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ECONOMIC IMPACTS OF AN INCREASE IN THE FOREIGN TOURISM RECEIPTS: A SAM-BASED INCOME MULTIPLIER ANALYSIS FOR TURKEY

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ABSTRACT

This study aims at analyzing the impacts of an increase in inbound tourism receipts in Turkey. To carry out the analyses a social accounting matrix is developed, that explicitly included tourism as an aggregate industry, by basing on input-output and tourism satellite account tables. Income multipliers derived from this social accounting matrix are used to reveal the effects on inter-industry relations, factor and household incomes. Empirical findings suggest that demand side shocks on tourism industry might be used to boost the overall economy and to cope with unemployment problem. In addition, the economic potential involved in tourism industry seems to be promising in terms of reaching the intended targets declared in "Tourism Strategy of Turkey-2023".

Keywords: Input-Output matrix, Tourism satellite accounts, Social accounting matrix, Income multiplier

INTRODUCTION

Tourism has become a major industry as a result of the globalization. According to the United Nations World Tourism Organization (UNWTO), total international tourist arrivals increased to 1 billion 35 million (UNWTO, 2013). Correspondingly, total tourism receipts in the world reached to 1 trillion 75 million US dollars in 2012. In Turkey, developments in the economy and other systems supportive of a viable tourism industry open to international competition only came gradually and in stages (Göymen, 2000: 1029). Although, government has started to give importance to tourism industry since the beginning of 1950s, the main growth has come true with the implementation of liberalization policies and export-oriented growth strategy in Turkey after the early years of the 1980s. Beside these, one of the major developments in tourism industry came with the Tourism Incentive Law in 1982. The government

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passed this law to introduce regulations regarding land use, property rights and incentives for private sector tourism investments. This law also provided various facilities, ranging from tax exemptions, tariff reductions to granting of public lands to develop the tourism industry (Akkemik, 2012). Investments have risen with increasing incentives in tourism industry. As a result of these investments, both tourist arrivals and tourism receipts have increased over the years. Table 1 shows the trend of international arrivals and international tourism receipts between 1965 and 2012.

As shown in Table 1, Turkey was visited by 31.7 million tourists who generated 23.4 million US dollars receipts in 2012. Considering results, Turkey ranks 6th and 11th in terms of tourist arrivals and tourism receipts respectively in 2012 (TSI, 2013).

Table 1. *Numbers of Tourist Arrivals and Tourism Receipts*

Years	**Number of Arrivals (1000)**	**Tourism Receipts (million $)**
1965	361	14
1970	724	52
1975	1540	201
1980	1288	327
1985	2614	1482
1990	5389	3225
1995	7726	4957
2000	10412	7636
2005	21124	18154
2010	28632	20800
2011	31456	23020
2012	31782	23440

Source: MCT (2013)

Tourism industry is one of the fastest growing industries of the world. It is also regarded as one of the world's leading industries with its economic activities providing goods and services to visitors and connections to other industries such as transportation, hotels, services and entertainment industries. The UNWTO Tourism Highlights of 2012 edition reports that about 30 % of the world's exports of commercial services and 6 % of overall exports of goods and services are accounted for tourism exports. These figures put tourism services in fourth place in the export category globally after fuels, chemicals and food. For emphasizing the importance of tourism income of Turkey, it is useful to show its shares

in Gross Domestic Product (GDP) and export revenues of Turkey in Table 2. As shown in table, the GDP of Turkey is 786 billion US dollars and export revenues are 151 billion US dollars in 2012. According to these values, the share of tourism receipts in GDP and export revenues are 2.9 % and 15.4 % respectively in the same year.

Table 2. *The Shares of Tourism Receipts in GDP and Export Revenues (%)*

Years	GDP (1) (billion $)	Exports (2) (Fob billion $)	Tourism Income (3) (billion $)	(3)/(1) (%)	(3)/(2) (%)
1990	150	13,0	3,2	2.1	24.6
1991	150	13,6	2,7	1.8	19.8
1995	170	21,6	5,0	2.9	23.1
2000	265	27,8	7,6	2.9	27.3
2001	197	31,3	8,1	4.1	25.9
2002	230	36,1	11,9	5.2	33.0
2003	305	47,3	13,2	4.3	27.9
2004	390	63,2	15,9	4.1	25.2
2005	481	73,5	18,2	3.8	24.7
2006	526	85,5	16,9	3.2	19.8
2007	659	107,2	18,5	2.8	17.3
2008	742	131,9	21,9	2.9	16.6
2009	616	102,1	21,2	3.4	20.7
2010	735	113,9	20,8	2.8	18.3
2011	772	134,6	23,0	2.9	17.1
2012	786	151	23,4	2.9	15.4

Source: TYD, www.ttyd.org.tr

This study aims to calculate Social Accounting Matrix (SAM) based income multipliers for Turkey by using data from the 2002 input-output table and tourism satellite accounts in the same year. SAM is set by using the same year's input-output table which is modified to incorporate an explicit tourism industry by utilizing the information collected under Tourism Satellite Account (TSA) tables of the same year. One "tourism demand" scenario (a 10 % increase on international tourism receipts) is run to evaluate the industrial and interindustry effects of this demand side shock and changes in industrial factor incomes, household incomes and production activities in the economy are calculated by using transfer, open-loop and closed loop effects. The motivation behind the demand

shock comes from the change of foreign tourism receipts between 2010 and 2011. Between these years, tourism receipts increased around 10.6 % which meant 2.2 billion US dollars additional income for Turkish economy. This research aims to trace the effect of this additional income mainly on tourism and other industries and on labor and household incomes.

The remainder of the paper is organized as follows; next section presents a literature review regarding tourism industry studies in Turkey and similar multiplier studies in the world. Section 3 outlines the methodology. Empirical analyses are given in Section 4, wherein emphasis is placed on derivation of SAM based income multipliers. Simulation results are reported and discussed also in this section. Finally, the paper concludes with some implications.

LITERATURE REVIEW

In the academic literature, different methodologies are used to carry out an impact analysis that involves tourism industry. While various econometric techniques and models are utilized for partial equilibrium analyses; input-output based multiplier models and computable general equilibrium models are employed to analyze the industry in the general equilibrium framework. Rather than reviewing all the empirical works regarding tourism industry in Turkey, in this section author prefers to review the studies, although not much in numbers, that employ especially input-output based multipliers. It was preferred to constraint the review section to show the distinguishing features of this study and to compare our findings with the previous studies.

There are many Input-Output and SAM multipliers studies to calculate tourism multipliers (generally income multipliers) on different regions and countries in the world. (Archer, 1976; 1995a; 1995b; Pavaskar, 1982; Lin and Sung, 1983; Song and Ahn, 1983; Cooper and Pigram, 1984; Liu et al., 1984; Fletcher, 1989; Heng and Low, 1990; Baum, 1991; Khan et al., 1995; Archer and Fletcher, 1996; Wagner, 1997; Henry and Deane, 1997; Frechtling and Horváth, 1999; Kweka et al., 2001; Arabsheibani and Labarthe, 2002; Polo and Valle, 2008; Gül and Blake, 2011; Akkemik, 2012).

In spite of the important role of tourism industry in Turkey, not much attention has been paid to its multiplier analysis in the academic studies. Liu et al. (1984) was the first article to investigate the Type I and Type II[1] tourist expenditure multipliers for Turkey, with employing 1979 input-output table. Gül and Blake (2011) carried out demand-based policy analysis by using 2002 input-output table and they upgraded these

multipliers. These two studies are quite useful to compare the tourism industry of Turkey since 1979[2]. In addition, Akkemik (2012) examines the importance of tourism demand for the Turkish economy by using SAM impact multipliers for 1996 and 2002. In his paper, two analyses are carried out. First, industrial GDP elasticity measures and the relative importance of international tourism activities are examined. Second, the impact of the international tourism industry on the overall economy is investigated using the SAM impact analysis.

Apart from the multiplier analyses, existing empirical research include some traditional econometric methods that focus on international tourism demand impacts of tourist expenditures and tourist receipts on the macroeconomic variables such as growth, employment and GDP in Turkey (Akış, 1998; Tosun, 1999; Akal 2004; Halıcıoglu, 2004; 2008; Yıldırım and Öcal, 2004; Demiröz and Ongan, 2005; Gündüz and Hatemi, 2005; Bahar, 2006; Yavuz, 2006; Dilber, 2007; Koç and Altınay, 2007; Aslan, 2008; Kaplan and Çelik, 2008; Kızılgöl and Erbaykal, 2008; Ongan, 2008; Akan and Işık, 2009; Öztürk and Acaravcı, 2009; Katırcıoglu, 2009; Eryiğit, 2010; Gökovalı, 2010).

METHODOLOGY

Tourism industry is related with many industries in the economy and therefore both demand and supply side shocks create primary (direct) and secondary (indirect+induced) economic effects. The methods which reveal the secondary effects of tourism are essentially multiplier based input-output analyses (Frechtling, 1994). This study employs essentially a SAM based modelling framework to derive the direct and indirect effects and calculate the income multipliers as a result of an increase in foreign tourism receipts.

Input-Output (I-O), SAM and Computable General Equilibrium (CGE) models have advantages over econometric analyses as they take into account interindustry input-output relations and final demand (i.e consumption, investment, exports and imports) simultaneously. Thus, they are superior to econometric techniques in quantitatively examining the economic contribution of tourism demand to overall economy (Akkemik, 2012). The fundamental problem with I-O modelling is that it ignores key aspects of the economy. It focuses on the industry which is being directly affected and its direct relationships with other parts of the economy. As a consequence, I–O estimates of impacts, on economic activity generally or on specific variables are usually overestimates, very often by large margins (Dwyer et al., 2004). SAM methodology

traditionally focuses on quantity oriented models and their income effects and it has some advantages over I-O modelling. SAM modelling provides a concise framework for synthesizing and displaying the data and describes the structure of an economy in terms of the links between production, income distribution and demand within an economy (Thorbecke, 1988).The main limitation of the SAM model is that it is a demand-driven model with an excess capacity assumption i.e., any increase in demand is immediately met by increased supply due to availability of unemployed resources. Therefore, SAM models are generally justified for economies with high unemployment and unused capacity in all industries (Akkemik, 2012: 792).

The methodology employed in this study can be explained in four steps. Firstly, TSA tables are constructed for aggregating 'tourism industry'. TSA tables include ten tables[3] and are built in accordance with national accounting system. They provide information specific to tourism industry and private/public consumption, investment expenditures and some useful information such as tourist expenditures, tourism-related employment and establishments. Tourist expenditures are classified into twenty three categories in tourism satellite accounts and these expenditures contribute to set an explicit tourism industry.

In the second step, by using the information built in, the aggregated tourism industry is inserted as one explicit industry in I-O table[4]. Tourism industry is carefully inserted in IO table without giving any cause for any double counting. Macroeconomic and interindustry linkages are gathered by using the information obtained from TSA, household expenditure surveys from Turkish Statistics Institute (TSI) and other data collected by various institutions such as Central Bank of the Republic of Turkey (CBRT), State Planning Office (SPO), and TSI (Household Income and Consumption Surveys) for the new aggregated tourism industry. The main contribution of TSA is to compose intermediate and final consumption (demand) vector based on expenditures for tourism industry. Finally, the original 59-industry I-O table aggregated into 19-industry matrix which includes tourism industry explicitly[5]. The unit of measure in input output table is billion TL and it shows basic values in 2002. The use of SAM modelling for tourism analysis becomes possible only after the introduction of tourism satellite accounts in the national accounting systems and I-O tables.

In the third step, the modified I-O table (19-industry) in Turkey is installed in a SAM built for the year 2002 which covers expenditure/income linkages in the economy (Breisinger et al., 2009). SAM square matrix records flows of all transactions in an economy. Columns

represent payments and rows represent receipts (income). Since total payments must equal to total receipts in an economy, row sum equals column sum for the same account. The SAM provides an accounting system itself and a snapshot of the economy for a given year (Köse and Yeldan, 1996).

In addition to I-O and TSA tables public sector accounts, national income accounts and balance of payments are used to construct the SAM. The SAM built in this study is composed of nine accounts: two production accounts (activities and commodities), two factors of production (labor and capital), three institutions (households, firms and government), the saving-investment account, and the rest of the world account. In SAM income multiplier model, traditionally government, capital-investment, and rest of the world accounts are set as exogenous while the remaining accounts are endogenous (Pyatt and Round, 1985; Thorbecke, 1988, 1994; Powell and Round, 1998; Arndt et al., 2000; Round, 2003). The macro-SAM of 2002 is presented in Table 3.

Table 3. *Macro SAM*

		Activities	**Goods**	**Production Factors**				**Institutions**		**Capital Account**		**ROW**	**TOTAL**
				Labor	*Capital*	*Land*	*Firms*	*Households*	*Government*	*Private Savings*	*Public Savings*		
Activities			516						4			73	**593**
Goods		320						200	35	40	15		**610**
Production Factors	*Labor*	70										3	**73**
	Capital	156										4	**160**
	Land	31										1	**32**
Institutions	*Firms*				21				33			3	**57**
	Households			61	138	18	45	31	11			1	**305**
	Government	16	9	12	1	14	6	12	22			3	**95**
Capital Account	*Private Savings*							62				8	**70**
	Public Savings								-15	30			**15**
ROW			85				6		5				**96**
TOTAL		**593**	**610**	**73**	**160**	**32**	**57**	**305**	**95**	**70**	**15**	**96**	

Source: Calculations of author (Billion TL-2002)

The last step of the methodology is about algebraic derivation of SAM-based income multiplier. A schematic representation of the SAM used in this study is shown in Table 4. In the model, there are 19 industries as producing outputs, including tourism. Each industry utilizes labor, capital and intermediate inputs. Industries are identified by indices *i and* j (*i, j* = 1,….19). Endogenous accounts are shown by T_{ij} and exogenous are given by *X*. Some sub-accounts are zero, because there are no transactions. In this table, T_{12} defines domestic supply, T_{31} and T_{43} defines production factors and household income respectively. X_1, X_2, X_3, and X_4 define injections (exports) for ROW accounts; L_1, L_2, L_3 and L_4 show leakages (imports) from ROW accounts. Y_{j1}, Y_{j2}, Y_{j3}, and Y_{j4} represent production activities (A), goods (G), production factors (F) and households' incomes (HH) respectively. Y_1, Y_2, Y_3, and Y_4 show the sum of endogenous and exogenous accounts ($y = T_{ij} + x_i$).

Table 4. *Endogenous and Exogenous Accounts in SAM*

				Expenditures					
				Endogenous Accounts				**Exogenous Accounts**	**Total**
				Production Activities	Goods	Factors	Households	Government+ Capital+ ROW	
				1	2	3	4	5	6
Incomes	**Endogenous Accounts**	Production Activities	1	0	T12	0	0	X1	Y1
		Goods	2	T21	0	0	T24	X2	Y2
		Factors	3	T31	0	0	0	X3	Y3
		Households	4	0	0	T43	0	X4	Y4
	Exogenous Accounts	Government+ Capital+ ROW	5	L1	L2	L3	L4	t	
		Total	6	Yj1	Yj2	Yj3	Yj4		

The study aims to estimate the SAM based income multipliers for analyzing the effects (transfer, open loop and closed loop) of exogenous demand shock on endogenous accounts (production activities, goods and production factors, household incomes). Matrix notations are shown below: Dividing the endogenous accounts (T_{ij}) columns by each column's sum (Y_j) in Table 4, the coefficient matrix A_{ij} is derived equation (1). All endogenous accounts' coefficients are shown as matrix A in equation (2). (In this study, endogenous accounts are Production activities (A), Goods (G), Factors (F) and Households (HH).

$$A_{ij} = T_{ij} Y_j^{-1} \tag{1}$$

$$\mathrm{A} = \begin{bmatrix} 0 & A_{12} & 0 & 0 \\ A_{21} & 0 & 0 & A_{24} \\ A_{31} & 0 & 0 & 0 \\ 0 & 0 & A_{43} & A_{44} \end{bmatrix} \tag{2}$$

If we re-arrange equation (1); we get equations (3) and (4).

$$A_{ij} Y_j = (T_{ij} Y_j^{-1}) Y_j \tag{3}$$

$$T_{ij} = A_{ij} Y_j \tag{4}$$

If we write the sum of endogenous and exogenous accounts as $y = T_{ij} + x_i$ and put into equation (4), we get equations (5) and (6),

$$\begin{matrix} A = \\ G = \\ F = \\ HH = \end{matrix} \begin{bmatrix} Y_1 \\ Y_2 \\ Y_3 \\ Y_4 \end{bmatrix} = \begin{bmatrix} 0 & A_{12} & 0 & 0 \\ A_{21} & 0 & 0 & A_{24} \\ A_{31} & 0 & 0 & 0 \\ 0 & 0 & A_{43} & A_{44} \end{bmatrix} \cdot \begin{bmatrix} Y_{j1} \\ Y_{j2} \\ Y_{j3} \\ Y_{j4} \end{bmatrix} + \begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \end{bmatrix} \tag{5}$$

$$Y = AY + X \tag{6}$$

here, Y defines total income vector of endogenous accounts and X shows other exogenous accounts' injections. If we solve equation (6) for Y;

$$X = (I - A)Y \tag{7}$$

$$(I - A)^{-1}(I - A)Y = (I - A)^{-1} X \tag{8}$$

$$Y = (I - A)^{-1} X \tag{9}$$

$(I - A)^{-1}$ matrix is Leontief inverse and defines SAM multiplier matrix (Pyatt and Round, 1979). After finding multiplier matrix, the impact of exogenous accounts on endogenous accounts can be analyzed. In addition, A matrix (in Equation 2) can be reduced to sub-accounts (B and C matrix) and different multiplier effects can be calculated as a result of intended policies.

$$\mathrm{B} = \begin{bmatrix} 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & A_{44} \end{bmatrix} \tag{10}$$

$$\mathrm{C} = \begin{bmatrix} 0 & A_{12} & 0 & 0 \\ A_{21} & 0 & 0 & A_{24} \\ A_{31} & 0 & 0 & 0 \\ 0 & 0 & A_{43} & 0 \end{bmatrix} \tag{11}$$

$$(I-B)^{-1}=\begin{bmatrix} I & 0 & 0 & 0 \\ 0 & I & 0 & 0 \\ 0 & 0 & I & 0 \\ 0 & 0 & 0 & (I-A_{44})^{-1} \end{bmatrix} \quad (12)$$

We substitute equations (10) and (11) into equation (6), we reach (16)

$$Y=(B+C)Y+X \quad (13)$$

$$Y-BY=CY+X \quad (14)$$

$$Y(I-B)=CY+X \quad (15)$$

$$Y=(I-B)^{-1}CY+(I-B)^{-1}X \quad (16)$$

If we write equation (16) in SAM matrix format with four endogenous accounts, we reach (17).

$$\begin{bmatrix} Y_1 \\ Y_2 \\ Y_3 \\ Y_4 \end{bmatrix} = \begin{bmatrix} 0 & A_{12} & 0 & 0 \\ A_{21} & 0 & 0 & A_{24} \\ A_{31} & 0 & 0 & 0 \\ 0 & 0 & (I-A_{44}).A_{43} & 0 \end{bmatrix} . \begin{bmatrix} Y_1 \\ Y_2 \\ Y_3 \\ Y_4 \end{bmatrix} + \begin{bmatrix} I & 0 & 0 & 0 \\ 0 & I & 0 & 0 \\ 0 & 0 & I & 0 \\ 0 & 0 & 0 & (I-A_{44})^{-1} \end{bmatrix} . \begin{bmatrix} X_1 \\ X_2 \\ X_3 \\ X_4 \end{bmatrix} \quad (17)$$

First matrix of the right side on equation (17) presents the effects among endogenous accounts. This matrix can be written as equation (18),

$$A^{*}=(I-B)^{-1}C \quad (18)$$

$$\begin{bmatrix} 0 & A_{12}^{*} & 0 & 0 \\ A_{21}^{*} & 0 & 0 & A_{24}^{*} \\ A_{31}^{*} & 0 & 0 & 0 \\ 0 & 0 & A_{43}^{*} & 0 \end{bmatrix} = \begin{bmatrix} 0 & A_{12} & 0 & 0 \\ A_{23} & 0 & 0 & A_{24} \\ A_{31} & 0 & 0 & 0 \\ 0 & 0 & (I-A_{44}).A_{43} & 0 \end{bmatrix} \quad (19)$$

If A^{*} is put into equation (16); we get equation (20)

$$Y=A^{*}Y+(I-B)^{-1}X \quad (20)$$

Equation (20) gives the effects of a transfer from an exogenous account on an endogenous account. If re-arrange this equation to calculate these effects; new equation is (21).

$$A^{*}Y=Y-(I-B)^{-1}X \quad (21)$$

If this equation written in matrix form, we get equation (22).

$$\begin{bmatrix} 0 & A_{12}^{*} & 0 & 0 \\ A_{21}^{*} & 0 & 0 & A_{24}^{*} \\ A_{31}^{*} & 0 & 0 & 0 \\ 0 & 0 & A_{43}^{*} & 0 \end{bmatrix} . \begin{bmatrix} Y_1 \\ Y_2 \\ Y_3 \\ Y_4 \end{bmatrix} = \begin{bmatrix} Y_1 \\ Y_2 \\ Y_3 \\ Y_4 \end{bmatrix} - \begin{bmatrix} I & 0 & 0 & 0 \\ 0 & I & 0 & 0 \\ 0 & 0 & I & 0 \\ 0 & 0 & 0 & (I-A_{44})^{-1} \end{bmatrix} . \begin{bmatrix} X_1 \\ X_2 \\ X_3 \\ X_4 \end{bmatrix} \quad (22)$$

Equation (20) was obtained for the first endogenous account. In this research, author employed four endogenous accounts in SAM. Therefore, for each endogenous account, equation (20) could be multiplied with A^{*} from both sides. For the second endogenous account:

$$A^{*}Y=A^{*}A^{*}Y+A^{*}(I-B)^{-1}X \quad (23)$$

If we write $A^*Y = Y - (I-B)^{-1}X$ instead of A*Y for the first endogenous account in equation (23), we get (26).

$$Y - (I-B)^{-1}X = A^{*2}Y + A^*(I-B)^{-1}X \quad (24)$$

$$Y = A^{*2}Y + (I-B)^{-1}X + A^*(I-B)^{-1}X \quad (25)$$

$$Y = A^{*2}Y + ((I+A^*)(I-B)^{-1})X \quad (26)$$

If we repeat this process for the third and fourth endogenous account by multiplying with A*; we reach equation (27).

$$Y = (I-A^{*4})^{-1}.(I+A^*+A^{*2}+A^{*3}).(I-B)^{-1}X \quad (27)$$

Pyatt and Round (1979) and Stone (1985) show that the multiplier matrix can be decomposed into three components; first one is a transfer matrix which picks up the net multiplier effects induced on a given set of accounts by exogenous transfers accruing to the given set ($M_1 = (I-B)^{-1}X$). Second one is an open loop matrix that shows the cross-effects between different accounts ($M_2 = (I+A^*+A^{*2}+A^{*3})$. The last one is a closed-loop matrix ending the multiplier effects of an exogenous inflow on an endogenous group after circled through the rest of endogenous accounts and returned to the original recipient $M_3 = (I-A^{*4})^{-1}$.

In equation (27) closed loop, open loop and transfer effects as defined cumulative effects. These effects can be separated as follows:

$$Y = M_3.M_2.M_1 \quad (28)$$

$$M = M_3.M_2.M_1 \quad (29)$$

$$M = I + (M_1 - I) + (M_2M_1 - M_1) + (M_3M_2M_1 - M_2M_1) \quad (30)$$

$$M = I + N_1 + N_2 + N_3 \quad (31)$$

In equation (31), I defines exogenous injections (injection at the beginning), N_1 defines net (direct) transfer effects which shows the cumulative effects of an exogenous account on an endogenous. N_2 shows open loop effects and represents the effects of an endogenous account on another endogenous account. N_3 shows closed loop effects and describes the effects of an addition to an endogenous accounts, then account at the beginning (Pyatt and Round, 1979).

The demand shock in this study is sourced by a 10 % rise in tourism industry receipts. Table 5 presents the interaction among SAM accounts after the shock is introduced. As shown in Table 5, an exogenous shock has given to *T21 account (goods accounts) and new exogenous vector of ROW (X2) is obtained as a result of 10 % increase in foreign tourism receipts. After that new exogenous vector is multiplied with *T21 matrix, total change in X2 are found. This effect is named as direct income transfer (own direct) effects. Then, the change in input use/activities affects T31 by

creating another effect on household income (T43). At this point open loop effects are in place. Lastly, changing household income motivates a change (firstly multiplied with T24 account) in final demand (T21) and this completes the circle. This last effect is known as closed loop effect.

Table 5. *The Model of Tourism Demand Scenario*

				Expenditures					
				Endogenous Accounts				**Exogenous Accounts**	
				Production Activities	Goods	Factors	Households	Government+ Capital+ ROW	**Total**
				1	2	3	4	5	6
Incomes	**Endogenous Accounts**	Production Activities	1	0	T12	0	0	X1	Y1
		Goods	2	*T21	0	0	T24	X2	Y2
		Factors	3	T31	0	0	0	X3	Y3
		Households	4	0	0	T43	0	X4	Y4
	Exogenous Accounts	Government+ Capital+ ROW	5	L1	L2	L3	L4	t	
		Total	6	Yj1	Yj2	Yj3	Yj4		

RESULTS

The demand increase stimulated the production in tourism and other industries. The transfer effects show that the biggest increases are seen in coke, refined petroleum products (3.72%) and agriculture (3%) respectively. These sectors are followed by textiles industry (2.96%), financial intermediation, and other services (2.54%). The impacts (direct income transfer, open loop and closed loop) on other industries are presented in Table 6.

To find open loop (cross) effects, transfer effects matrix is multiplied firstly with T31 (production factors account) and then with T43 (households factor incomes). As a result, labor income is increased by 3.25%. This is attributed to both the labor-intensive feature of tourism and low wages in the industry. Based on the rise in labor price total household income also increase by 8.88%.

Household incomes must be reflected to demand again to complete the circle. To find closed loop effects we must multiply open loop effects firstly with T24 (households' goods demand) and reach to T21 for a circular. This is known as closed loop effects. The results of closed loop

effects show that food and beverage (0.41%) and metal industries (0.41%) have more effects than other industries. In this scenario, transfer effects are bigger than closed loop effects in all industries.

Table 6. *Total Impacts of Tourism Demand Scenario*

No	Industries	Transfer Effects	Open Loop Effects	Closed Loop (Circular) Effects
1	Agriculture	3.001		0.141
2	Mining	0.656		0.080
3	Manufacture of food products and beverage	1.124		0.412
4	Manufacture of textiles	2.960		0.230
5	Manufacture of wood and of products of wood	1.268		0.227
6	Manufacture of coke, refined petroleum products	3.727		0.177
7	Manufacture of basic metals	2.296		0.411
8	Electricity, gas, steam	0.758		0.087
9	Construction	0.248		0.109
10	Sale, maintenance and repair of motor vehicles	1.717		0.067
11	Retail Trade	0.824		0.120
12	Hotels and Restaurants	0.203		0.087
13	Transportation (Land, Air, Water)	1.808		0.184
14	Supporting and Auxiliary Transport Activities	1.153		0.103
15	Post and Telecommunications	0.376		0.143
16	Financial Intermediation and Other Services	2.542		0.205
17	Real Estate Activities	0.376		0.084
18	Recreational, Cultural and Sporting Activities	0.863		0.016
PF	Labor		3.256	
HH	Households		8.889	

CONCLUSION

In the existing literature, the Social Accounting Matrix has been intensively used to investigate the income generating process in the economy. In this paper, author aimed to develop an interindustry income multiplier model by SAM to show the linkages among production activities, goods, production factors and household incomes in the economy. SAM allows a deeper understanding of the interconnections of tourism with other industries of the economy and reveals the economic importance of tourism among other industries under different scenarios.

This study searches for the decomposed effects of a demand shock given to tourism industry on interindustry relations, labor and household income by deriving transfer, open loop and closed loop effects. Traditionally government, capital-investment, and rest of the world (ROW) accounts are set as exogenous and the remaining accounts are as endogenous.

A 10 % increase in foreign tourism receipts creates an increase in production (intermediate input usage) of other industries. Transfer effects show that the biggest increases are seen in coke, refined petroleum products sector (3.72%) and agriculture sector (3%) respectively. Based on this factor demand, labor income has risen at about 3.25%. This rise in labor income is due to both labor-intensive feature of tourism industry and low wages in the sector. The rise in labor income led to increase in overall household income at about 8%. In all sectors, transfer effects are bigger than closed loop effects. This implies that economy has an imperfect market and weak economic integration. Main implication of the scenario analyses is that policy and non-policy induced shocks to the tourism industry can be an efficient instrument to cope with unemployment problem in Turkey. Therefore, public and non-governmental institutions might use the initiative to create instruments in promoting tourism industry. As a conclusion, findings of this demand side scenario suggest that results are quite promising in reaching the intended targets mentioned in Tourism Strategy of Turkey-2023. In the Tourism Strategy of Turkey-2023, 63 million tourist arrivals and 86 billion US dollars of tourism receipts are targeted by the government which accounts for 1,350 US dollars of tourist expenditures per tourist (MCT, 2007). These objectives may put Turkey in the top five, according to both tourist arrivals and tourism receipts in the world. Hence, it becomes quite important to carry out especially demand based policy simulations in advance, in order to suggest relevant policy advices for the policy makers.

Our results come with several caveats. Firstly, the latest I-O table dates to 2002. Economics conditions and tourism industry have changed significantly, so we need more recent data to reach better results. Secondly, in accordance with I-O table, all TSA tables must be upgraded. Lastly, SAM income multiplier model has also some limitations. As a demand-driven model, it assumes that activity levels may vary while prices are fixed. This assumption is generally justified in the presence of excess capacity and unused resources in production activities (Roland-Holst and Sancho, 1995).

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Appendixes

Appendix 1. *Contents of TSA Tables*

Table	Coverage	Definition
1	Inbound Tourism Expenditure	Part of aggregate demand (Export)
2	Domestic Tourism Expenditures	Part of domestic total consumption (Households)
3	Outbound Tourism Expenditures	A part of import
4	Internal "Final Tourism Consumption"	The sum of Table 1 and Table 2
5	Tourism Collective Consumption	Government consumption on tourism
6	Domestic supply & consumption by product	Tourism value added and tourism supply
7	Production of tourism commodities	The services and products of 'tourist related' industries and non-tourist related industries
8	Tourism Fixed Capital Formation (Investment)	Capital formation and stock on tourism sector
9	Employment & labour use	Employment data on tourism sector
10	Non-monetary Indicators	Tourism volumes/nights; types of tourist etc.

Source: Jones et al. (2004)

Appendix 2. *Classification of industries in the I-O Table (2002)*

No	Code	Industries	Industrial Codes in the I-O Table (2002)
01	AGR	Agriculture	01,02,03
02	MIN	Mining	04,05,06,07,08
03	FDB	Manufacture of food products and beverage	09,10
04	TEX	Manufacture of textiles	11,12,13
05	WOO	Manufacture of wood and of products of wood	14,15,16,30,31
06	COK	Manufacture of coke, refined petroleum products	17,18,19,20
07	MET	Manufacture of basic metals	21,22,23,24,25,26,27,28,29
08	EGS	Electricity, gas, steam	32,33
09	CON	Construction	34
10	MOT	Sale, maintenance and repair of motor vehicles	35,36
11	RET	Retail Trade	37
12	HOR	Hotels and Restaurants	38
13	TRA	Transportation (Land, Air, Water)	39,40,41
14	STA	Supporting and Auxiliary Transport Activities	42
15	COM	Post and Telecommunications	43
16	FOS	Financial Intermediation and Other Services	44,45,46,48,49,50,51,52,53,54, 55,56,58,59
17	RES	Real Estate Activities	47
18	CRS	Recreational, Cultural and Sporting Activities	57
19	TOU	**Tourism**	

Notes

[1] Type I and Type II, are the two types of ratio multipliers calculated in this study. Type I income multipliers show the amount of direct plus indirect income created by an additional unit of tourist expenditure, while Type II income multipliers show the amount of direct plus indirect plus induced income created by an additional unit of tourist expenditure (Fletcher, 1989).

[2] Between 1979 and 2002 IO table, Type I and Type II multiplier effects created by tourism industry increased from 1.5 and 3.8 to 2.1 and 4.1 respectively (Liu et al., 1984; Gül and Blake, 2011).

[3] Their contents are explained in Appendix. The latest available year of TSA tables are, 2001-2003.

[4] Previously, tourism services were not regarded as production activities in national I-O tables which included in various services (e.g. hotels, restaurants, transportation and recreation) (Akkemik, 2012). The latest I-O table dates to 2002.

[5] Industrial concordance is given in Appendix.