounts. These accounts are: 1. Production account 2. Consumption account 3. Accumulation account (saving) 4. Outside world account. By adjusting four accounts in the form of a matrix obtained Macro social accounting matrix.

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Table (1-1). The general structure of a conventional macro social accounting matrix.

Input items Output items	1.Production account	2.organizations Consumption accounts	3.Accumulation account (investment)	4.abroad Account	5. Total inputs
1.Production account	intersectional Intermediate Transactions (1-1)	Final consumption of goods and services by organizations (1-2)	Fixed capital formation and stock Inventories (1-3)	Imported goods and services (1-4)	Total demand (total producers income)
2.organizationsConsumption accounts	Added value, taxes, Subsidies Matrix(2-1)	Current transfers Between organization (2-2)		organizations Foreign Receive(2-4)	Total organization income
3.Accumulation account (investment)		Organization internal saving(3-2)			Total saving
4.abroad Account	Import goods, services (1-4)	Organization payment to abroad(4-2)	Foreign current account(4-3)	Net foreign loan(3-4)	Total foreign income
5. Total inputs	total supply (total cost of producers)	Total cost of organization	Total investment	Total foreign cost	

Table (1-1) reveals Overall structure of a conventional macro social accounting matrix based on four main public accounts. Its line Indicate incoming items (income) of each account and its columns show the output items (costs) of the corresponding accounts. The number of rows and columns of the table are the same and thus the table is a square matrix.so that Total income of each account should equal to Total cost of corresponding Based on the logic of financial accounting organization in one year. In order to remove the limitations were detected the Consumption account And generally instead of four macro account in society, five specific accounts is considered. Table (2-1) showed Social accounting matrix structure into five distinct society account.

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Table 1-2: social major accounting matrix structure in form of five accounts.

Input items Output items	1.Production account	2.produt factors account	3.Accumulation account (investment)	4.abroad Account	5. Total inputs
1.Production account	Intersectional Intermediate Transactions(1-1)	Final consumption of goods and services by organizations(1-2)	Fixed capital formation and stock Inventories(1-3)	Imported goods and services(1-4)	Total demand (total producers income)
2.produt factors account	Added value, taxes, Subsidies Matrix(2-1)	Current transfers Between organization(2-2)		organizations Foreign Receive(2-4)	Total organization income
3.Accumulation account (investment)		Organization internal saving(3-2)			Total saving
4.abroad Account	Import goods, services (1-4)	Organization payment to abroad(4-2)	Foreign current account(4-3)	Net foreign loan(3-4)	Total foreign income
5. Total inputs	total supply (total cost of producers)	Total cost of product factors account	Total investment	Total foreign cost	

Consumer account is divided into Production factors and organizations. This type of classification can be detailed substrate added value matrix in terms of socio-economic groups and labor, mixed income and operating surplus (Without mixed income) and also provide socio-economic classification groups to households.

Each of the five accounts in above table can be summarized as follows.
Rows and columns 1 (Production account) show the way of sell goods and services to the producers and their cost structure. In fact the rows and columns show the structure table of Input – Output at macro level. Total line indicates the demand of whole society or producer income. The total demand contained of two parts.

In the first part, Intermediate demand intersectional is considered as (entry 1-1) that is the intermediate matrix intersectional in Leontief –Standh table. In which different production activities such as agriculture, industry, services and sub-sectors dealing with each other.
The second part reveals the final demand. This part shows that how the productive goods by product activity attract to entry 1-3, 1-4, and 1-5.

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Entry (1-3) is the amount of goods and services that finally used by households and the government's social and economic groups. Entry (1-4) and (1-5) are the demand remaining components that In order to establish security and economic production create capital Or in forms of goods and services exported to abroad.

Column 1 of this table reflecting the cost of production accounts (Economic sectors) and show the payment of the account to other accounts. Entry (1-1) is the Intermediate payments from account to account in a transaction matrix in inter mediation. Entry (2-1) is payment of this account to factors (Labor, capital, etc.) as added value and Producers payment to the outside world in the form of imports of goods and services and show in entry (1-5).

Row and column 2 in the mentioned table reflects the incomes and manufacturing factors account cost respectively. Row 2 in the above table states that manufacturing factors in social accounting matrix framework, obtains the incomes from two added values, entry 2-1 and the other one receiving the manufacturing factors from external factors in entry 2-5. Column 2 shows that manufacturing incomes has been paid to which accounts. In this one we observe that a part of manufacturing factors income allocated to the society internal organizations (families, companies and government) (entry 2-3) and other part considers the manufacturing factors account incomes as the external world (entry 2-5).

Row and column 3 shows the total incomes and organizations consumption account costs respectively. Regarding to the table 1-1 in row 3 we observe that organizations account income has been formed from three specified sources.

- At first incomes that society's organizations directly receive manufacturing factors (entry 2-3).
- Secondly incomes that society's organizations receive through common transfers between themselves (entry 3-3).
- Third one is the incomes sources which receive them from external world account (entry 5-3).

Mentioned account column clears cost manner. Organizations cost items is separable to four categories.

- First part is the goods and services cost amount which is performed by the organizations (entry 3-1).
- Other part is the organizations payment as the inter-organization transfers (entry 3-3).
- Final part is the organizations payment to the external world account (entry 3-5).
- What that remains from the organization income, considers as the society's organizations saving which usually obtains as the redundant and then will be considered as the accumulation account (saving) in entry 3-4.

Row and column 4 indicates the accumulation account (saving) respectively the saving summation and investing. Row 4 shows the national saving summation which is formed from two parts.

- Is the saving that is performed by the society's internal organizations (entry 3-4).
- Just loans that organizations (government) receive from external world (entry 5-4).

Mentioned account column states that the whole national saving how will be invested. A part from whole mentioned saving invests in order of manufacturing capacity creation in different economic

ISSN 2055-608X(Print), ISSN 2055-6098(Online)

parts (entry 4-1) and another part as the redundant which actually indicates the country's business balance will be considered in external world account. This redundant possibly can be negative, positive or even zero (entry 4-5).
5th column and row shows the external world accounts items in social accounting matrix. Mentioned row items are as the following:

- Services and goods importation (entry 1-5).
- External world other countries' income from the country's costs analysis (entry 2-5).
- Organizations payment to the external world (entry 3-5).
- And external business balance (entry 4-5).

And its column items are the incomes that the analyzed countries receive from other countries.
Two general approaches from the methodological viewpoint, field and performance about the social accounting matrix are presented as the following:

- Income approach or demand side approach.
- Offering side approach or cost approach or price.

In the demand side approach, direct and indirect effects and results of political major variables changes (injecting items) evaluates the economic different parts manufacturing synchronous changes, manufacturing factors income distribution changes, families social-economical groups income distribution changes, poverty and poverty eradication of different economical parts.
In cost or price demand side approach generally related policies to the direct and indirect social and economic effects and results (government financial policies) originating government financial policies variables changes (leakage items) on sectors price indexes changes, manufacturing factors price indexes changes and living costs indexes changes (welfare index) of families social and economic groups will be analyzed quantitatively.
In order of analyzing the methodological different aspects, standard increasingly coefficients matrix and performing it in vast ranges of economic-social policies is necessary which at first is designed base on the table 4-7 structure, whole structure of social accounting matrix according to the endogenous and exogenous accounts. Table 4-8 shows this structure.

Table (4-1) The general structure of a conventional macro social accounting matrix based on Endogenous accounts and Exogenous accounts

Inputs Outputs	Endogenous accounts	Exogenous accounts	Total inputs
Endogenous accounts	N (I)	X (III)	Y^d
Exogenous accounts	L (III)	R (IV)	Y^x
Total outputs	Y^d	Y^x	

Table 1-4 organized to two endogenous general accounts in four specified I, II, III and IV areas. N is a square matrix and whole common endogenous accounts exchanges (manufacturing, manufacturing factors and society internal organizations except the government) will be cleared. Ne=n and e is a column unit vector. Therefore n shows the N square matrix column summation. Nij clears the elements and I and j indexes shows the related endogenous accounts to three endogenous accounts (manufacturing, manufacturing factors and organizations). Forming contents

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include government price, investing, goods export and services, manufacturing factors income from the external world and government common transfers to families, therefore X is one vector which X=[xi] and its elements Yd=I 1,2,3 and xi is the demands summation or shows the endogenous accounts income and its elements Yd=[Ydi] that indicates the i^{th} endogenous accounts (i=1,2,3).
L in the III area is the endogenous accounts leakage items summation which is considered in the endogenous accounts.

Formation elements include the goods importation and services, taxes for manufacturing and importation, subsidies for manufacturing and importation, savings, paying the manufacturing and organizations factors accounts away. Variables such as importation, taxes and subsidies actually are political variables that are used in the government financial policies framework. [lj]L= is one linear vector that j=1,2,3 indicates three endogenous accounts leakage.

Y, d are the outputs summation or endogenous accounts costs and its elements Y.d=[Y.dj] indicates one linear vector. According to the accounting organization logic, endogenous accounts input and output summation and endogenous accounts input and output summation and input and output summation of each endogenous accounts should be equal meaning Y.d=Yd and Ydi=Y.dj.
R in IV area acts as the one balancer redundant endogenous outputs and inputs pen meaning that Yx=Y.x. regarding to the above description we can show the table 1-4 matrix figure for three endogenous accounts.

Table 1-5: three social matrix endogenous and exogenous accounts matrix form

input output		Endogenous accounts			Exogenous accounts	Inputs summation
		Organizations accounts	Manufacturing factors account	Manufacturing account		
Endogenous accounts	Manufacturing account	N_{11}	0	N_{12}	Other accounts	
	Manufacturing factors account	N_{12}	0 (I)	0	X	Y
	Organizations accounts	0	N_{21}	N_{22}	X	Y
Exogenous accounts	Other accounts	I	I	I	X	Y
	Outputs summation	Y	Y	Y	T	

ISSN 2055-608X(Print), ISSN 2055-6098(Online)

According to the manufacturing balance logic of Leonetif data-output table, income-manufacturing combinational balance sheet (manufacturing and society internal organizations factors) regarding to three endogenous account of the above table is written as the following.

$$Ydi= n + x\ i \quad (1)$$

Relation 1 shows that the whole endogenous accounts income is formed from two parts.

- Endogenous accounts income is the common exchanges.

(Xi) is considered as the endogenous accounts which are as the endogenous accounts in other accounts.

In order of economic analysis it is necessary that intermediate exchange part transfers between endogenous accounts tone middle tendency matrix of costs. Mentioned coefficients from division of matrix N elements is measured rather to the whole cost accounts.

Meaning that:

$$Bn=N[Yd]\text{-}1 \quad (2)$$

$$N=BnYd \quad (3)$$

$$B_n=\begin{pmatrix} B_{33} & O & B_{11} \\ O & O & B_{21} \\ B_{33} & B_{32} & O \end{pmatrix}$$

Bn matrix elements are as following:

- Leontif data-output mean coefficients matrix (B11)
- Mean cost or family reagent coefficient matrix (3B1)
- Manufacturing factors mean income coefficient matrix (B21)
- final internal mean income coefficient matrix (B32)
- inter and intermediate final exchanges mean coefficient matrix (B33)

By substituting relation 3 in relation 1, we obtain the following relation.

$$yd = Bn\ yd + x \quad (4)$$

By using from relation 4 we can measure the social and economic policies effects and results originating from political variables changes Xi on Ydi as the following.

$$yd = (I – Bn)\text{-}1\ x = Ma\ x \quad (5)$$

In relation 5 (Bn-I)-1 or Ma states the normal and standard increasingly coefficients matrix in manufacturing approach or social accounting matrix income. Relation 5 can be used in three policy levels are used according endogenous x variables changes through Ma increasingly coefficient matrix on Yd endogenous variables changes. Performing this analysis type and related policies to it are possible in three main hypothesis frameworks:

We consider that manufacturing extra capacity presents in economy and therefore there is no limitation in economic glut side that won't be considered.

Manufacturing technology and also sources (manufacturing factors) in one accounting specific period (annual) will be identified.

Average tendency to the cost and final tendency to the cost in all Bn coefficient matrix elements are considered to be equal.

Regarding to the mentioned consideration is one of the relation 5 advantage in social and economic policies and analysis which increasingly coefficients matrix (Ma) is decomposable to three parts (Ma=M3M2M1). By substituting decomposed Ma in relation 5 we obtain a new relation.

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yd= M3M2M1 x (6)

M1 means that effects of account begin and after affecting the sub-accounts will return to it again. Leontif increasingly coefficient matrix is a sample of deficit closed loop effects.

M2 is mainly the residue cycle. Meaning that the effect begins from one account and after affecting the sub-accounts will not return to it again.

M3 Means that the effect begins from one account and after affecting the sub-accounts will return to it again.

One of the main insufficiencies of performing relations 5 and 6 in three policy levels, is the equality of mean cost coefficients in three endogenous accounts with their final cost coefficients. Performing this mentioned consideration about the manufacturing accounts and manufacturing factors maybe can be defendable in short period social and economic analysis but about the families consumption it seems to be unreal. With final tendency measurement to the families consumption, above relations will be modified as the following:

dyd = cdyd + dx (7)

which

Cij =Cc and

dyd =(I-Cc)-1dx =Mc dx (8

More in comparison with relation 5, relation 7 can be stated as the matrix form:

(9) $$\begin{pmatrix} dy_1^d \\ dy_2^d \\ dy_3^d \end{pmatrix} - \begin{pmatrix} C_{11} & 0 & C_{13} \\ C_{21} & 0 & C_{23} \\ 0 & C_{32} & C_{33} \end{pmatrix} \begin{pmatrix} dy_1^d \\ dy_2^d \\ dy_3^d \end{pmatrix} + \begin{pmatrix} dx_1 \\ dx_2 \\ dx_3 \end{pmatrix}$$

If we compare the relation 5 and 6 with relations 7 and 8 and 9 we will reach the following observation:

• Fr

om the methodological viewpoint Ma in relation 6, is named as the accounting increasingly coefficients and Mc in relation 8 constant price increasingly coefficients matrix.

• Fr

om the theoretical viewpoint Mc on Ma in short period economic and social analysis have excellence because all of the manufacturing cycles in Ma are based on the equality hypothesis against the mean tendency to the costs and final tendency to the stable costs and therefore results respects base on Ma (which itself originates from the policies variables in three policies levels for manufacturing, manufacturing factors income and economic and social groups income of families) in measuring the cyclic process is unable. Implicating the equality hypothesis of mean tendency to the costs and final tendency to the costs in all Ma elements is the reflector of unit costs which is hidden in Bn. This is one the main Ma limitation and considers the social and economic analysis. In order of exiting from this insufficiency, final tendency is closer to the reality rather than Bn as the one alternative meaning Cn, is offered in Kinzy prices stability framework. So in short period policies, Kinzy's equilibrium pattern will be constant by increasing the manufacturing unit under the presented conditions for vacant prices manufacturing capacities, now in Walres public equilibrium models, prices are determining the economic equilibrium.

ISSN 2055-608X(Print), ISSN 2055-6098(Online)

In Ma we consider those families' social and economic groups income traction demands (B13) are like the endogenous ones (B33, B32, B21, B11) for different goods and services groups with unit. This means that the consumer population (family) spends relatively to their specified income for different goods which regarding to the consumers' behaviors and actins, the consideration is unreal. Under these conditions if C13 substitute the B13, more realistic imagine from the economy structure (Cn) and consequently (Cn-I)-1 will be obtained in the social and economic analysis. Final tendency measurement method rather than the consumption, C13 was performed as the following. Income total traction (cost) of different families group for i^{th} good equals with the final tendency ratio of i^{th} good cost (MEPhi) to the mean tendency for that cost (Aehi).

$$e_{yh} = \frac{MEPhi}{AEhi} \quad (10)$$

Eyhi in relation 10, shows the income traction of h^{th} families groups for i^{th} good. Meaning from the group income in this relation is the h^{th} families group total income and not the consumable income. By knowing the eyhi and also AEhi which is measured based on B13, MEPhi will be obtained as the following.

MEPhi = eyhi . AEhi (11)

Relation 7 and its matrix formation in relation 9 have more flexibility especially social and economic analysis in three policies levels rather than relation 5. In order of observing the above and using from relation 9 we can state three manufacturing balance sheet relation-income balance as the following.

(9 - 1) dy1 d = C11dy1 d + 0 + C13dy3d + dx1

(9 - 2) dy2d = C21dy1 d + 0 + 0 + dx2

(9 - 3) dy3d = 0 + C21dy2d + C33dy3d + dx3

Three policies level mentioned above is cleared according to the political variables changes and forming elements in three endogenous accounts. These three policies levels include: dX1, dX2, dX3.

Direct and indirect effects and results of each policies can be measured in different scenarios on increasing the parts manufacturing (dyd1) on increasing the manufacturing factors income (dyd2) and increasing the families social-economic groups income (dyd3). For example if the related policies to the direct and indirect effects and results of export encourage policies on increasing the families different social-economic groups it seems that in this item it is necessary that base on relations 9-1 and 9-2 and 9-3 the dx1 and dyd3 effects and results states as the following:

$$(12)\quad dy_3{}^d = (I - C_{33})^{-1} C_{32} C_{21}[(I - C_{12})^{-1} C_{13} dy_3{}^d + (I - C_{12})^{-1} dx_1]$$
$$= (I - C_{33})^{-1} C_{32} C_{21}(I - C_{12})^{-1} C_{13} dy_3{}^d$$
$$+ (I - C_{33})^{-1} C_{32} C_{21} (I - C_{12})^{-1} dx_1$$
$$(13)\quad dy_3{}^d = [\, I - (I - C_{33})^{-1} C_{32} C_{21}(I - C_{12})^{-1} C_{13}\,]^{-1}(I - C_{33})^{-1} C_{32} C_{21} (I - C_{12})^{-1} dx_1$$

Relation 13 generally shows the direct and indirect effects and results of political variables changes inserted in dx1 (considering export encouragement) on increasing the families social-economic groups income. Mentioned relation is formed from two parts, R and D means that:

dy3d = RDdx1 (14)

which in it

ISSN 2055-608X(Print), ISSN 2055-6098(Online)

$$R = (I – C33) -1 C32 C21 (I – C11) -1 \quad (14 – 1)$$
$$D = [I – (I – C33) -1 C32 C21(I – C11) -1 C13]-1 \quad (14 – 2)$$

R and D respectively state the distribution increasingly and dependency originated from the export encouragement policies matrixes in complicated process of factors manufacturing and finally the families' group income. Therefore base on the relation 1-14 we can observe that complicated process begins from dx1 changes, mentioned changes causes the increasing in intermediate exchanges between part (C11-I)-1. Increasing the mentioned exchanges for manufacturing factors demands and consequently their income will be increased (C21). Increasing in manufacturing factors income related to the increasing organizations income (families social-economic groups) will be obtained (C32). Increasing in organizations' income cases the intensification common transferring between organizations (C33-I)-1. Regarding to the mentioned descriptions distribution increasingly coefficient matrix (D) can be categorized in three contents:

$$D = D3\ D2\ D1 \quad (15)$$

which

$$D1 = (I – C11) -1 \text{ و} D2 = C32\ C21 \text{ و} D3 =(I – C33) -1$$

Above matrixes respectively clear the manufacturing increasingly coefficients, manufacturing factors income increasingly coefficients and organizations and increasingly common transferring coefficients between organizations.

Second part (R matrix) is the first part continuation which is known as the dependence matrix. Mentioned increasingly coefficients matrix beginning point begins from D3. This means that common transferring increasing between organizations, causes the increasing in families economic groups consumption and consequently increasing manufacturing (C11-I) (C13).

Then increasing in manufacturing demand increases for manufacturing factors and causes the increasing in their income. Increasing in manufacturing factors income causes the increasing in organizations income and consequently increasing in common transferring between organizations.

DATA ANALYSIS AND CONCLUSION

Generally numbers summation of each column for each organizations account in families separation (which in social accounting matrix of this study, families are categorized according to the income and costs plan of Iran Statistics Center to two urban and rural parts and each one is also categorized in cost deciles) indicates the whole budget or family costs which the inserted numbers in this column shows the cost place. Therefore numbers that are inserted in each column are inserted in front of related to the energy carriers include the family costs data related with the energy. Table 2-1 shows the urban families energy costs with energy carriers separation. As we can see, whole energy costs during the deciles have an ascending process, so tenth decile costs and first urban family is respectively 1992898 and 122489 milliard rials (about 16 times bigger). Notable point is that despite of tenth decile high energy price; this decile energy share is lower rather than the other deciles from the whole family budget (1.29%). The highest energy share in urban families' budget relates to the 7^{th}, 8^{th} and 6^{th} deciles respectively with 1.95, 1.93 and 1.84 %. Last two rows in table 2-1, respectively shows the families share from the total urban and rural families energy costs of whole energy costs (urban and rural). As we can see, the last two rows numbers have completely ascending process, so the first decile share from the urban families energy costs and whole energy costs are respectively 1.8 and 1.4 % and tenth decile share is also

ISSN 2055-608X(Print), ISSN 2055-6098(Online)

30 and 23% respectively. The last row numbers summation shows that about 76% of whole energy costs relates to the urban families.

Table (1-2) Energy costs in the budget of urban households

	first decile	Second decile	third Decile	fourth Decile	fifth decile	sixth decile	seventh decile	eighth decile	ninth decile	tenth decile
Electricity and related services	53471	97857	113076	134720	149154	152014	176399	186758	237285	320153
distribution Natural gas and related services	36729	63255	82652	100422	106448	124643	130705	149397	160058	185347
Petrol	16328	44125	65934	131325	132186	256596	330736	519232	621364	1447883
Kerosene	13563	19475	22447	21351	18767	25813	21813	23638	22577	14062
gasoline	0	555	644	1510	6117	4784	3945	5859	14532	21847
Fuel and black oil	10	11	159	78	355	0	29	0	85	9
Liquid gas	2315	2965	2245	3686	3536	2818	2440	3603	3866	3192
Unclassified oil fuel	62	16	16	50	2	187	13	52	99	405
Total energy cost	122489	228359	288273	393142	416566	566857	66779	88539	1059866	1992898
Household budget	7640380	14089356	19095863	21959660	25970633	30795680	34279233	46111282	58715507	15416753 2
Energy share in Household budget(percent)	1.6	1.62	1.51	1.79	1.6	1.84	1.95	1.93	1.81	1.29

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Household budget share in total cost of urban energy(percent)	1.8	3.4	4.4	5.9	6.3	8.6	10.1	13.4	16.0	30.1
Household budget share in total energy cost(per cent)	1.4	2.6	3.3	4.5	4.8	6.45	7.7	10.3	12.2	23

Source: social accounting matrix

Table 2-2, shows the rural families' energy costs with energy carriers' separation. Energy cost for rural families have also ascending process, so tenth decile and first urban family respectively 528150.9 and 38061.1 milliard rials (about 14 times bigger). In rural families also tenth decile have lower energy share from whole family budget (1.29%). The highest energy share in rural families' budget relates to the 3th, 5^{th} and 4^{th} deciles are respectively with 2.3, 2.2 and 2.1 %.
According to the two last rows data of table 2-2 shows that families share from rural energy costs and whole energy cost (rural and urban) have completely ascending process, therefore the first decile share from rural families energy cost and whole energy cost respectively 1.9 and 0.4 %and tenth share is also 25.9 and 6.1 %. The last column numbers summation shows that about 24 % of whole energy costs relates to the rural families.

Table (2-2): Energy costs in the budget for rural households

first decile	Second decile	third Decile	fourth Decile	fifth decile	sixth decile	seventh decile	eighth decile	ninth decile	tenth decile
Electricity and related services									
distribution Natural gas and related services									
Petrol									
Kerosene									
gasoline									

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Fuel and black oil									
Liquid gas									
Unclassified oil fuel									
Total energy cost									
Household budget									
Energy share in Household budget(percent)									
Household budget share in total cost of urban energy(percent)									
Household budget share in total energy cost(percent)									

Table 3-2 shows the families share from different energy carriers of whole consumable cost. According to the mentioned data for rural and urban families are respectively 71 and 29 % of electricity consuming costs rather than the whole family costs allocated for this energy carrier. This value for natural gas is respectively 96and 4%, for petroleum 81 and 19% and for gasoline are 60 and 40%. It should be noted that rural families have share more than 65% from kerosene consumption and 90% from fuel oil.

Table 2-3: families share from energy carriers (%).

Electricity and related services									
distribution Natural gas and related services									
Petrol									
Kerosene									
gasoline									
Fuel and black oil									

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Liquid gas									
Unclassified oil fuel									
Rural households									
Electricity and related services									
distribution Natural gas and related services									
Petrol									
Kerosene									
gasoline									
Fuel and black oil									
Liquid gas									
Unclassified oil fuel									

Therefore according to the table 2-3 we can state that which electricity, gasoline and natural gas are more in urban families and kerosene, fuel oil and liquid gas more in rural families have an ascending process. This process is also observed for liquid gas, kerosene and fuel oil in rural families.
This ascending process for petroleum consumption has sharper slope and tenth decile of urban families with share more than 32% from whole families' costs for petroleum approximately 90 times bigger than urban first decile, 470 times bigger than rural first decile, and 4 times bigger than tenth rural decile for petroleum consumption. Also 6^{th} and 10^{th} urban deciles have share more than 70% from total consumed costs which is 25 times bigger more than first till 5^{th} rural families share and 8 times bigger than the whole first till 5^{th} rural families deciles.

Also more than 50% of gasoline and electricity consumption is allocated to the 6^{th} and 10^{th} urban families' deciles, therefore costs summation of this part is more than 5 time bigger than electricity and more than 16 times bigger than the rural families first and fifth deciles. So we can say that families' with higher urban income will consume more from the energy carriers rather than other people.

In table 4-2, energy carriers' shares in family budget are identified according to the urban and rural deciles. According to this, in first till 5^{th} urban deciles and first till 6^{th} rural deciles the electricity costs are in the first rank and for other urban and rural deciles the most is allocated to the petroleum. For sixth till tenth deciles, petroleum share is about 50% and electricity costs is 20 till25% while for fifth primary urban decile, electricity costs is about 35-45% and natural gas costs is about 25-30%. Seventh till tenth rural deciles are also between 35-50 % for petroleum, 30% for electricity

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and about 20% for kerosene while other rural deciles cost about 40-50% for electricity and 25-30% for kerosene.

Table 4-2: different carriers share in family's energy budget (%).

Electricity and related services									
distribution Natural gas and related services									
Petrol									
Kerosene									
gasoline									
Fuel and black oil									
Liquid gas									
Unclassified oil fuel									
TOTAL									
Rural households									
Electricity and related services									
distribution Natural gas and related services									
Petrol									
Kerosene									
gasoline									
Fuel and black oil									
Liquid gas									
Unclassified oil fuel									
TOTAL									

In three primary urban deciles (first till third), natural gas and in the first three rural deciles, kerosene is in the second place. Kerosene and liquid gas costs share from the total energy costs will be decreased with the urban and rural families income increasing. Generally liquid gas costs share is less than 2% in cities and less than 4% in villages and this share is lower for deciles with

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higher income. Also fuel oil is also for all deciles have lower income less than 1% of spent costs for energy.

Energy carriers price increasing scenario introduction

In table 2-5, two energy carriers price increasing scenarios (extracted from economic evolution group data) is presented accorded to the 12260 and 25000 currency rate.

Table 2-5. Energy carriers price increasing scenarios.

		Consumption according to the 1390 performance	Common price	Currency rate 12260	Currency rate 25000
petrol	Quota				
	Free price				
	Super petroleum				
	total				
gasoline	Quota				
	Free price				
	Powerhouse				
	total				
Fuel oil					
	Free price				
	Powerhouse				
	total				
Kerosene	Free price				
	Quota				
	total				
Liquid gas	Quota				
	Free price				
	total				
natural gas	Household				
	Industry				
	Agriculture				
	Powerhouse				
	Commercial and other				
Electricity	Household				

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	Industry				
	Agriculture				
	commercial				
	Total				

Table 2-6: Energy carriers' price increasing during two scenarios

	exchange rate scenario 11260	exchange rate scenario 25000
petrol		
gasoline		
Fuel oil		
Kerosene		
Liquid gas		
natural gas		
Electricity		

As we observe that energy carriers price includes the petroleum, gasoline, fuel oil, kerosene, liquid gas, natural gas and electricity which each one's growth during the first scenario is 132, 360, 246, 906, 104, 347 and 217% respectively (normal growth average 300) and during the second scenario is 368,827, 594, 1923, 282, 841 and 500% respectively.

Computations from the methodology viewpoint are performed by using from "glut party approach or cost approach or price approach" and" standard and normal increasingly coefficient matrix" performance. Computations are organized in three general levels:

- At first exogenous and endogenous accounts are separated from each other. Manufacturing account, organizations account and manufacturers account are considered as the endogenous accounts and taxes and subsidies, accumulate account and external world account are considered as the exogenous accounts. So endogenous accounts matrix (N), exogenous accounts matrix (X) and outputs matrix (Y) are formed.
- "Standard and normal increasingly coefficients matrixes" are computed by using from MATLAB software.
- Finally outputs changes are computed according to the forced measures for exogenous accounts.

Energy carriers price increasing effects on consumer and manufacture price index

In table 2-7, energy carriers' price increasing effects on manufacture and consumer price index are presented in two scenarios. According to the first scenario manufacture and consumer price index are increasing respectively 10 and 12 % and urban and rural inflation are increasing respectively 11.4 and 17.1%. Manufacture and consumer price index are increasing respectively 24 and 29 % and urban and rural inflation are increasing respectively 27.6 and 36 %.

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Table 2-7: energy carriers' prices increasing effects during two scenario (%).

	First scenario	Second scenario
Manufacturing prices index	10	24
Consumer prices index	12	29
Urban inflation	11.4	27.6
Rural inflation	17.1	36

Source: present study computations.

Energy carriers' price increasing effects on living costs (deciles separation)

In table 8-2 and 1-2, energy carriers' price increasing effect on urban and rural living costs with deciles separation based on the first scenario are presented. As we can see the living costs increasing are higher in low deciles rather than upper deciles.

Table 9-2 and 2-2, presented energy carriers' price increasing effect on urban and rural living costs with deciles separation based on the second scenario. As we can see the living costs increasing are higher in low deciles rather than upper deciles.

Table 9-2. Energy carriers' price increasing effects on living costs during the second scenario (%).

Urban families									
First decile	Second decile	Third decile	fourth decile	Fifth decile	Sixth decile	Seventh decile	Eighth decile	Ninth decile	Tenth decile
27.3	30.6	30	29.5	28.6	27.3	26.5	25.5	24.6	21.7
Rural families									
41.4	38.8	39.3	39.8	40.3	37.5	37.4	34.7	33.1	27.8
Total									
29.6	32.3	32.1	32.1	31.6	29.6	28.7	27.4	26.6	23.3

Source: present study computation.

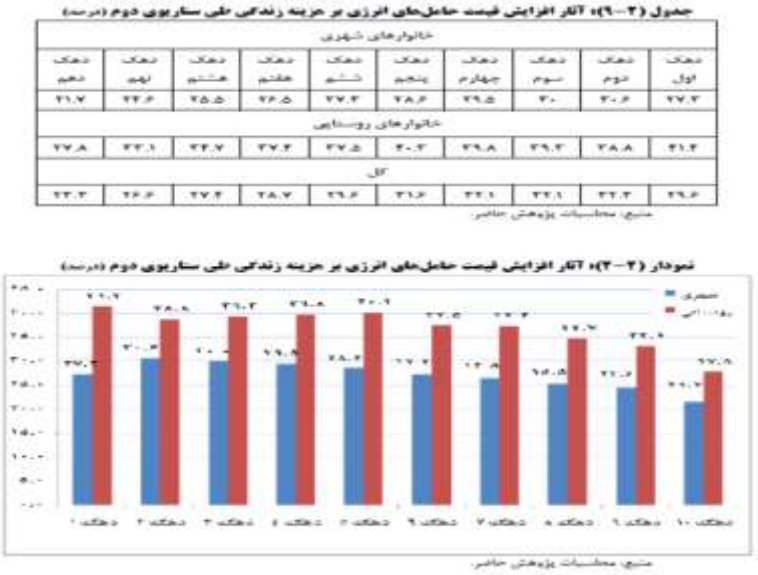

Figure 2-2: Energy carriers' price increasing effects on living costs during the second scenario (%).

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Energy carriers' price increasing effect on industrial activities price

In tables 9-2 and 3-2, energy carriers' price increasing effects on the industry activities price are listed. As we can see that most of the effectiveness related to the glass types and glass products, bricks, blocks and tiles, other non-metallic minerals, ferrous and steel and other basic metals increase with 19.5, 20.2, 20.2, 20.2, 18.8 and 18.8 % respectively.

Table 2-9: Figure 3-2: Energy carriers' price increasing effects on industry's activities price during the first scenario (%)

	Price increasing
Breads types and bread products	10.4
Sugar	10.4
Food and drinking products	7.8
Cigarettes and tobacco products	3.4
Clothes and textiles	5.7
Leather and leather products	5.3
Woods and woods products	8.8
Papers and paper products: printing	12
Petroleum products	6.1
Chemical products	8
Lattices and plastics products	7.3
Glass and glass products	19.5
Brick, tile and blocks	20.2
cement	20.2
Other non-metallic products	20.2
Ferrous and steel	18.8
Other metallic products	18.8
Fabric metallic products	10.7
Machines and equipment	9.2
Other machineries and electricity devices	10.5
Mine products	10.9
Radio, TV and communication products	5.7
Medical, optical and accurate equipment	8.9
Transportation devices	9.5
Other transportation equipment	8.8

Source: present study computation.

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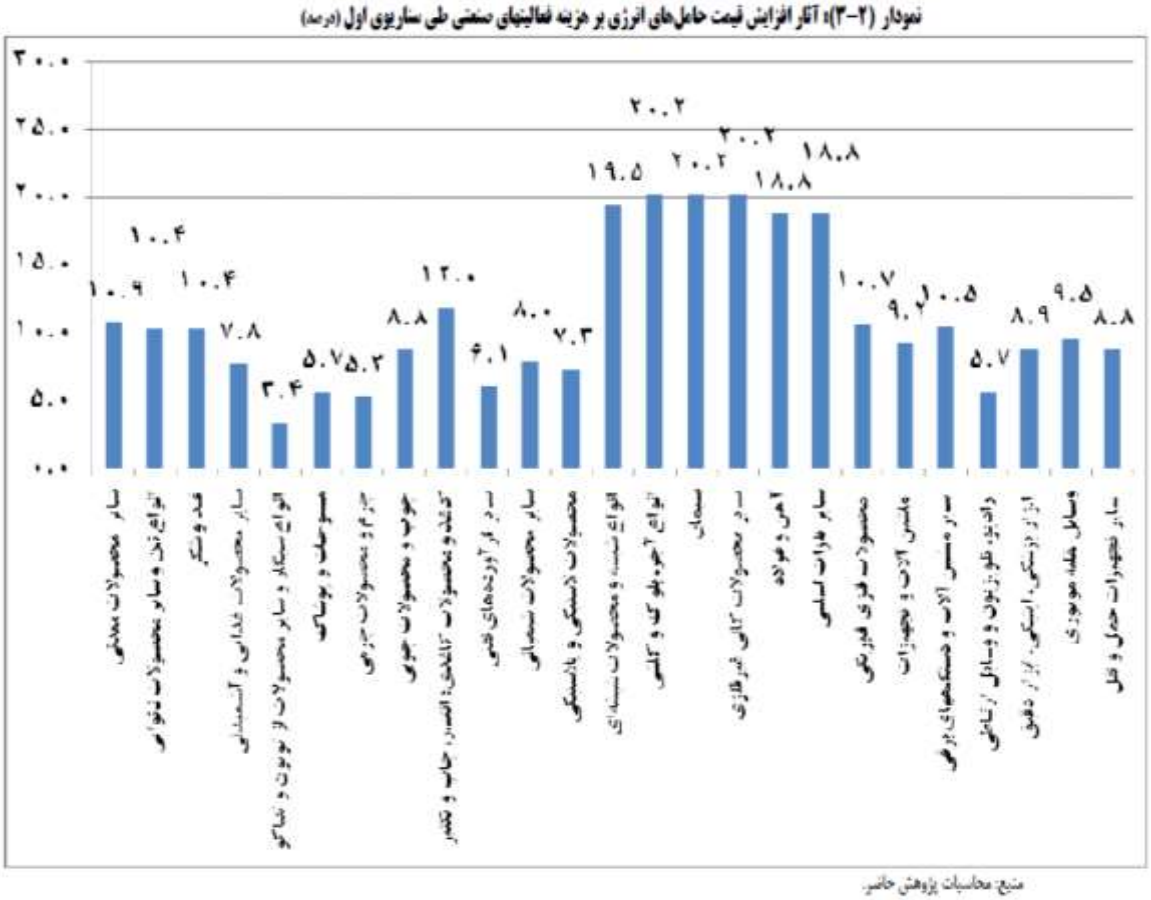

Figure 3-2: Energy carriers' price increasing effects on industry's activities price during the first scenario (%)

In tables 10-2 and 4-2, energy carriers' price increasing effects on the industry activities price are listed. As we can see that most of the effectiveness related to the glass types and glass products, bricks, blocks and tiles, other non-metallic minerals, ferrous and steel and other basic metals increase with 46.6, 48.3, 48.3, 8.3, 44.6 and 44.7 % respectively.

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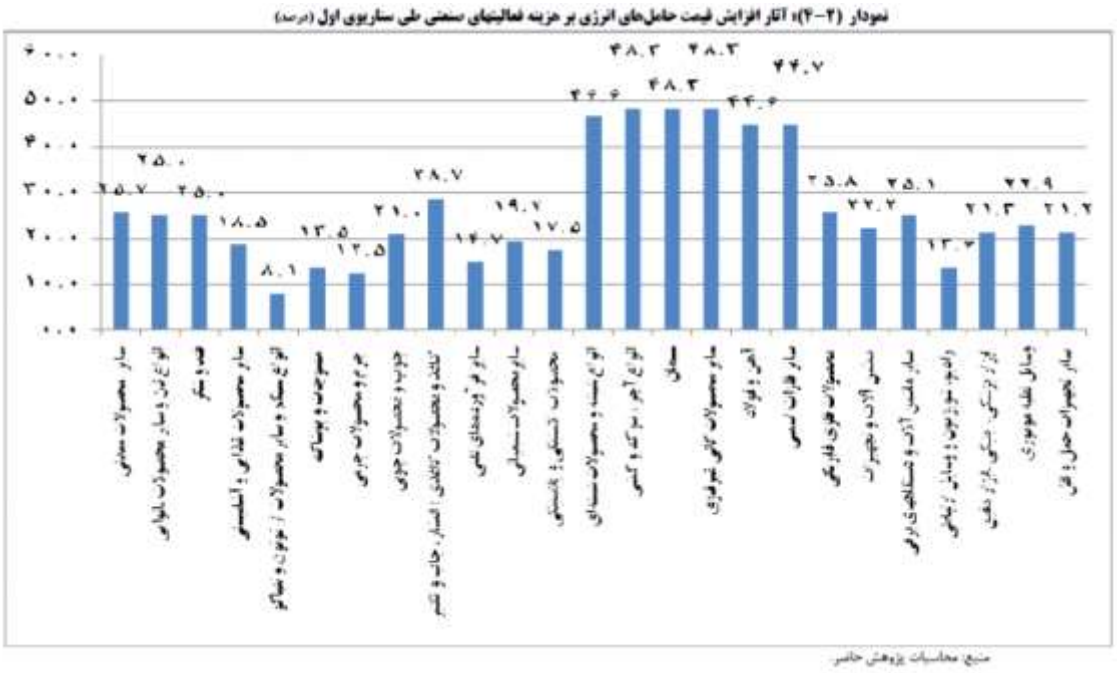
Table 2-10: Figure 3-2: Energy carriers' price increasing effects on industry's activities price during the second scenario (%)

	Price increasing
Breads types and bread products	25
Sugar	25
Food and drinking products	18.5
Cigarettes and tobacco products	8.1
Clothes and textiles	13.5
Leather and leather products	12.5
Woods and woods products	21
Papers and paper products: printing	28.7
Petroleum products	14.7
Chemical products	19.2
Lattices and plastics products	17.5
Glass and glass products	46.6
Brick, tile and blocks	48.3
cement	48.3
Other non-metallic products	48.3
Ferrous and steel	44.6
Other metallic products	44.7
Fabric metallic products	25.8
Machines and equipment	22.2
Other machineries and electricity devices	25.1
Mine products	25.7
Radio, TV and communication products	13.6
Medical, optical and accurate equipment	21.3
Transportation devices	22.9
Other transportation equipment	21.2

Source: present study computation.

Figure 4-2: Energy carriers' price increasing effects on industry's activities price during the first scenario (%)

ISSN 2055-608X(Print), ISSN 2055-6098(Online)



Therefore we conclude that:

- Energy carriers' price increasing effects during the first scenario on manufacture price index and consumer price index is 10 and 12 respectively. According to this scenario, urban and rural inflation will grow 11.4 and 17.1% respectively.
- Energies carriers' price increasing effects during the second scenario on manufacture price index and consumer price index is 24 and 29 respectively. According to this scenario, urban and rural inflation will grow 27.6 and 36 % respectively.
- According to the first scenario, energy carriers' price increasing, industry activities of glass types and glass products, bricks, blocks and tiles, other non-metallic minerals, ferrous and steel and other basic metals will be faced with 19.5, 20.2, 20.2, 20.2, 18.8 and 18.8 % increasing in price.
- According to the second scenario, energy carriers' price increasing, industry activities of glass types and glass products, bricks, blocks and tiles, other non-metallic minerals, ferrous and steel and other basic metals will be faced with 46.6, 48.3, 48.3, 8.3, 44.6 and 44.7 % increasing in price.

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