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The Distributional Paths of Foreign Tourism Spending in Iran: Application of Structural Path Analysis

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Abstract

Tourism has not been a growing sector in Iran due to political challenges. Still, there is hope that it grows after lifting the economic and monetary sanctions and may bring both political and economic stability and more tourists to Iran. The aim of this paper is to study the distributional impact of foreign tourists spending in Iran using structural path analysis (SPA) within the SAM framework. The primary databases are the 2011 SAM and foreign tourism spending in 2018. According to the SAM multiplier results, high-income groups benefit significantly from foreign tourists spending and generates more inequality between ten deciles of urban and rural household income groups. Moreover, results of SPA approach indicate that most of the paths affecting household income pass through production factors. Evaluating the production factors reveal that mixed-income has a significant contributor to intermediate paths, and its share in global influence for higher-income groups are significantly greater than middle- and low-income groups. Global influence also reveals that compensation of employees for lower household income groups, would be affected sharply.

Highlights

- Distributional impact of tourism in an economy can be assessed within SAM framework.
- SPA identifies the movement of income between origin and destination.
- High -income groups benefit significantly from foreign tourism expenditure in Iran.
- Tourism expansion generates an inequality between household groups in Iran.
- Tourism related- sector is labor- intensive in Iran.

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1. Introduction

According to World Tourism Organization report, Iran has ranked tenth archaeological in terms of historical attractions and fifth in natural attractions in the world (UNWTO, 2017), and therefore has a significant potential to increase the number of tourists. Iran's International tourism has grown since the mid-1990s. As figures in Table 1 show, the number of arrivals increased with annual growth rate of 1.34% and from 568,000 to 7,295,000 tourists in the 1995-2018 period. United Nations World Tourism Organization (UNWTO) puts Iran as one of the top 50 countries in terms of tourism attractions. Meanwhile, by attracting 4.7 million foreign tourists, Iran ranked 48th in 2013 for the first time since the Islamic Revolution (UNWTO, 2017). Income produced by these arrivals grow at an annual growth rate of % 2.4, increasing from US$ 205 million to US$ 4.632 billion over the period of 1995-2017 (UNWTO site)[1]. Most of these tourists come from Middle East and Europe, mostly from Iraq, Azerbaijan, Afghanistan, and Turkey. The tourism income balance (income from international tourists' arrival and Iranian tourist going abroad) is negative (more than US $4 billion). In 2015 the tourism revenue reached the highest share (0.01) of GDP.

According to the Islamic Parliament Research Center (IPRC, 2015) the share of (inbound and outbound) tourism income is 6.1% of GDP, and its total contribution to employment (direct and indirect jobs creation) is 1.184000 jobs, which is about 5.1% of total employment. Moreover, tourism also increase the national capital investment by 2.9%. Therefore, macroeconomic consequences of changes in tourism arrival cannot be ignored.

Tourism is an essential economic activity in most of the countries around the world. The tourism industry not only has a direct economic impact, but it also has significant indirect and induced effects. The direct impact of tourism on GDP reflects the internal spending on tourism and is concerned with the output of characteristic tourism sectors such as hotels, airlines, airports, travel agents, and leisure and recreation services. The total impacts of tourism are broader and include indirect and induced impacts on the economy. The indirect impacts include the GDP growth and jobs created by tourism investment spending on purchasing new aircraft, constructing new hotels etc., whereas the induced effects measure the GDP growth and jobs created by the spending of industries that are indirectly employed by the tourism industry. Also, tourism development affects income distribution via direct, indirect, and induced impacts on output and employment growth. Literature suggests that tourism plays a central role in distributional issues such as poverty rates or income inequality at national and regional levels (Blake et al., 2008; Deller, 2010; Incera & Fernández, 2015; Alam and Paramati, 2016; Raza & Shah, 2017; Liorca-Rodríguez et al., 2018; Njoya & Seetaram, 2018).

[1] https://data.worldbank.org/indicator/ST.INT.ARVL?locations=IR

Table 1. Total Receipt, Number of International Tourism in Iran

year	total receipt ($ million)	%of GDP	number of arrivals (1000 person)
1995	205	0.07	568
1996	142	0.05	693
1997	190	0.07	860
1998	656	0.22	1124
1999	559	0.19	-
2000	677	0.21	-
2001	1122	0.35	-
2002	1607	0.47	-
2003	1266	0.34	-
2004	1305	0.34	-
2005	1025	0.26	-
2006	1464	0.35	-
2007	1950	0.43	2219
2008	1978	0.43	2034
2009	2259	0.49	2116
2010	2631	0.54	2938
2011	2489	0.50	3354
2012	2483	0.54	3834
2013	3306	0.72	4769
2014	4197	0.87	4968
2015	4771	1.00	5237
2016	3914	0.72	4942
2017	4632	0.83	4867
2018	-	-	7295

***Source**: World Tourism Organization (WTO), Yearbook of Tourism Statistics, Compendium of Tourism Statistics, and data files.*

Tourism development generally considered as one of activity for reducing inequality. Nonetheless, it remains unclear as to whether tourism contributes to reducing inequality or not. On one hand, tourism is considered a relatively labor-intensive sector, and is traditionally made up of small businesses and micro-enterprises; these are potentially quite accessible to the relatively low-skilled poor people such as women, youth, and disadvantaged groups, so can be considered as pro-poor activity and may reduce income inequality (Mitchell & Ashley, 2010; Winter, 2019). On the other hand, tourism expansion could create leakage, more dependency, and inflation. The first, tourism leakage occurs when revenues from its economic activities are not available for reinvestment within the same destination. As a result, economic resources are leaked away. Such situation happens if tourism companies are foreign owned or if they have high dependency

to another country (Scheyvens, 2002; Winter, 2019). So, it may bring an income inequality (Blake et al., 2008).

As literature shows, inflation is also one of the potential effects of tourism expansion which is expected to have a significant direct effect on income inequality (Nantob, 2015). Tourism has also potential to be used as a tool to redistribute income, since it is a source of government tax revenue (Alam & Paramati, 2016). It is, however, crucial whether the government spends the new revenues to improve the welfare of the poor and/or to provide the social infrastructure (Njoya & Seetaram, 2018).

Although there are various theoretical studies on the relationship between tourism and income inequality, to the best of our knowledge, the empirical studies are rare in Iran. There are a few studies on the tourism development impact using SAM approach. Only two studies, Mousavi et al. (2018) and Bazzazan et al. (2020), have been found. The first examines the effects of rural tourism and the second the effect of international tourism on sectroal growth. To provide a better understanding of the tourism impacts is on the distribution of the economic outcomes among different income groups, this aspect has been ignored. To fill the gap, the main aim of this paper is to investigate the effect of tourism development on income distribution in Iran. Our analysis is focused on assessing the impact of foreign tourism spending on the Iranian economy using structural path analysis (SPA) in the social accounting matrix (SAM) framework. SPA approach provides an alternative and much more detailed way than multipliers by decomposing traditional SAM multiplier. The SAM proposed in this study is elaborated with a special design for tourism development policy evaluation. This design allows us to examine not only the production impacts, but also the effects on the generated income in the labor market as well as the disposable income of the household income groups. This paper seeks a better understanding of the household groups, which are likely to receive the most from the economic benefits of tourism and the distributional effects of tourism spending transmission channels on households. . For this purpose, households, as an institutional account in SAM framework, are considered in 20 groups: 10 urban income deciles and 10 rural income deciles. By considering 20- household income groups, this study would be able to measure the impact of tourism expansion on ten decile urban and rural household income groups and calculate which groups can receive more benefit. Although, inequality in Iran has been improved gradually since 1979, fluctuated a lot (Gini coefficients from 0.46 to 0.36), and urban areas are more inequal (Ebrahimi et al., 2018; Salehi-Isfahani, 2017). It is important to determine whether the tourism expansion would affect income distribution. If so, will it improve it or not?

Answering to the above question in line with the main purpose of the article, the remainder of this paper is organized as follows. In part 2, we review the literature on the economic impacts of tourism development on income inequality. Part 3 sets out the methodology of SAM technique using structural path analysis to assess the impact of international tourist arrival expenditure on different income

groups. The database, model estimation, and results are presented in part 4. Finally, part 5 wraps up the conclusions and recommendations for further research.

2. Literature Review

Much research has attempted to study the economic impact of tourism development in different countries, including Iran. The techniques used in these studies range from univariate and multivariate econometric techniques to general equilibrium models such as input-output (IO), social accounting matrix (SAM), computable general equilibrium (CGE), and applied computable general equilibrium (ACGE) models. Econometric techniques are partial equilibrium and have little to say on interindustry relationships in an economy. While, IO, SAM, CGE, and ACGE models have advantages over econometric analysis as they consider interindustry relationships and final demand (i.e., consumption, investment, exports, and imports) simultaneously (Archer, 1996; Fletcher, 1989). However, the literature is still dominated by econometric studies that use multivariate regression and causality techniques to study the relationship between tourist development, growth, employment, and income inequality or poverty. International studies on the economic impacts of the expansion of tourism sectors on poverty and income inequality can be categorized into two groups: the first group hypothesized and empirically proved that a growth in tourism sectors had a negative effect on income equality; for example, Wen, and Tisdell (1996b) in China, Kweka (2004) in Tanzania, Wattanakuljarus (2006) in Thailand, and Incera and Fernández (2015) in Galicia. The second group found that tourism expansion had a positive effect on poverty or income equality, some examples are Blake et al. (2008) in Brazil, Croes and Vanegas (2008) in Nicaragua, Vanegas et al. (2015) in Costa Rica and Nicaragua, and Njoya, and Seetaram (2018) in Kenya. Also, Croes and Rivera (2017) using SAM approach showed that tourism development in Ecuador benefited the poor disproportionately by improving their income. This review suggested that the income effect of tourism development on poorer households was mixed, and the relationship between tourism expansion and income inequality diverse across countries and depending on the applied methods.

While empirical studies that estimate tourism demand in Iran mostly use econometric techniques, of which the most recent are Rahmani et al. (2019), Hatami et al. (2018), Haghight et al. (2013), and Ranjpour et al. (2011). Those studies use an input-output technique at national level Isazadde and Ghodsi (2012), and regional levels Bazzazan and Jafari (2014), Bazzazan and Azaddana (2018). Whereas Ghaderi (2015) measures the effects of increasing foreign tourism expenditures for the production and distribution of institutional income, by using an accounting multiplier approach. Farzin et al. (2019), explore the impact of inbound tourism development on the sectoral production and employment using SPA Approach. Bazzazan et al. (2020) employed output multipliers and SPA approach in the SAM framework measuring the impact of

foreign tourism on sectoral output. Although the above studies used different models to measure the impact of tourism expansion, but they had relatively the same results. Their results indicate that tourism development has the high effect on the sectoral output and employment, mostly on tourism related sectors.

while Iranian empirical studies offer a valuable insight into how sectoral output and employment are affected by tourism development, cannot provide more information on the different household income groups and distribution incomes. To better understand those effects, it is essential to explore how economic outcomes are distributed among different income groups and paths of influence. The current paper is the first attempt to fill this gap by using SPA approach in the SAM framework to identify paths of distribution household income influences.

3. Research Methodology

Tourism is a multi-activity, and policymakers such as investors, governments, etc. benefit from international tourism spending. This insight has led to developing several quantitative modeling tools in order to measure the impact of policies on a country's economy. There are various techniques to measure the economic impact of international and national tourism: a) comparison of trends in tourist activities by using some key economic indicators through the cost-benefit analyses (CBA); b) proportional multiplier methods in the form of tourism demand functions, input-output models, Social accounting matrix models, computable general equilibrium models, linear programming models, etc. The predominant approach at the international level is based on input-output models (Briassoulis, 1991; Johnson & Moore, 1993; Fletcher, 1989–1994; Frechtling, 1999; Crompton et al., 2001; Tyrrell & Johnston, 2001; Surugiu, 2009; Los & Steenge, 2010). Despite its popularity, the input-output approach has limitations, and does not capture the variability of income distribution across different household income groups (Rossouw & Saayman, 2011). It is necessary to take the distributional income differences into account to consider the processes by which tourism expenditure affects the distribution of labor and capital revenue to different household income groups. SAM models in the form of multipliers resolve this limitation (Wagner, 1997; and more recently Blake et al., 2008; Croes & Vanegas, 2008; Bhatt and Munjal, 2013; Incera & Fernandez, 2015; Bazzazan et al., 2020). The expansion of tourism tends to have both positive and negative effects on the redistribution to household income groups. On its positive side, tourism expansion increases the employment of lower-skilled workers and could also bring more revenue from government spending to poor households. On the other hand, a negative aspect can be that the inflation caused by the expansion of tourism leads to an increase in prices of mostly necessary products, which is likely to affect the poorest households more than other groups. Although using the SAM multiplier takes the model one step forward, its power to reveal how the influence is transmitted within a structure is still limited. It can only measure total effects within and between SAM accounts and cannot identify the network of paths

through which the influence is carried among and between accounts, that being the contribution of structural path analysis (Defourny & Thorbecke, 1984). SPA identifies the movement of income between the origin and destination of three main SAM accounts by decomposing the multipliers into direct and indirect components. SPA analysis is an attractive methodology that can provide insights into a range of government policy questions about the government's employment targets and stimulus policies such as tourism expansion. Recently, the application of the SPA analysis has even expanded to an inter-regional SAM (Rui et al., 2020) and comparative static analysis in a national economy (Rui et al., 2020). The core of SAM is the national accounts, but it can be extended to include the flows of non-national accounts as well (Benjamin & Kahen, 2008).

SAM is a square matrix that describes income/spending flows among production activities, production factors, and (social and economic) institutions. It carries out monetary transactions through columns (spending) and rows (income) in a way that the sum of the spending (columns) and incomes (rows) are equal. A SAM includes five main accounts: 1) production; 2) production factors; 3) institutions; 4) combined capital; and 5) Rest of the world, each of which has an income flow (in rows) and a spending flow (in columns). For analytical purposes, accountings are divided into endogenous and exogenous accounts to model the SAM (as shown in Table 2). Production activities, factors of production, and institutions (except for the government) are categorized as endogenous, whereas combined capital, other countries, and government accounts are categorized as exogenous accounts.

Table 2. SAM based on Endogenous and Exogenous Accounts

Output	Input	Endogenous accounts			Exogenous accounts	Totals
		Production activities	Factors of production (skilled, semi-skilled, unskilled)	Institutions (urban & rural households)	Combined capital government, other countries	
Endogenous accounts	Production activities	N_{11}	-	N_{13}	X_1	Y_1
	Factors of production (skilled, semi-skilled, unskilled)	N_{21}	-	-	X_2	Y_2
	Institutional (urban and rural households)	-	N_{32}	N_{33}	X_3	Y_3
Exogenous accounts	Combined capital, government, other countries	L^t_1	L^t_2	L^t_3	R	Y^x
	Totals	Y^t_1	Y^t_2	Y^t_3	Y^{tx}	

Where N_{11} is the matrix of inter-industry transactions, N_{21} is the value-added payment to the factors matrix, N_{13} is the households' consumption spending on goods and services matrix, N_{32} is the income of the labor allocated to households matrix, N_{33} is the current transfers between households matrix, and X_1 is the total exogenous demand for the production activities resulting from government consumption, investment and export demand. Similarly, X_2 and X_3 represent the total exogenous demand for factors (hence income injection to reward factors), and the total exogenous income accruing to the different socioeconomic household groups and companies from government subsidies and remittances from abroad, respectively. Likewise, L^t_1, L^t_2, and L^t_3 embody the corresponding leakages from savings, imports, and taxation, respectively.

For analytical purposes, the endogenous part of the transactions matrix is changed to the average spending propensity matrix of which every element is divided by the sum of its corresponding column; this matrix has a sub-set of coefficients with different concepts:

$$B = N(y^d)^{-1} \quad (1)$$

$$y^d = By^d + X \quad (2)$$

$$B = \begin{bmatrix} B_{11} & 0 & B_{13} \\ B_{21} & 0 & 0 \\ 0 & B_{32} & B_{33} \end{bmatrix}$$

$$y^d = (I - B)^{-1}X = M_a X \quad (3)$$

$$\Delta y^d = (I - B)^{-1}\Delta X = M_a \Delta X \quad (4)$$

Where M_a is the SAM multiplier matrix or an accounting multiplier based on the average propensity to consume (Thorbecke, 2000). If B is the pattern of outlays, and is assumed to be fixed, then M_a is also fixed and Equations 3 and 4 measure the total outputs and incomes of y^d that are consistent with any set of injections (in this study, increases in exogenous accounts of related international tourism spending sectors such as hotels, restaurants, transportation, wholesale and tourism expenditure are considered as the export of related tourism sectors that is in other countries' accounts). M_a multiplier matrix captures direct, indirect, and induced effects of the first and consequent rounds of the circular income flow on activity production and on factors and household incomes according to the Keynesian income-expenditure multipliers (Round, 2003). Generally, multipliers measure the effect of any shock from exogenous injection into one account to reach its endogenous destination account: production and incomes on factors of production and household. The size of the multiplier depends on the economic structure. Thorbecke (2000) defined the M_a accounting multiplier as a black box. The reason is that it could capture the global (direct, indirect, and induced) effects of an exogenous injection that may be affected by an increase in international tourism expenditure. He introduced the SPA method which identifies all the possible account paths from the origin to destination, and can determine the behavioral mechanism responsible for these global effects. Understanding the paths of influence for tourism policy makers can be a great help in attracting capital resources to invest more in tourism-related sectors such as: hotels, restaurants, the creation of new transportation lines, air and land. He also pointed out that although the magnitude of multipliers is important, it would be better if they are combined with structural path analysis (Thorbecke, 2000). SAM multipliers and SPA were explained in detail by Defourny and Thorbecke (1984). After SAM multipliers are calculated, SPA approach can identify the movement between origin and destination accounts; i.e., it is possible to follow the final effect of an exogenous shock along the different paths through which moves from one sector of origin to the ultimate destination (Arndt et al., 2012; Rob, 2017; Rui et al., 2020). In this state, the SPA provides a detailed way of separating multipliers through the sector of origin to their ultimate destination to open the black box (M_a matrix) multipliers.

In the SPA approach, the economic system is considered as a network of poles interconnected through the SAM framework (activities, factors of production, and institutions: including households, firms, and government). Policymakers are interested to know how a change in the expenditure on one pole *i* (as the origin account in SAM) impacts the other pole *j* (as destination account in SAM), which is measured by b_{ij}. b_{ij} (the element of coefficient matrix *B* in equation 2) indicates the intensity of the "influence" along the arc (linking account *i* to account *j*, both of which are endogenous accounts). Any endogenous account is considered a pole. In the social accounting framework, a path is defined as a sequence of consecutive arcs. The length of a path is equal to the number of its

arcs. For example, arc (i,j) is a path with a length of 1 unit, whereas path (i,y,z,j) has a length of 3. An elementary path is one that does not pass through the same pole more than once.

In contrast, a circuit is a path that starts and ends at the same pole. For example, the path (x,y,z,x) is a circuit. The basic form of SPA is captured in Figure 1 which shows there are four types of path. Path 1 shows the direct impact of *i* to *j*. Examples for path 1 are when hotel and restaurant activities purchase food product from the food industry, or when transportation services activity buy a bus from the automobile industry to give service to international tourism. Path 1 is the path of direct influence. Average expenditure coefficients measure the strengthening of direct influence, i.e., the amount spent by *i* on purchases of *j* per unit of total expenditure by *i*, $b_{ij.}$

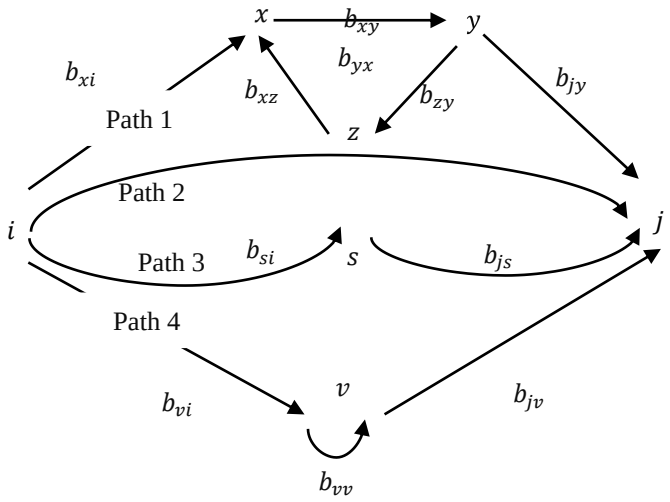

Figure 1. Elementary Paths and Adjacent Circuits Linking Poles i and j
***Source**: Defourny and Thorbecke (1984); Rob (2017)*

From the policy point of view, path 1 is not very interesting (Rob, 2017). Path 2 shows an elementary path (Defourny & Thorebecke, 1984). In path 2, *i* has a direct influence which transmits the impact directly to *j*. The influence on *j* measures $b_{si} \times b_{js}$, whereas paths 3 and 4 are beyond the elementary path. Path 3, which shows the intermediate pole, not only transmits influence on the destination, but also the feeds back on itself, reinforcing the influence along the elementary path. On path 4, the *y* pole not only transmits the influence to the destination, but also feeds back on the earlier intermediate pole *x*, both directly and indirectly, via loop through pole *z* (Rob, 2017). According to these paths, SPA encompasses three types of economic influence: direct influence (DI), total influence (TI), and global influence (GI). These influences are discussed in the following sections.

A. Direct Influence

There are two types of direct influence: direct influence in a single arc, and direct influence along an elementary path. The direct influence of *i* on *j* measures the income (production) change of *j* caused by a unitary change in *i*, with the income (production) of all other poles except those along the selected elementary path remaining constant. In this manner, direct influence that travels along a single arc (i,j) is equal to the average spending propensity b_{ij}:

$$ID(i \to j) = b_{ji} \quad (5)$$

So, the matrix B can be thought of as the matrix of direct influences in an arc. The direct influence along an elementary path, containing multiple arcs from a pole *i* to a pole *j*, is equal to the product of the intensities of the component arcs along the path. For example, the path (i,x,y,j) has three arcs $(i,x),(x,y),\text{and }(y,j)$; thus the magnitude of direct influence is determined by:

$$ID(i \to j)p \equiv ID(i,x,y,j) = b_{xi} \times b_{yx} \times b_{jy} \quad (6)$$

B. Total Influence

Total influence is defined for a given elementary path $p = (i,\dots,j)$ with the origin of *i* and destination of *j* as the influence transmitted from *i* to *j* along the elementary path *p*, which contains all indirect effects within the structure imputable to the path (Thorbecke, 2000). The main purpose of calculating total influence is to measure the effect of amplification of the circuit that complements the direct influence (Rui et al., 2020). The total influence transmitted along the path (i to j) is measured by:

$$IT(i \to j)p = ID(i,x,y,j) \times M_P = b_{xi}b_{yx}b_{jy}\left[1 - b_{yx}(b_{xy} + c_{zy}c_{xz})\right]^{-1} \quad (7)$$

M_P is the path multiplier, and shows the extent of the amplification power impressed on the path *P* by adjacent circuits. Since all the expenditure coefficients (direct path) are < 1, the influence along the elementary path rapidly diminishes, and it is possible for a given SAM to make the comparison between paths and capture the maximum path.

C. Global Influence

Finally, the global influence is the sum of influences. Global influence from pole *i* to pole *j* is the total effect on income or output of pole *j* because of the injection of one unit of output or income into pole *i*. The *Ma* accounting multiplier matrix simply gives the global influence in SAM framework in Equation 3. In other words, the magnitude of *G*I takes the full effects of an exogenous injection dX_i on the endogenous variable *j*:

$$GI(i \to j) = M_{a_{ij}} = IT(i,x,y,j) + IT(i,s,j) + IT(i,v,j)$$
$$= IT(i,j)_1 + IT(i,j)_2 + IT(i,j)_3$$

In which:

$$IT(i,j)_1 = b_{xi}b_{yx}b_{jy}\left[1 - b_{yx}(b_{xy} + c_{zy}c_{xz})\right]^{-1}$$

$IT(i,j)_2 = b_{si} \times b_{js}$

$IT(i,j)_3 = b_{vi} b_{jv} (1 - b_{vv})^{-1}$

Therefore:

$GI(i \to j) = ID(i \to j)_1 M_1 + ID(i \to j)_2 M_2 + ID(i \to j)_3 M_3$

Where:

$M_1 = \left[1 - b_{yx}(b_{xy} + c_{zy} c_{xz})\right]^{-1}$

$M_2 = 1$

$M_3 = (1 - b_{vv})^{-1}$

and the general form of global influence is:

$$IG(i \to j) = \sum_P IT(i \to j)_P = \sum_P ID(i \to j)_P \times M_P \quad (8)$$

In this paper, the SPA in the SAM approach is used to explore the main structural channels through which international tourism expenditures (as origins) travel to target destinations (households). In this manner, the SPA technique is used to separate accounting multipliers, and shows the social-economic structure at the national level.

4. Data and Results

4.1 Data

The main database used in the present study is the 2011 SAM (with 99 rows and columns) prepared by the Parliament Research Center (IPRC), Islamic Republic of Iran in 2015. The production activity account in this SAM is 71. The production factors account includes the labor force account (workers service compensation?) and other incomes (mixed-income and gross operating surplus). The institutions accounts are divided into government, non-profit companies, and 10 urban and 10 rural household income groups. Due to the data limitations on international tourism spending, production accounts are aggregated into 23 economic sectors in order to make SAM operational.

The second main data source is the total international tourism income data obtained from the World Bank (2019)[2]. According to the World Bank data, Iran's total income from international tourism in 2017 was 4,632 billion dollars (the most recent data). Since Tourism Satellite Accounts (TSA) have not been previously provided for Iran, developing TSAs is the first step in analyzing all aspects of demand for products associated with the tourism sector in detail. An alternative solution is to distribute international tourism spending through the tourism sectors using an index from a reliable data source. The latter has been chosen in this study. We obtained sectoral shares of international tourists spending in 2017 from Alizadeh (2017), which is shown in Table 2. Columns (1) and (2) of Table 3 show the shares of income received from international tourists by sector in percentages, and income receipt in million dollars. As figures in column (1) of Table 3 show the main share of tourism expenditure (or income receipt) is generated from hotels and transportation (51%=28+23). The column (2) is

[2] https://data.worldbank.org/indicator/ST.INT.ARVL?locations=IR

considered as export increment in the exogenous account(ΔX) in equation (4), and (Δy^d) is calculated and shown in Table 4.

Table 3. Sectoral Data of International Tourists Spending

Sector	income share (%) (1)	Income receipt (in million $) (2)
Hotels	28	1296.96
Transportation	23	1065.36
Restaurants	21	972.72
Wholesalers and retailers	16	741.12
Handicraft and other products	6.4	296.448
Other services	5.6	259.392
Total	100	4632

***Source**: (1) Alizadeh (2017); (2, 3) Research calculations*

4.2 Results

Model estimations and results analyses include two parts, a) total impacts or accounting multiplier through sum of the M_a matrix column, and b) structural path analysis. In "a part", the global impact of tourism spending on sectoral output is calculated by the accounting multiplier Equation 4. Data of Table 2 is a vector of exogenous variable ΔX (vector of international tourism spending in table 3) and results on sectoral output and household incomes are shown in Tables 4 and 5 respectively. In Table 4, the total output of activity (production) accounts increment is $10688 million which contains 4.5% of the GDP. Other services (ac23), wholesalers and retailers (ac15), and hotels (ac16) (adding up to almost 40%) are the three top production activities that are affected.

Additionally, the income receive of tourism expansion on urban and rural deciles households are shown in Table 5. Figures in Table 5 show that total income gained by urban and rural households is $2784 (80%) and $694 (20%) millions, respectively. As 71.4% of the population lives in urban areas and the remaining 29.6% in rural areas (Statistical Center of Iran, 2011), these results show that the share in income benefiting the urban groups is more than their share in the population. The results in Table 5 also show that the poorest urban decile (1st decile) received 3.21% of $2784 million, while the richest urban decile (10th decile), received 26.42% which is more than eight times of the 1st decile. For more clear analysis ten decile income groups are merged and classified into three groups for rural and urban areas: low, middle, and high-income groups. For this purpose, four lower deciles considered as low-income group, four middle decile groups as middle-income group, and finally top two deciles as high-income

groups. This analysis is also congruent with rural households. Moreover, the results also revealed that more than 41% [(1137+289)/(2784+694)] of the income generated by international tourists goes to the top two urban and rural deciles (high-income group), the rest to the seven urban and rural decile groups (low and middle-income groups). As the population of all urban (or rural) decile are equal and in the new classification low-, middle-, high- income groups are 40, 40, 20% of the population from figures in Table 5, 20% of population receive 41.65% that is much greater than two other low (20.28%) and middle (38.06%) income groups. According to the percentage of receipts, it can be finally concluded that international tourism spending rises inequality between urban and rural household income groups, according to the SAM multiplier analysis in Iran.

Table 4. Impact of International Tourism Spending on Production Activity (Sectoral Output)

Activity Code	**Activity**	Output Impact ($ million)	Percentage
ac(1)	Agriculture	882	8
ac(2)	Mining	71	1
ac(3)	Food and beverages manufacturing	994	9
ac(4)	Textile manufacturing	49	0
ac(5)	Cloth manufacturing	63	1
ac(6)	Leather manufacturing	23	0
ac(7)	Wood and paper manufacturing	24	0
ac(8)	Publishing manufacturing	12	0
ac(9)	Chemical manufacturing	975	9
ac(10)	Non-metal manufacturing	44	0
ac(11)	Basic metal manufacturing	62	1
ac(12)	Other manufacturing	277	3
ac(13)	Utilities	499	5
ac(14)	Construction	67	1
ac(15)	Wholesalers and retailers	1459	14
ac(16)	Hotels	1310	12
ac(17)	Restaurants	1033	10
ac(18)	Rail transportation	240	2
ac(19)	Road transportation	638	6
ac(20)	Pipe transportation	3	0
ac(21)	Water transportation	10	0
ac(22)	Air transportation	488	5
ac (23)	Other services	1465	14
-	Total	10688	100

***Source**: Research findings*

Table 5. Income receive of International Tourism Expenditure on Household Groups

Household group	Urban household groups (million $)	%	Rural household groups (million $)	%
1st decile	89	3.21	22	3.14
2nd decile	132	4.74	33	4.73
3rd decile	162	5.82	41	5.88
4th decile	191	6.84	46	6.67
Low-income group (1)	574	20.64	142	20.28
5th decile	209	7.52	53	7.66
6th decile	246	8.84	60	8.63
7th decile	287	10.30	70	10.04
8th decile	331	11.88	81	11.64
Middle-income group (2)	1073	38.51	264	38.06
9th decile	401	14.42	106	15.29
10th decile	736	26.42	183	26.33
High-income group (3)	1137	40.84	289	41.65
Total	2784	100	694	100

***Source**: Research findings*

The shortcomings of the results in "part a", is that calculates only the total impacts through $M_a$multiplier that is called the global influence. $M_a$multiplier is also called black box, as it shows the origin and destination of the influence and does not show the path length. So if one wants to investigate the source of inequality of tourism expansion policy, they should concentrate on the SPA that can divide the multiplier into different sources. MATS is used to calculate the SPA approach whose results are shown in Table 6. Two steps are taken to make the results reportable: firstly, ten household groups are divided into three groups: low- (poor), middle-, and high-income groups and called: (u1 or r1), (u2 or r2), and (u3 or r3) respectively, as are shown in Table 5. Secondly, the eight tourism production activities (ac3, ac15, ac16, ac17, ac18, ac19, ac22, and ac23) are also aggregated and presented as the tourism sector (ac16). The tourism sector is considered as the origin pole in column 1of Table 6. The destination poles are three urban (u1 to u3) and three rural (r1 to r3) household income groups. Table 6 explores the path analysis from tourism sector injection into other production activities and finally to the urban and rural household groups. Results of Table 6 and appendix show that all effects can be divided into different paths.

Table 6. SPA Results: Global, Direct, and Total Influences of for International Tourism Activities on Urban and Rural Households in Iran

Path (Origin → Destination)	Global influence (1)	Direct influence (2)	Path Multiplier (3)	Total Influence (4)=2×3	Global share % (5)=(4÷1)
ac16, fc1, u1	0.16	0.036	1.812	0.065	41
ac16, fc2, u1		0.031	1.859	0.058	36
ac16, fc3, u1		0.006	1.804	0.011	7
ac16, ac1, fc2, u1		0.004	2.236	0.009	6
ac16, ac12, fc1, u1		0.001	1.982	0.003	2
ac16, fc1, u2	0.296	0.055	1.82	0.1	34
ac16, fc2, u2		0.063	1.86	0.117	40
ac16, fc3, u2		0.017	1.813	0.031	11
ac16, ac1, fc2, u2		0.008	2.236	0.018	6
ac16, ac12, fc1, u2		0.002	1.988	0.005	2
ac16, ac12, fc3, u2		0.001	1.987	0.002	1
ac16, fc1, u3	0.311	0.044	1.822	0.08	26
ac16, fc2, u3		0.071	1.86	0.133	43
ac16, fc3, u3		0.025	1.809	0.046	15
ac16, ac1, fc2, u3		0.009	2.237	0.02	7
ac16, ac8, fc3, u3		0.001	2.319	0.003	1
ac16, ac12, fc1, u3		0.002	1.989	0.004	1
ac16, ac12, fc3, u3		0.002	1.986	0.003	1
ac16, fc1, r1	0.04	0.009	1.805	0.017	43
ac16, fc2, r1		0.007	1.856	0.013	33
ac16, fc3, r1		0.002	1.794	0.003	8
ac16, fc1, r2	0.072	0.013	1.805	0.024	33
ac16, fc2, r2		0.017	1.851	0.031	43
ac16, fc3, r2		0.003	1.794	0.006	8
ac16, ac1, fc2, r2		0.002	2.227	0.005	7

Table 6 (Continued). SPA Results: Global, Direct, and Total Influences of for International Tourism Activities on Urban and Rural Households in Iran

ac16, fc1, r3	0.078	0.009	1.809	0.016	21
ac16, fc2, r3		0.021	1.852	0.039	50
ac16, fc3, r3		0.005	1.796	0.008	11
ac16, ac1, fc2, r3		0.003	2.229	0.006	8

***Source**: Research findings, ac(activity), fc(factor of production), u(urban households), r(rural households)*

Structural pathways have been defined as the overall impact of tourism-related sectors on the 6 household groups and are divided into structural paths. Due to the large volume, only the most important paths are considered and reported in Table 6. Figures in column (1), Table 6 confirm the results in Table 5 that the global influence on high income groups (0.311 and 0.078) are greater than on middle-income groups (0.296 and 0.72), and global influence of low -income (0.16 and 0.04) groups are the least for both urban and rural areas. In addition, results in Table 6, column (5) show that most of the paths affecting household income pass through production factors (fc1, fc2, and fc3)[3]; 84% (41+36+7), 85% (34+40+11), and 84% (26+43+15) of the global influence for low- (u1), middle- (u2), and high-income (u3) urban households, respectively. These results are also congruent with rural household groups of r1, r2, and r3. These two above observations show that production activities play a weak role in providing intermediate input for the tourism-related sectors. When international tourists arrive in Iran, the output of the tourism-related sector as well as the factor of production increase, so the income of different households also increases. Since inter-industry relations between activities are weak, the share of the factor of production increment is much higher than the share of production activities. These results may be due to two facts in the tourism-related sector: being either a) labor-intensive, or b) heavily dependent on imports. The former is more likely to be true, as tourism sectors includes hotel, restaurant, transport, and retailer sectors, those use a relatively high proportion of unskilled or semiskilled labor and could be an important source of employment for low-income groups. In addition, among the production activities, those affected by international tourism are agriculture (ac1) and manufacturing activities (ac12), with an average of less than 16% of total paths receiving the most influence. Both sectors with many subsectors those are heavily dependent on import from 10% to 70% for input and machinery according to the SAM data.

The results on production factors reveal that mixed-income is a major contributor to intermediate paths. The shares of the factor of production (fc2, mixed-income) for rural households are 33%(r1), 43%(r2), and 50%(r3) of global influences, whereas for urban household groups are 36%(u1), 40%(u2), and

[3] In the Iranian social accounting matrix, the factor of production account includes three components for two types of factors: compensation of employees (fc1), mixed-income (fc2) for labor, and operating surplus (fc3) for capital mostly.

43%(u3). Therefore, the share of mixed-income of global influence for high-income groups is significantly higher than middle-income groups, and for middle-income groups is higher than low-income groups. As agriculture, road transport, and restaurants have a higher share (more than 60% on average) of mixed-income (income of self-employed workforce) (fc2), the informal labor is expected to grow faster. The column of global influence also reveals that compensation of employees (payment to the formal workforce) (fc1) for lower household income groups would be affected sharply. The rest of the production factor, i.e. operating surplus (fc3), contributes a low share to household income. Such a result comes from two facts: the first is that tourism-related sector is not a capital-intensive sector in Iran; and the second which arrives from the first fact is that when the income of production factors increase because of tourist arrivals, labor force income increases more than that of the capital owners. Therefore, the profits of the owners of the capital and investments do not increase very much.

5. Concluding Remarks

Tourism has not been a growing sector in Iran due to political conflicts with the west. Still, there is hope that it grows after lifting the economic and monetary sanctions and may bring both political and economic stability and more international tourists to Iran. As literature show tourism expansion has both positive and negative socioeconomic impacts especially on an income distribution and inequality. The current paper is the first attempt to explore how economic outcomes of tourism expansion are distributed among different income groups using accounting multiplier and SPA approach in the SAM framework. The most important advantage of SPA is providing a detailed way of decomposing output multipliers and identifying a full network of economic influences from one sector of origin to its ultimate destination.

The main database used was the 2011 SAM and total income from international tourism. Two types of results were obtained: 1) accounting multiplier and 2) structural path analysis results. Results from the accounting multiplier revealed that the share of income received by urban groups was more than their share of population.

Moreover, according to the SAM multiplier analysis, international tourism spending generates more inequality between low-, middle-, and high- income household groups of urban and rural areas. For the second type of results on SPA approach, the tourism sector is considered as the origin pole, whereas three low-middle- and high- urban and rural household income groups are presented as destination poles. Results show that most of the paths affecting household income passed through production factors for both rural and urban households. Results also indicated that production activities played a weak role in the tourism-related sector, and the share of the production increment factor was much higher than that of production activities. These results could be due to the high labor-intensive tourism-related sector. Results on the production factors revealed that the mixed-income was a major contributor to intermediate paths, and its share on global

influence for higher-income groups was significantly higher than middle-income groups, and for middle-income groups was higher than low-income groups. The results SPA approach show that the development of the tourism sector in terms of production can lead to the growth of tourism-related sectors but cannot improve the distribution of income. Therefore, the development of the tourism sector in Iran like many other countries; China (Wen & Tisdell, 1996b), Tanzania (Kweka, 2004), Thailand (Wattanakuljarus, 2006), and Galicia (Incera & Fernández, 2015) encourages more inequality.

As the results of the present study show, it is necessary to introduce support packages for low-income groups or be subject to tax exemptions, when tourist arrivals increase, or tourism promotion policy encourage.

Nevertheless, there were some limitations conducting this research. The article suffers from access to up dated SAM and detailed information of foreign tourist spending items. This led to the use of not only a relatively old 2011 SAM, but also made some assumptions on the ratio of sectoral foreign tourist spending. Provide more reliable results in future research, it is necessarily providing up dated SAM and collect data of satellite tourism accounts by official institutions, such as Statistical Centre of Iran. Moreover, a main outcome of SAM based analysis is to examine the effects of real shocks on the distribution of income across socio-economic groups of households and identify the resulting more inequality and poverty. The latter outcome has not been investigated in the present paper, that could be the subject of further research.

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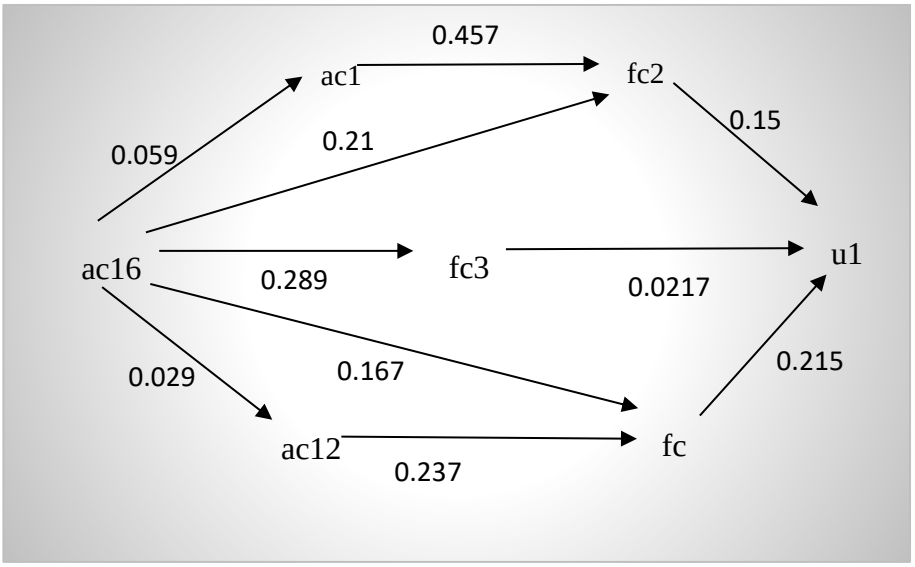
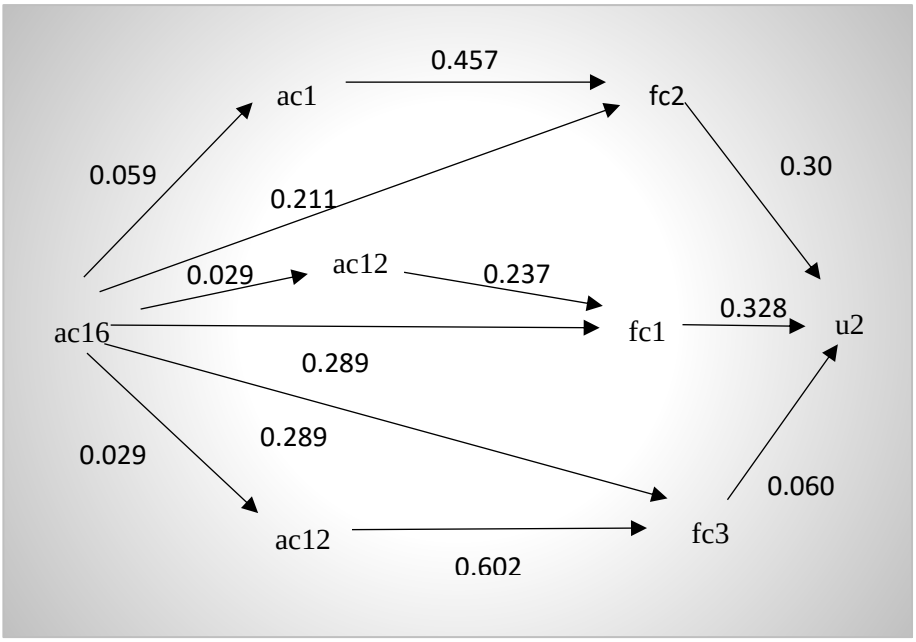
https://data.worldbank.org/indicator/ST.INT.RCPT.CD?locations=IR.

Appendix

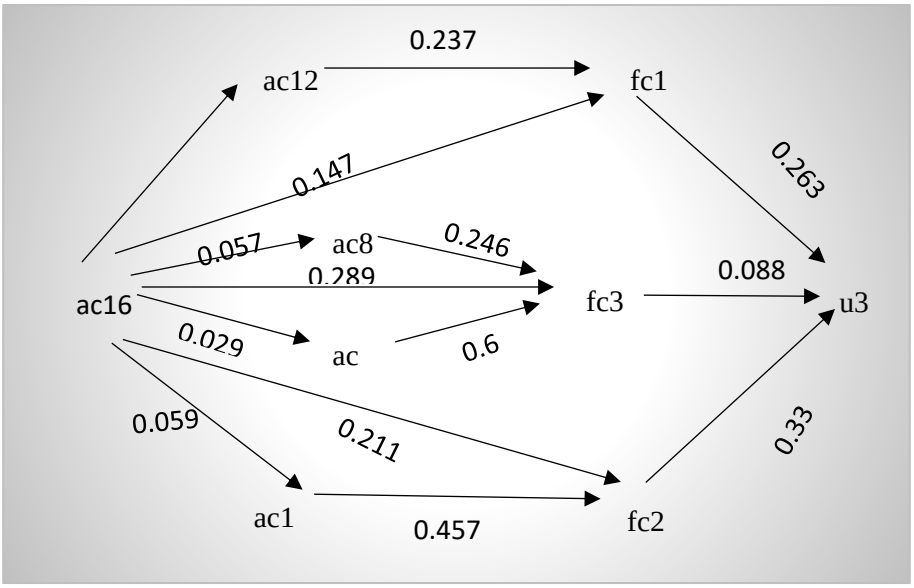
Path1. tourism sector (origion) to urban low income groups (destination)



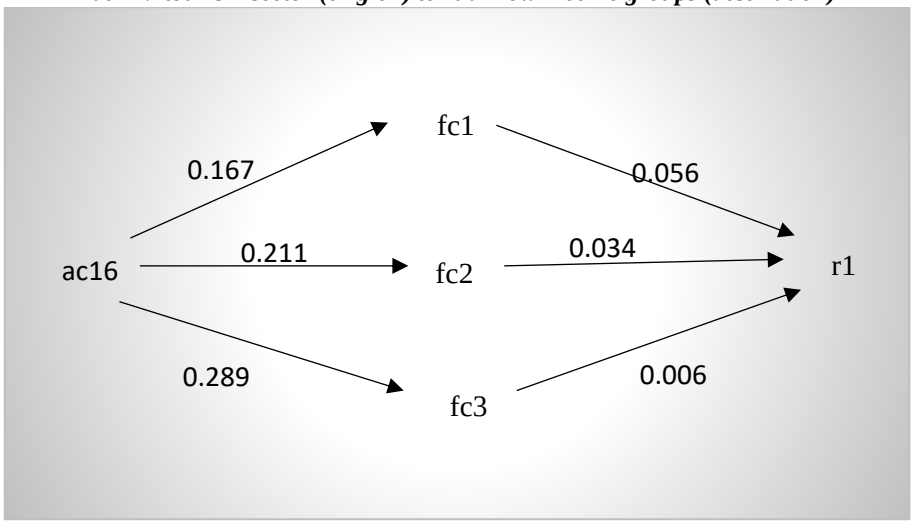
Path 2. tourism sector (origion) to urban middle income groups (destination)



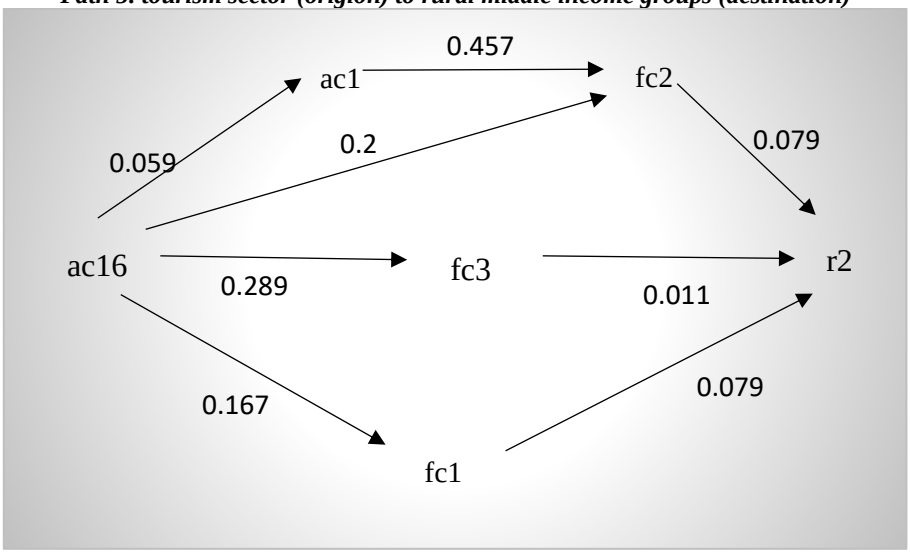
Path 3. tourism sector (origion) to urban high income groups (destination)



Path 4. tourism sector (origion) to rual low income groups (destination)



Path 5. tourism sector (origion) to rural middle income groups (destination)



Path 6. tourism sector (origion) to rural high income groups (destination)