Income Effects of Cash Subsidy Payment, Social Accounting Matrix Approach: The Fixed Price Multiplier

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ABSTRACT

The main aim of this study is to measure direct and indirect income effects of cash subsidies on producing activities, factors of production and institutions incomes with the focus on rural and urban household incomes. Assessment in the social accounting matrix model takes place via fixed price multiplier matrix in which the relationship between income injection and income distribution policies is given. Therefore, the 2006 Social Accounting Matrix (prepared by Majlis Research Center in 2012), Census of Population and Housing and a fixed subsidy payment monthly, are employed as main data resources. The results are shown that the effect of cash subsidy on incomes of activities production, factors production, urban households, and rural households would be; 2.58%, 2.58%, 2.41%, 2.56% respectively. The results also show that the income impact of this policy on rural households is more effective than urban households. Moreover, other services, agricultural, home appliances, retail-seller activities have the greatest influence of the policy in the activity production accounts.

Key words: social accounting matrix, accounting multiplier, constant price multiplier, subsidies

Jel: G 31, H20, H24

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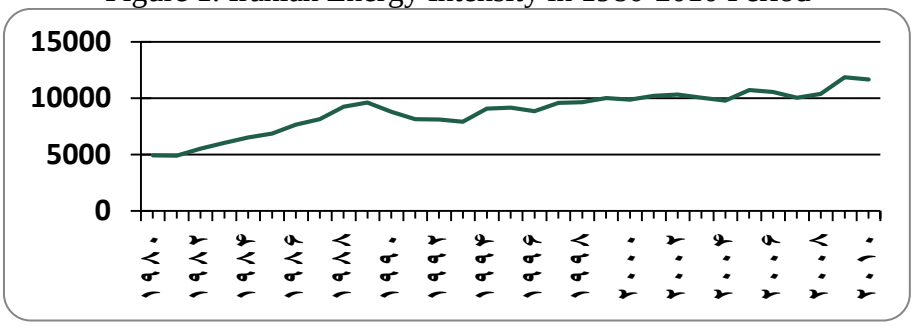
1. Introduction

So far, oil has played an important role as Iranian's main energy consumption. Furthermore, crude oil has long been an important source of government revenue. In the last three decade, Iranian oil production has not increased and no new significant oil reserve has been discovered, while domestic demand for oil has increased significantly.

The other concern is energy intensity, which has not improved in the last three decades. Energy Information Administration (EIA) in 2010 reported that, in the last three decades, energy intensity several East Asian countries, particularly China, have improved significantly, and developed countries around the world have been able to keep the energy intensity low, while Iran's energy intensity has worsened and stated from 4.887 BTU per year 2005 US dollars in 1980, to 11.657 BTU per year 2005 US dollars in 2010 (EIA 2014). According to these figures, Iran's energy intensity has worsened at a rate of 2.94% each year. This situation indicates, though not precisely, that there has been an increasing trend towards inefficiency in primary energy use in Iran during 1980–2010.

Figure 1. Iranian Energy Intensity in 1980-2010 Period



Source: International energy Statistics, EIA (2014)

Other issue relates to the energy consumption in Iran is negative externalities to the environment especially in the urban areas and main cities. At the urban areas environmental problems related to energy use, are generally human health problems caused by emissions from vehicles and industrial activities in the short time. At the global level causes climate change and global warming due to increasing emissions of greenhouse gases. EIA in 2014 reported that CO_2 emission intensity of Iran has been increasing at a rate of 5.5% annually during 1990-2011 and started from 202.1115 Metric Tons of Carbon Dioxide per Thousand Year 2005 U.S. Dollars in 1990 to 624.8554 metric tons in 2011 (EIA 2014).

By looking at the above mentioned concerns, it is important for the Iranian government to develop various programs to promote better and more efficient use of energy. One of the most common issue for using energy more efficient and reduce the energy intensity for both households and manufacturing is eliminating the energy subsidies.

Iran population is nearly 78 million and has grown on average by more than 1.1% per year during last five years. Higher oil price have boosted government revenues and facilitated government investments and expenditures mostly subsidy. Since 1979, the country had subsidized: petroleum products, basic foodstuffs, medical goods and utilities, initially to mitigate the hardships imposed by the eight-year war with Iraq, and subsequently to prevent political and economic challenges after the war. Such condition causes very high energy consumption in Iran compare with other developing countries. The prolonged subsidy program in the Iranian economy, especially in the energy sector, had led to significant economic distortions in the economy and deficits in multiple sectors, including the government budget. The estimated annual value of the subsidies paid by the government is estimated at approximately 25% of GDP.

Since the 1990s, all presidents had tried to reduce (or omit) the subsidies, but two first presidents avoided because of such policy might have severe economic, social and political obstacles; finally President Ahmadinejad, in keeping with parliamentary action calling for the subsidies to be phased out by 2015, carried out the plan. Under the plan, economic subsidies were to be replaced by small cash payments to households and direct manufacturing support. Because economic reforms had previously triggered social unrest and the cutbacks came at a time when the government already faced serious economic and political troubles (including international sanctions), the plan seemed likely to produce the greatest social, economic and political turmoil since the revolution. The subsidy reform plan was the most important part of the "Economic Reform Plan" that initially introduced in the summer of 2008.

Economists and some members of the media were concerned that a removal of the subsidies could trigger dramatically increased inflation and unemployment, cause economic conditions to deteriorate and lead to a socio-political backlash. In this context, Parliament urged the government to lift the subsidies "gradually" all of the energy and non-energy subsidies on fuel, gas, electricity, water, and bread over a five year period. According to the plan, 50% of the newly available resources would be used to provide cash hand-outs to households to reduce the pain of reforms, and 30% was earmarked to compensate industries for increased production costs and improve public transportation and infrastructure. The remaining 20% was to have been used to offset the government's own increased expenditures. According to the plan, energy, food and water subsidies would be removed and every Iranian citizen would receive approximately $44 per month (according to the exchange rate of 2010). But the government "shockingly" removed almost all of the subsidies at once in the first year of the plan, in fact, in a single night in 2010. The government celebrated that no major socio-political backlash (a common occurrence for countries in similar circumstances) occurred.

The average price increase was about 500% for Natural gas, 400% for Gasoline, 1000% for Diesel, 700% for CNG, 300% for Electricity, 300% Water and 200% for Bread. The other concern is government so far controls the price of domestic oil products —fuel oils— such as gasoline, diesel oil and gas. The government also controls the price of electricity, water, and bread to be fixed since they increased. Six months after of the implementation of the plan, the annual inflation rate varied between 10.1 and 15%, based on the figures provided by the Central Bank of Iran (CBI). Additionally, the annual inflation rate varied between 10.2 and approximately 17% in the same period based on the figures provided by the Statistics Centre of Iran. At the same time, the point-to-point inflation rate crossed 22%, according to CBI and 26%, according to SCI. Although annual inflation did not show rapid changes in the early months of the plan, but inflation of the Producer Price Index – PPI) increased tremendously and showing 15% growth in the first month of the plan. Public announcements of inflation statistics were discontinued by the government in the first 6th month of the plan. Meanwhile, the doubt and scepticism surrounding the behavior of statistics announcing centers has been increased. The lack of growth rate and gross domestic product (GDP) announcements for the past three years (2008-2010), the lack of unemployment rate announcements for the past year and the various objections of Majlis (the Parliament) representatives and the mass media have made the government's interference in the production and publication of statistics a salient issue in Iran. However, 5–6 months after the implementation of the plan, when annual inflation was nearing 20%, the government, both CBI and SCI, stopped releasing inflation data for April 2011 and later. Some MPs, in interviews with news agencies, said that the release of the data was stopped because of a presidential order and has been "classified", according to the members of the parliament narrating from the head of National Statistical Centre. However, according to the internal reports, point to- point inflation crossed 27% in July and annual inflation was nearing 20% (SCI index). At the same time inflationary pressure exceeded 150% of annualised inflation based on monthly inflation in some provinces.

Three years after the reform, the economists forecast were realized and increased inflation and unemployment, cause economic conditions to deteriorate. To help the government, this paper aims to establish the economic impact of the cash payment subsidy to the households for compensation.

The main aim of this study is to measure direct and indirect income effects of cash subsidies on producing activities, factors of production and institutions incomes with the focus on rural and urban household incomes. Assessment in the social accounting matrix model takes place via fixed price multiplier matrix in which the relationship between income injection and income distribution policies is given. In order to reach this aim, the paper is organized as follows. The

following two sections illustrate the methodology to derive the accounting and marginal multiplier matrices. Data used in this exercise are described in section three, while sections four contain results and analysis. The final, section five, sketches the main conclusions of the analysis.

2. Methodology

This paper uses a simple version of a general equilibrium model, namely the Social Accounting Matrix (SAM) framework, to predict the economy-wide impact of a reform energy policy. The two particular methods implemented are: (i) an accounting multiplier matrix; and (ii) a constrained fixed price multiplier to analyse the impact of the cash payment subsidy to the households for compensation. The main aim of the SAM-based multiplier analysis is to examine the effects of real shocks occurring in the system on the distribution of income across different groups of households. The multiplier approach allows quantifying the different ways by which an income equally earned by each socio-economic group identified in the Household sector, turns into different disposable income levels through the three stages of spending, production and redistribution.

SAM is a matrix that represents the economic and social accounts of a country. These accounts are grouped into two: endogenous and exogenous accounts. The main endogenous accounts are divided into three blocks: production factor, institutional, and production activity blocks. Table 1 illustrates a simple SAM framework with both endogenous and exogenous accounts.

Table 1. A Simple SAM Framework

Receipt / Expenditure	Endogenous Accounts			Exogenous accounts	Total receipts
	Production	Factor	Institutions		
Production	N_{11}	٠	N_{13}	X_1	Y_1
Factor	N_{21}	٠	٠	X_2	Y_2
Institutions	٠	N_{32}	N_{33}	X_3	Y_3
Exogenous Accounts	I_1'	I_2'	I_3'	R	Y^x
Total Expenditures	Y_1'	Y_2'	Y_3'	$Y^{x\prime}$	

As shown in Table -1, three components of the SAM have been endogenous: Activities, Factors, (national) Private Institutions as Households and Companies. Private Companies receive income from Factors and redistribute it to other Private Institutions. Endogenous accounts must be isolated from the exogenous ones (Government,

Rest of the World and Capital/Saving) by aggregating one or more sub-matrices of the SAM. This kind of "truncated SAM consolidates all exogenous transactions and corresponding leakages and focuses exclusively on the endogenous transactions and transformations" (Thorbecke, 2000: p8). In particular, the sum of the exogenous injections from government expenditures, investment and exports, respectively, has been consolidated into three vectors $\mathbf{x}_1$, $\mathbf{x}_2$ and $\mathbf{x}_3$.

For analytical purposes, the endogenous transaction matrix *N* transformed into the average propensity to consume matrix and shown by *A* matrix:

$$A_n = \begin{bmatrix} A_{11} & 0 & A_{13} \\ A_{21} & 0 & 0 \\ 0 & A_{32} & A_{33} \end{bmatrix} \quad (1)$$

Matrix A is average of three main endogenous accounts. In terms of total revenue endogenous transaction matrix can be written as follows:

$$Y_n = A_n Y_n + X$$
$$Y_n = (I - A)^{-1} X$$
$$Y_n = M_a X \quad (2)$$

In such structure M_a is Accounting multiplier matrix (Pyatt and Round, 1979: p856) because it explains the results obtained in a SAM and not the process by which they are generated. Accounting multiplier matrix will provide useful information on the economic structure and the results of the multiplier analysis can be interpreted as a demonstration of how the economic system is expected to behave in case the model assumptions perfectly reflect the real situation. It shows average responses of endogenous variables to exogenous injections under three assumptions: there exists excess capacity which would allow prices to remain constant, expenditure propensities of endogenous accounts remain constant, and the production technology and resource endowments are given for a period (Thorbecke and Jung 1996).

One of the M_a limitations is that it implies unitary expenditure elasticities. While this assumption is unrealistic for the expenditure pattern of the household group i.e. A_{13}, if is defensible for other account (production and factor of production). Whereas the accounting multipliers provide very useful information on the general structure of the economy, these multipliers cannot be interpreted directly as measure of the effects of changes in injections into the economy on the levels of endogenous incomes. For this latter purpose, we need to know how different economic agents behave in response to changes (Pyatt & Round, 1985, p.197). In particular, it is important to analyze or measure how injections into endogenous accounts influence expenditure patterns, assuring that prices of goods and services are fixed and yet income is allowed to vary. Since prices are fixed, multipliers generated under such

condition are called fixed price multipliers and shown by C_n, that is more realistic alternative. C_n is a matrix of marginal expenditure propensities corresponding to observed income and expenditure eleasticites of the different agents under the assumption that price remain fixed (Thorbecke and Jung 1996) *i. e.*: Expressing the changes in incomes (dy) resulting from changes in injections, can obtains

$$dY_n = C_n dY_n + dX \qquad (3)$$

each element of the C_n matrix is the partial derivative of ith element of n with respect to the *j*th element of Y_n. C_n in this case is a matrix of the marginal propensity to consume and can be written as,

$$C_n = \begin{bmatrix} C_{11} & 0 & C_{13} \\ C_{21} & 0 & 0 \\ 0 & C_{32} & C_{33} \end{bmatrix}$$

The difference between C_n and A_n is as follows: $A_{32} = C_{32}$, $A_{33} = C_{33}$, $A_{21} = C_{21}$, $A_{22} = C_{22}$, $A_{13} \neq C_{13}$.

From equation (3), marginal multiplier matrix can be driven:

$$dY_n = (I - C_n)^{-1} dX$$

$$dY_n = M_c dX \qquad (4)$$

M_c is called a fixed price multiplier matrix (Pyatt and Round 1979, Thorbecke 2000), if $(I - C_n)^{-1}$ exists above equation show the elements of Y_n change as a result of changes in injections, following changes in injections from exogenous accounts which allows any nonnegative income and expenditure elasticities to be reflected. Since the expenditure (income) elasticity for household group *h* and commodity (product) *i*: εy_{hi}, is equal to the ratio of the marginal expenditure propensity MEP_{hi} (*i.e.* C_{13}) to the average expenditure propensity AEP_{hi} (*i.e.* A_{13}), it follows that the matrix of marginal expenditure propensities, C_{13}, can be readily obtained once the expenditure elasticities and average expenditure propensities are known,

i.e.: $\varepsilon y_{hi} = MEP_{hi} / AEP_{hi}$; then $MEP_{hi} = \varepsilon y_{hi} \times AEP_{hi}$. (5)

Equation (4) is analogous equation (2), if C_n matrix is non-negative then M_c, to be as a fixed price multiplier matrix. There are three assumptions behind both multipliers. First, Prices are fixed and any changes in demand lead, to changes in physical output rather than prices. Second, factor resources are unlimited or unconstrained, so that any increase in demand is matched by increased supply. Third, input coefficients of producers and consumption patterns of households are unaffected by exogenous changes in demand (*i.e.*, linkage effects are linear and there is no behavioral change).

If we rewrite equation (3) in terms of elements of matrices then we have,

$$\begin{bmatrix} dY_1 \\ dY_2 \\ dY_3 \end{bmatrix} = \begin{bmatrix} C_{11} & 0 & C_{13} \\ C_{21} & 0 & 0 \\ 0 & C_{32} & C_{33} \end{bmatrix} \begin{bmatrix} dY_1 \\ dY_2 \\ dY_3 \end{bmatrix} + \begin{bmatrix} dX_1 \\ dX_2 \\ dX_3 \end{bmatrix}$$

$$dY_1 = (I - C_{11})^{-1} C_{13} dY_3 + (I - C_{11})^{-1} dX_1$$

$$dY_2 = C_{21} dY_1 + dX_2 \qquad (5)$$

$$dY_3 = (I - C_{33})^{-1} C_{32} dY_2 + (I - C_{33})^{-1} dX_3$$

In equation (5), dX_3 is an exogenous injection and dY_1, dY_2, and dY_3 are endogenous incomes. In this paper we employed equation (5) in order to measure direct and indirect income effects of cash subsidies dX_3 on producing activities dY_1, factors of production dY_2 and institutions incomes with the focus on rural and urban household incomes dY_3.

3. Data Resources

In order to achieve the objectives of this study the following three sources of data are employed.

First, a (48×48) Social Accounting Matrix for the year 2006 at the national level, that is produced by the Majlis Research Center (Majlis Research Center 2012). To employ 2006 SAM for our aim the number of sectors are reduced into the 20 because of data limitation on income elasticities data. Sectors are as follows: 1) agriculture and forestry, 2) fisheries and livestock, 3) mining, 4) food, 5) textiles, footwear and clothing, 6) wood products, 7) metals and machinery, 8) home appliances, 9) vehicles, 10) electricity and gas, 11) construction, 12) water, 13) transportation, 14) post and telecommunication, 15) education, 16) insurance, 17) health, 18) retail, 19) banks and financial, and 20) other services. The SAM is aggregated in terms of factors in one actor. 20 categories of households (ten deciles for urban and rural groups), are reduced into two categories, i.e. rural and urban households. The reason behind this decision relates to the data limitation on income elastities at the decile levels). Table 2 in the appendix shows the picture of 2006 SAM matrix for Iran.

The second, in order to calculate marginal expenditure propensity, we collected income elasticities for urban and rural household for 20 sectors. They are collected from different data sources mainly papers.

The third: rural and urban population separately collected from national census, Statistical Center of Iran 2010.

4. Model Estimation and Results

Model estimation includes three parts: a) accounting average multipliers, b) marginal multipliers, c) income effects of cash subsidy payment to households.

a) Accounting Average Multipliers

Table 2 presents an illustrative example of a SAM for Iranian economy. Table 3 is derived from table 2 gives the matrix of average expenditure propensity (An) for this Iranian economy. According to table 3, it can be seen that the most intensive primary input sectors are

education and insurance sectors with the share 83% and 82% out of total output. It can also be seen that 10 % of total factors income belong to the rural households and 42% to the urban households and 45% go to the government revenues (tax rate on factor income), and 3% go to rest of the world. The average propensities to consume for urban and rural households are 81% and 80%, consumption tax rates for both groups are 5% and 3% for urban and rural household. As a result average propensities to save are 12% and 14%.

Table 5 presents the accounting multipliers for this economy. If who is interested in to know the impact of a change in exogenous variable X (export, government expenditure or investment) on whole socioeconomic system, this multipliers can give useful information.

The column total indicates that if one of the elements of the exogenous part of production activity accounts i.e. dX_1 (for example: export or government expenditure or investment) increases one unit then the income of production activity would increase 2.547 unit, income of factor of production 1.383 units and urban household income 0.588 and rural household income 0.143 unit and the sum impact would be 4.661 units. As long as excess capacity and a labor slack prevail, any exogenous change in demand can be satisfied through a corresponding increase in output without having any effect on prices. Thus, for any given injection anywhere in the SAM, influence is transmitted through the interdependent SAM system. The total includes: direct and indirect, effects of the injection on the endogenous accounts, i.e.

Three last rows in table 5- have different meaning. The first row, Factor, shows that if one of the elements of the exogenous part of factor of production accounts i.e. dX_2 (for example: factor income from abroad) increases then the income of production activity would increase 1.054 unit, income of factor of production 1.541 units and urban household income 0.655 and rural household income 0.159 unit and the sum impact would be 3.410 units. Whereas the second and the third rows, urban and rural, show that if the first elements of the exogenous part of household accounts i.e. dX_3 (for example: cash subsidy) increases then the income of production activity would increase 2.19 unit, income of factor of production 1.042 units and urban household income 1.457 and rural household income 0.108 unit and the sum impact would be 4.627 units.

b) Marginal Multipliers Matrix

For accounting average multiplier data of 2006 SAM is enough to be accounted, but for marginal multipliers additional data on the income elasticity of households i.e. εy_{hi} are required (which are different from unity), in order to calculate C_{13} in equation (5).

In Table 4 comparison has been made between C_{13} and A_{13}household average and marginal expenditure propensities, Iran, 2006. As table 4 shows total average expenditure propensity for both urban (0.81) and

rural (0.80) households are higher than their marginal expenditure propensity (0.69, 0.66) respectively.

Moreover, the average and marginal multipliers M_a and M_c are calculated according to those propensities and the results are shown in table 5.

The second part of table 5 shows that average multipliers are higher than marginal multipliers not only for the production activity accounts but also for factors productions and expenditure household. Whereas their rankings are almost the same i.e. for both multipliers sector number 12 has the highest and sector number 9 the lowest multipliers. This is due to their ranking for production activity multipliers that has high role in total multipliers.

Table 4- Household Average and Marginal Expenditure Propensities, Iran, 2006

Sector	Average Propensity		Marginal Propensity	
	Urban	**Rural**	**Urban**	**Rural**
Agriculture, Forestry	0.06	0.09	0.06	0.09
Fisheries and Livestock	0.01	0.03	0.00	0.00
Mining	0.03	0.04	0.02	0.00
Food	0.09	0.12	0.07	0.12
Textiles, Footwear and Clothing	0.02	0.03	0.00	0.00
Wood	0.01	0.01	0.00	0.01
Metals and Machinery	0.01	0.01	0.02	0.01
Home Appliances	0.01	0.01	0.01	0.01
Vehicles	0.04	0.02	0.11	0.07
Electricity and Gas	0.02	0.01	0.00	0.00
Construction	0.00	0.00	0.00	0.00
Water	0.00	0.00	0.00	0.00
Transportation	0.05	0.07	0.01	0.01
Post and Telecommunication	0.03	0.02	0.02	0.01
Education	0.03	0.01	0.04	0.02
Insurance	0.00	0.00	0.00	0.00
Health	0.05	0.04	0.04	0.03
Retail	0.10	0.15	0.01	0.18
Banks and Financial	0.01	0.01	0.00	0.01
Other services	0.23	0.11	0.26	0.08
Total	0.81	0.80	0.69	0.66

Source: Author's calculations

Table 5- Comparison Between Accounting and Fixed Price Multipliers, Iran, 2006

	Accounting Multipliers					Fixed Price Multipliers				
Sector	Production	Factor	Urban	Rural	Total	Production	Factor	Urban	Rural	Total
1	2.547	1.383	0.588	0.143	4.661	2.297	1.240	0.527	0.128	4.193
2	2.525	1.433	0.609	0.148	4.715	2.266	1.285	0.546	0.133	4.230
3	1.930	1.246	0.529	0.129	3.834	1.705	1.117	0.475	0.115	3.412
4	2.881	1.098	0.467	0.113	4.559	2.683	0.984	0.418	0.102	4.188
5	2.619	1.130	0.480	0.117	4.346	2.414	1.013	0.431	0.105	3.963
6	2.355	1.110	0.472	0.115	4.052	2.154	0.996	0.423	0.103	3.676
7	1.866	0.563	0.239	0.058	2.726	1.764	0.505	0.215	0.052	2.535
8	2.791	1.159	0.493	0.120	4.563	2.581	1.040	0.442	0.107	4.170
9	1.743	0.505	0.214	0.052	2.514	1.652	0.452	0.192	0.047	2.343
10	2.424	1.465	0.623	0.151	4.663	2.159	1.314	0.558	0.136	4.167
11	2.481	1.445	0.614	0.149	4.689	2.220	1.296	0.551	0.134	4.200
12	2.975	1.410	0.599	0.146	5.130	2.720	1.265	0.537	0.131	4.653
13	2.234	1.265	0.538	0.131	4.168	2.006	1.134	0.482	0.117	3.739
14	2.198	1.430	0.608	0.148	4.385	1.940	1.283	0.545	0.133	3.900
15	2.158	1.425	0.605	0.147	4.335	1.900	1.277	0.543	0.132	3.852
16	2.239	1.517	0.645	0.157	4.558	1.965	1.360	0.578	0.141	4.044
17	2.920	1.334	0.567	0.138	4.959	2.678	1.197	0.509	0.124	4.507
18	2.737	1.292	0.549	0.134	4.712	2.503	1.159	0.493	0.120	4.275
19	2.361	1.459	0.620	0.151	4.590	2.097	1.308	0.556	0.135	4.096
20	2.340	1.376	0.585	0.142	4.443	2.091	1.234	0.525	0.128	3.977
Factor	1.054	1.541	0.655	0.159	3.410	0.776	1.382	0.587	0.143	2.888
Urban	2.019	1.042	1.458	0.108	4.627	1.474	0.738	1.328	0.076	3.616
Rural	2.060	1.029	0.437	1.126	4.652	1.562	0.719	0.306	1.094	3.680

Source: Author's calculations

c) Income Effects of Cash Subsidy Payment to Households

In this section one of the main applications of marginal fixed price multiplier is empirically explained in the context of cash subsidy payment to the urban and rural household. In this context cash subsidy payment is an additional household incomes (besides income from their contribution on activity production), so households move on the Engle curve with allows income elasticity to be different. As in the real world all commodities do not have same income elasticities, such Engle curve is more reasonable than linear one with fixed unit income elasticity. In this condition the model create smaller multiplier such as fixed price multipliers.

According to the Iranian urban and rural population on 2010 and fixed cash subsidy payment 445000 rials monthly per each person (almost 15$ in 2013 and 33$ in 2010), such income for urban and rural household groups (aggregated levels) are approximately 1.3% and 2.3% of their annual income. Impacts of this income increment on the

production activities and factor of production have been calculated through equation (5) and results are shown in table 6. The results in table show that after other services, agriculture and forestry sector has the highest impact on total household consumption as a result on production activity accounts. Factor of production increases 2.58% to respond to increment to the household consumption and such interdependency between three accounts make more income for urban households 2.41% and rural households 2.56%.

Table 6- Impact of Cash Subsidy Payment using Fixed Price Multipliers

Agriculture, Forestry	0.71
Fisheries and Livestock	0.01
Mining	0.15
Food	0.51
Textiles, Footwear and Clothing	0.02
Wood	0.06
Metals and Machinery	0.16
Home Appliances	0.67
Vehicles	0.47
Electricity and Gas	0.05
Construction	0.04
Water	0.12
Transportation	0.15
Post and Telecommunication	0.11
Education	0.15
Insurance	0.24
Health	0.28
Retail	0.64
Banks and Financial	0.04
Other services	0.87
Factor	2.58
Urban	2.41
Rural	2.56

Source: Author's calculations

5. Conclusions

This Paper has shown how a social accounting matrix (SAM) can be used to measure SAM-based multiplier models in two approaches: accounting (average) and Fixed price (marginal) multipliers. The models provide a simple structure for examining the potential effects of exogenous policy (or external) shocks on incomes, expenditures and employment, etc, of different household groups, in a fixed price setting. It is tempting to assume that these models work out the broad orders of magnitude and directions of effect. But whether they do so depends crucially upon whether the underlying assumptions are met. There are circumstances when they are not. If an economy is

constrained or faces bottlenecks in any sector, in the supply of goods or services, or in key factors of production, then the multiplier analysis needs to be viewed with caution. Also, multipliers are only useful in examining the real-side effects of quantity-based shocks. In the empirical part to estimate the income effects of cash subsidies on producing activities, factors of production and institutions incomes with the focus on rural and urban household incomes in Iran. Assessment in the social accounting matrix model takes place via fixed price multipliers matrix in which the relationship between income injection and income distribution policies is given. A 2006 Social Accounting Matrix (prepared by Majlis Research Center in 2012), Census of Population and Housing and a fixed subsidy payment monthly, are employed as main data resources. Estimation through fixed price multiplier take place and the result shows that the effect of cash subsidy on incomes of activities production, factors production, urban households, and rural households would be; 2.58%, 2.58%, 2.41%, 2.56* respectively. The results also show that the income impact of this policy on rural households is more effective than urban households. Moreover, ther services, agricultural, home appliances, retail-seller activities have the greatest influence of the policy in the activity production accounts.

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Table 2- Iranian 2006 Social Accounting Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Factor	urban	rural
1	53175	756	1426	41000	3516	9890	35	14006	29	1	9865	96	131	0	165	137	234	18383	3	2585	0	72201	25332
2	543	84	14	2493	50	0	1	0	2	1	1	0	21	0	14	6	20	5	0	69	0	11722	9736
3	6587	148	8444	727	2010	1953	6044	543	285	5578	9806	755	1059	38	270	266	2244	17550	30	1603	0	39723	11749
4	685	392	248	12846	381	76	736	131	190	20	45	229	327	6	249	61	524	558	22	2933	0	102105	33974
5	714	28	124	612	14692	350	587	89	182	23	321	184	141	0	49	40	427	1424	8	1050	0	19797	8691
6	1418	36	275	335	374	8458	2592	131	828	24	7621	82	84	5	178	85	502	1736	23	532	0	8880	2499
7	2781	205	914	2885	816	1159	40532	666	3724	458	24940	612	586	15	191	96	4511	4221	52	2051	0	12985	3806
8	15758	200	4233	37917	3681	1515	18352	81338	2250	615	687	4847	3545	1575	6007	3154	24486	24075	1328	15374	0	9480	2280
9	174	5	32	23	19	6	174	8	1935	10	151	54	347	9	7	34	63	108	1	109	0	42592	6601
10	825	14	946	1109	564	127	2119	463	90	5340	38	745	1589	114	682	398	1066	4470	61	1328	0	18292	3747
11	3142	32	1111	274	69	54	574	98	33	75	17354	2933	3917	131	1016	527	488	1058	172	3767	0	2892	732
12	17529	138	1616	576	179	93	548	220	38	189	1481	48913	740	103	641	711	1383	1047	84	5617	0	5421	1261
13	3434	125	1442	7971	448	530	13420	227	584	234	6476	514	23642	1028	470	1294	1971	7255	85	2691	0	59229	20474
14	2479	36	684	199	156	75	685	91	44	134	91	329	570	5931	703	301	719	487	194	1756	0	29562	5077
15	245	2	61	58	11	2	81	56	22	41	14	104	81	8	26	71	50	68	12	239	0	35062	4144
16	10602	793	9953	5560	4301	1271	5797	4927	2943	1015	24598	4263	22946	2196	2348	39274	6462	17482	1083	10398	0	2569	1085
17	127	30	871	65	63	26	770	97	88	241	879	175	1026	4	160	442	80965	153	10	2213	0	62001	11470
18	4450	827	2389	9658	3480	3504	8517	845	3485	282	65143	2020	1147	30	695	307	22538	12889	39	2706	0	120834	41859
19	1562	34	1040	594	331	51	533	103	120	85	2365	157	143	38	109	74	261	357	135	581	0	14144	2040
20	2701	84	1117	554	271	112	3270	264	243	647	1927	1448	1291	115	540	1409	1077	1265	150	7602	0	265548	29777
Factor	202400	7631	517990	36223	23469	32795	56549	66894	10457	31988	382120	55417	138621	54764	111264	261908	119256	79212	11430	185594	0	0	0
urban	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1016025	16736	0
rural	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	245938	0	5336
GOV	68	-5	-89	-28	-2	-76	-52	-176	-8	-86	-284	-300	-316	-57	-9	-192	-338	-95	-15	-64	1098276	54888	8800
INV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	135882	38559
ROW	18619	207	125381	32984	11660	16234	179512	26537	40193	375	0	4148	35424	3974	7757	2863	12969	14453	347	18649	65464	10919	2397
Total	350019	11802	680223	194633	70541	78205	341375	197557	67756	47286	555638	127725	237063	70027	133531	313265	281878	208162	15254	269384	2425703	1153461	281426

Source: Aggregation 2006 SAM into 20 sectors by Author

Table 3- Direct Input matrix of 2006 SAM for Iran

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Factor	Urban	Rural
1	0.15	0.06	0.00	0.21	0.05	0.13	0.00	0.07	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.01	0.00	0.06	0.09
2	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03
3	0.02	0.01	0.01	0.00	0.03	0.02	0.02	0.00	0.00	0.12	0.02	0.01	0.00	0.00	0.00	0.00	0.01	0.08	0.00	0.01	0.00	0.03	0.04
4	0.00	0.03	0.00	0.07	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.09	0.12
5	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.02	0.03
6	0.00	0.00	0.00	0.00	0.01	0.11	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01
7	0.01	0.02	0.00	0.01	0.01	0.01	0.12	0.00	0.05	0.01	0.04	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.01	0.00	0.01	0.01
8	0.05	0.02	0.01	0.19	0.05	0.02	0.05	0.41	0.03	0.01	0.00	0.04	0.01	0.02	0.04	0.01	0.09	0.12	0.09	0.06	0.00	0.01	0.01
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.02
10	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.11	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.02	0.01
11	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.02	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00
12	0.05	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.00	0.00	0.00
13	0.01	0.01	0.00	0.04	0.01	0.01	0.04	0.00	0.01	0.00	0.01	0.00	0.10	0.01	0.00	0.00	0.01	0.03	0.01	0.01	0.00	0.05	0.07
14	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.03	0.02
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01
16	0.03	0.07	0.01	0.03	0.06	0.02	0.02	0.02	0.04	0.02	0.04	0.03	0.10	0.03	0.02	0.13	0.02	0.08	0.07	0.04	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.01	0.00	0.05	0.04
18	0.01	0.07	0.00	0.05	0.05	0.04	0.02	0.00	0.05	0.01	0.12	0.02	0.00	0.00	0.01	0.00	0.08	0.06	0.00	0.01	0.00	0.10	0.15
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.01
20	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.00	0.23	0.11
Factor	0.58	0.65	0.76	0.19	0.33	0.42	0.17	0.34	0.15	0.68	0.69	0.43	0.58	0.78	0.83	0.84	0.42	0.38	0.75	0.69	0.00	0.00	0.00
Urban	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42	0.01	0.00
Rural	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.02
GOV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.05	0.03
INV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.14
ROW	0.05	0.02	0.18	0.17	0.17	0.21	0.53	0.13	0.59	0.01	0.00	0.03	0.15	0.06	0.06	0.01	0.05	0.07	0.02	0.07	0.03	0.01	0.01
Total	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Source: author's calculation from 2006 SAM