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# **Estimating Economic Impact of Homestays Using Input-Output Model Framework**

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# Estimating Economic Impact of Homestays Using Input-Output Model Framework

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## 1. Homestays – A Buzzing Concept

Homestay is a popular accommodation alternative to traditional hotel sector popular in large number of countries. Modern tourists consider homestay as an alternative lodging experience to the normal chain hotels due to its capability in creating a short relaxing break in a homelike atmosphere. This allows them to experience host culture and pristine nature in more authentic way (Adiati, 2016; Acharya and Halpenny, 2013). With changing characteristics of tourists and their demand for authentic tourism experience at destinations, homestay sector should emerge more strongly in future if an enabling environment is provided. The process of commercializing one's home for profitable purposes has in practice for centuries. However, in the last two decades especially, this has assumed newer dimensions with large- scale conversion of the portions of the home for hosting the visitors while the owners live in the same dwelling premise. Popularly known as the homestays, such home sharing arrangements between the resident and the host has not only accorded newer dimensions to the sharing economy but it also heralded a new facet of the socio-cultural engagements between the visitors and visited. The homestays are also positioned to provide tourists with a sense of feeling at home, interaction with the host family, first-hand relationship with locals, the experience of the local culture and low-cost accommodation (Kuhzady et al., 2020; Babu and Mukhopadhyay, 2021).

The choice of a homestay is also often seen as pragmatic as it it's pretty cheaper and devoid of varied taxes and hidden costs. It is an attractive sustainable rural tourism product (Acharya & Halpenny, 2013; Walter et al., 2018), poised to satisfy the key sustainable community-based tourism goals of environmental, cultural, and

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local employment protection as it set to unfold intense visitor-host interaction zone (Reimer & Walter 2013). The gaining importance of homestay hosting can also be inferred from the growing interest academic interventions in the last decade. An exhaustive review of the literature by Janjua et.al. (2021) have documented over a hundred articles appeared in 35 leading academic journals during 2010-2020 period. The authors also attempted documenting the critical issues

India is one of the important tourism destinations of the world. The Incredible India campaign launched in 2003 paved the way to portray the country as an exotic getaway showcasing its natural resources coupled with rich, unique and diverse culture as magnificent attractions to world tourism community. This led to a significant growth in foreign tourist arrivals to the country. Rise in income level, especially at the upper income deciles, along with penetration of internet and use of social media generated immense interests amongst resident Indians also towards tourism. Better accessibility to remote regions has also played positive role to promote tourism. As a result, the country is experiencing rapid growth on domestic as well as inbound tourism fronts (Munjaj. et. al, 2018, Babu and Mukhopadhyay 2021).

Studies suggest that homestay tourism has evolved through societies' religious belief, financial incentives, and hunger for novel cultural experience, environmental awareness, enhanced demands for solitude, poverty reduction, and sustainable tourism development over centuries (Yasami, 2017). Furthermore, it clarifies that the modern tourists consider homestay as an alternative lodging experience to the normal chain hotels due to its capability in creating a short relaxing break in a homelike atmosphere (ACRA & IAMAI, 2020; Chandan and Singh 2012).

**Table 1: Number of International and Domestic Tourists in India in Last 10 Years**

Year	Foreign Tourists Arrivals (FTA) (in millions)	% Change in FTA over previous year	Domestic Tourists (in Million)	% Change in domestic tourists over previous year
2007	5.08	14.3	527	13.9
2008	5.28	3.9	563	6.9
2009	5.17	-2.1	669	18.8
2010	5.78	11.8	748	11.8
2011	6.32	9.3	865	15.6
2012	6.58	4.1	1045	20.9
2013	6.97	5.9	1143	9.3
2014	7.68	10.2	1283	12.3
2015	8.03	4.6	1432	11.6

2016	8.8	9.6	1615	12.8
2017	10.04	14.1	1652	2.3
2018	10.56	5.2	1853	11.8
2019	10.93	3.5	2321	25.3
2020	2.74	-74.9	610	-73.7
2021	1.52	-44.5	678	11.5

Source: *Tourism Statistics of India, 2022, Ministry of Tourism, Government of India.*

As obvious from the above table, new additions to availability of rooms is a must to cater this increasing number of tourists visiting different corners of the country, if we ignore the pandemic affected years of 2020 and 2021. Data from Tourism Statistics of India shows that room availability has not increased commensurately to the increase in number of tourists (ACRA and IAMAI, 2020).<sup>2</sup> Another interesting point is that number of approved hotels at higher end has increased significantly in about last decade or so. This leaves an opportunity for smaller accommodations in rural and remote areas since business feasibility perspective would not allow high end hotels to establish in every nook and corner of the country.

Homestays should have a minimum of one room to maximum six rooms as per the Ministry of Tourism, Government of India norms, as per guidelines of Incredible India Bed and Breakfast/Homestay Establishments. According to these norms, Homestays have to be registered under the Bed & Breakfast Scheme of the Tourism Department. The owners have to reside in the property and make provisions of clean and comfortable accommodation and breakfast to the guests.

There are very few studies about Indian homestays that look into the holistic scenario. In India the Tourism Satellite Account (TSA) 2015-16 estimated tourism GDP at 5.2% of the country's total GDP including direct and indirect economic impacts. The direct and indirect economic employment stood at 12.38% of the country's total employment in the same year (NACER 2018). Tourism sector being the largest contributor to country's GDP and employment generation and the accommodation sector being a key component of tourism sector, it is pertinent to look into the contribution of homestays to Indian economy since it is being popular as an alternative to traditional accommodation sector. This paper discusses the economic impact of the homestays in 2018-19. Being the pre-covid year, the estimates provide

a scenario which was business as usual without being impacted by any exogenous elements.

Every economic activity carried out in a geographic region impacts the social and economic profile of that region, both directly, indirectly and induced manner. The direct impact results from the supply of goods or services which the activity produces and also from the employment that it generates for the local community. Indirect impact is the consequence of the interaction between the activity and its input-providing economic activities which further interact with their input-providing activities, resulting in strong backward and forward linkages with the entire gamut of economic activities being carried out in the region.

This is true for the accommodation sector that provides service to the tourists. This accommodation sector includes, hotels, guest houses, dharmshalas, rented houses, homestays/B&Bs and others. Among these, homestays are increasingly becoming popular and preferred by the tourists since it is believed to be a provider of unique experiences to the tourists (Janjua et al. 2021). The growing prevalence of homestays provides benefits to the regional economy in several ways (Deloitte, 2017). As direct economic benefits, from the supply side, include empowering the accommodation property owners, providing livelihood to local people and preserving the local resources and culture. From the demand side, the users or the tourists are benefitted from the provision of cheaper, cleaner, homely and safer accommodation (Walter, 2018). These demand side benefits translate into the increased inflow of tourists, further enhancing the benefits accrued to the supply side stakeholders.

Indirectly, the demand arising from the operational homestays trigger production in other activities which fall in their supply chain by way of providing goods and services. These may include goods like agricultural produce, textile products, kitchen utensils, furniture items etc. and services like utility services, transport services, recreational services, health related services etc. This paper estimated this direct and indirects economic impacts of homestay sector through Input-Output model.

## **2. Data and Approach**

The study has used both primary and secondary data for analysis purpose. The primary survey covered 6 Indian states, namely, Maharashtra, Himachal Pradesh,

Kerala, Rajasthan, Sikkim and Goa. From each of the states 30 homestays were covered in the survey. A total of 180 plus homestays were surveyed to capture feedback on various aspects of homestay operations through a semi-structured questionnaire. The questionnaire captured the economics parameters of homestay business apart from other functional issues. Apart from homestay/B&B units the survey also covered more than 540 tourists from the selected states, who stayed in the surveyed homestays, to capture their experiences along with expenditure.

Apart from the primary survey data, the study has used extensive secondary data to analyse economic contribution of this sector. Since there is no consolidated list or data on number of homestays/B&Bs in the country, we collated data from all online travel platforms (OTAs) representing the market such as Airbnb, Makemytrip, booking.com, goibobo and similar ones to facilitate Input-Output model used for measuring contributions of the homestays to Indian economy.

The analysis used the following data:

- Primary survey data of homestays and B&Bs covered in 6 states
- Primary survey data of tourists who visited the homestays surveyed
- NSSO tourist survey, Government of India
- International Passenger Survey, Government of India
- Input-Output table of India, CSO, Government of India
- Macro-economic data including GDP, PFCE, employment etc., CSO, Government of India

The contribution of an economic activity in the economy is most commonly estimated by measuring its share in total Gross Value Added (GVA) and total employment of the economy. The estimates of GVA by different production sectors are provided by the Central Statistics Office (CSO) in form of National Accounts Statistics (NAS). The following table mentioned description of the Indian accommodation sector as per the latest National Industrial Classification (NIC) 2008. As evident from the table below, even at the most disaggregated level of industrial classification, on which most of the official data are available, homestays are not identified as separate industry. At best, these can be considered as part of code “55109”.

**Table 1: Hotel Industry Codes and description**

NIC 3-digit	NIC 5-digit	Description
551		Short term accommodation activities
	55101	Hotels and Motels, inns, resorts providing short term lodging facilities; includes accommodation in house boats
	55102	Provision of short term lodging facilities to members of a particular organisation such as govt. guest houses, company guest houses, circuit houses and similar establishments
	55109	Provision of other short stay accommodation (e.g. holiday homes, private guest houses etc.)
552	55200	Camping grounds, recreational vehicle parks and trailer parks
559		Other accommodation
	55901	Accommodation provided by student residences, school dormitories
	55902	Worker hostels and boarding houses

Due to non-availability of data exclusively for homestays, we have used the inputs from the primary survey conducted in this study and some plausible ratios from secondary data to establish the contribution of homestays in the economy. The National Sample Survey Office (NSSO), under the Ministry of Statistics and Programme Implementation (MoSPI), conducted the survey on Unincorporated Non-Agricultural enterprises during 2015-16 as part of their 73rd round of survey. The survey was designed to generate estimates of various operational and economic characteristics of the non-agricultural enterprises in manufacturing, trade and other services (excluding construction) at more disaggregated level. Domestic Tourism Survey (DTS) is an all-India household survey on domestic tourism (DTS, 2014-15), carried out during the period July 2014 to June 2015 by the NSSO as part of its 72<sup>nd</sup> Round of sample surveys. This data is the latest so far, covering all aspects of domestic tourism in India in terms of the tourist and trip characteristics and also the spending pattern of the domestic tourists. This database was also used indirectly in analysing economic contribution of homestays.

In this survey, the information on trips were collected differently for different leading purposes of trips, that is, reference period for some trips is 365 days and for others is 30 days. Hence, survey captured all the trip characteristics for two sets of trips – one

with 365 days reference period and other with 30 days reference period. Even the total number of trips is presented separately for these two sets of trips. Since all the estimates, from this survey, could be obtained for two different reference periods, we have also referred to India's Third Tourism Satellite Account (TSA) for 2015-16, prepared and published by National Council of Applied Economic Research (NCAER) for the Ministry of Tourism. The supply and use tables (SUT) of an economy are the tables which focus on the processes of production and consumption of individual types of goods and services. The SUTs depict, in matrices form, where the products come from and how they are used. The SUT for India are prepared by Central Statistics Office (CSO) in regular intervals, mostly with a gap of 5 years. This paper used SUT of 2015-16 to compute the relevant IO table.

These tables have been compiled at a level of disaggregation of 140 products and 66 industries. Of these 66 industries, "Hotels" is one of them and homestays are not identified separately. NSS data was used to obtain the ratios which further be used was bifurcated the "Hotels" industry into "Homestays" and "Other accommodation activities" in the SUT.

### **3. Input-Output (I-O) Methodology in Brief**

Input-Output (I-O) Table is the matrix representation of a nation's economy. It is used to analyse the inter-industry linkages in an economy, depicting how the output of one industry is used as input in other industries showing their relationship as user and supplier. A brief description of the Input-Output model is given below as Box 1.

### Box 1: Input-Output (IO) Model

The basis of an IO model is an IO table, which is the matrix representation of a nation's economy and depicts how the output of one industry is used as input in other industries, thereby making each industry dependent on other industries both as the user and as supplier. A row in an IO table shows the values in which an economic sector provides inputs to various other sectors and final uses. Final use refers to the sector's sales to households and government as their consumption expenditure; sector's use in fixed investment; and its net exports. On the other hand, a column shows the sector's inputs from other sectors and its primary inputs consisting of taxes less subsidies on production and the gross value added comprising payments for labour, capital, land and imported inputs. The row total and the column total of a sector give its total value of output and hence are equal. The IO table with, say, 3 sectors is shown below:

	Sectors				
Sectors	1	2	3	Final Demand	Gross Value of Output
1	$x_{11}$	$x_{12}$	$x_{13}$	$F_1$	$X_1$
2	$x_{21}$	$x_{22}$	$x_{23}$	$F_2$	$X_2$
3	$x_{31}$	$x_{32}$	$x_{33}$	$F_3$	$X_3$
Primary Inputs	$P_1$	$P_2$	$P_3$		
Gross Value of Output		$X_1$	$X_2$	$X_3$	

The above matrix represents the following set of 3 balance equations, representing the sector's sales to other sectors and final users.

$$\begin{aligned}x_{11} + x_{12} + x_{13} + F_1 &= X_1 \\x_{21} + x_{22} + x_{23} + F_2 &= X_2 \\x_{31} + x_{32} + x_{33} + F_3 &= X_3\end{aligned}$$

where  $F_i$  is the final use or final demand.

Further, if  $a_{ij}$  is the input coefficient and is denoted by  $x_{ij}/X_j$ , we get,

$$\begin{aligned}a_{11}X_1 + a_{12}X_2 + a_{13}X_3 + F_1 &= X_1 \\a_{21}X_1 + a_{22}X_2 + a_{23}X_3 + F_2 &= X_2 \\a_{31}X_1 + a_{32}X_2 + a_{33}X_3 + F_3 &= X_3\end{aligned}$$

In matrix notations, these equations can be written as:

$$\begin{aligned}AX + F &= X \\ \text{or } (I-A)X &= F \\ \text{or } X &= (I-A)^{-1}F\end{aligned}$$

Hence obtained inverse matrix is called Leontief inverse matrices after W. Leontief who introduced Input-Output Analysis. The entries in this matrix reflect the direct and indirect effects of inter-industry linkages. Here, each coefficient represents the amount of output of one industry required directly and indirectly for one unit of final demand of other industry. The column sum gives the increase in gross output of all the industries that are required in the production of  $j$ th industry.

Source: Dripto Mukhopadhyay and Others, India Book Market. Nielsen IQ, 2022

## 4. Results

The following section provides direct and indirect economic impacts of homestays in terms of gross value added, output and employment which are key parameters to understand the sectoral impact from macro-economic perspective.

### **Direct impact of Homestays**

The following steps have been followed to derive the direct share of homestays, using NSSO ratios and SUT's industry GVA:

Using primary survey and NSS estimated number of accommodation units, the number of homestays work out to be 12,225 in 2018-19. The estimated value of output of short-term accommodation activities (NIC code 551), using NSS survey data, is Rs. 23,398 crore. The number of such units is estimated to be 94,550. Therefore, the average annual per unit output or revenue to be Rs. 24.7 lakh. When we consider the primary survey of homestays conducted for the study, average revenue of the homestays is estimated as about Rs. 9.90 lakh. This translates the direct economic contribution of homestays in terms of output to be Rs. 1177.30 crore. However, these values are derived from the NSS estimates, these relate to only the unincorporated units. To obtain a better estimate that include both incorporated and unincorporated establishments, using SUT numbers are more apt. According to the SUT, it is derived that the total estimated value of output of homestays is Rs. 2577.4 crore. Ap per this output level the gross value added as estimated for the homestay sector is Rs. 879.5 crore. The employment output ratio for homestay sector was estimated as 0.153. This implies that for Rs. 1 crore of revenue or output generation in homestay sector, it requires 15.3 jobs.

### ***Indirect contribution of Homestays in economy***

As discussed earlier, the indirect benefits of the homestay sector result due to the inter-linkages of the sector with all other industries of the economy. Apart from this, the income generated by this industry is re-circulated and re-spent in the local economy. Therefore, this process generates additional income and output for other industries. The actual economic benefit to the economy is, therefore, significantly larger than the original direct benefit.

The Input–Output (IO) model is used to estimate the indirect benefits accrued to the economy because of homestay sector. This model is the most widely used mathematical model to determine the inter-linkages of the industries in an economy and its spill over impacts. The model generates the output and employment multipliers, which are the measures of the indirect benefits of a sector to the economy's output and employment respectively.

The IO table as published by MoSPI, which is prepared using the Supply and Use Table (SUT), has been used for the estimation purpose. In the IO model, the indirect benefits due to the interlinkages are obtained through the Leontief Inverse matrix

and subsequently through the estimated multipliers. The multipliers are the factors by which a change in demand of one industry is expected to generate additional demand in other industries in the economy through the associated interlinkages.

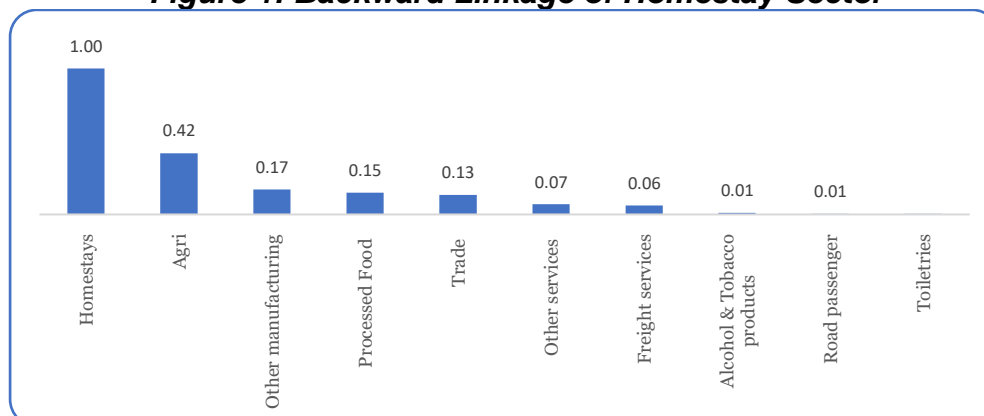
In other words, if output is increased in an industry, more inputs, including intermediates, are required from other industries. Such an interdependencies of an industry with other industries is termed as a “backward linkage” and is represented by an “output multiplier”. Higher the multipliers, the larger are the effects on the economy because of industry linkages.

Similarly, an employment multiplier is the factor by which total employment in the economy is expected to increase, given an increase in employment in homestay sector. In order to derive the output and employment multipliers of the Homestay sector, this industry is extracted from the total “Hotels” industry and kept as a separate industry in the SUT framework. The hotel industry is bifurcated into “Homestays” and “Other accommodation units”. The SUT is converted into the IO table to estimate the multipliers.

The IO based multiplier analysis derived the output multiplier and employment multiplier for homestay sector. The output multiplier is calculated as 2.04. The employment multiplier is calculated as 4.38 respectively. This means that if the demand for homestays increases by one unit, in order to meet this additional demand in homestay sector, the output of several other industries increase due to their inter-industry linkages. The total output of the economy is expected to increase by 2.0402 units because of one unit additional demand for homestay sector. This suggests that the homestay sector has strong backward linkages with other industries in the economy. Any increase in their demand and output, triggers activity in other industries to the extent of more than twofold.

The following graph (Figure 1) shows the top 10 sector in terms of backward linkages of the homestay sector. The multipliers suggest the extent of output of each of the top 10 industries is expected to increase as a result of a unit increase in homestay sector’s output.

**Figure 1: Backward Linkage of Homestay Sector**



Source: IO model estimations

As a consequence of increased output of homestays industry by 1 unit, the agricultural produces is expected to increase by 0.42 units, manufacturing output by 0.17 units, and processed food by 0.15 units and so on, summing up to the economy's output increase by 2.0402 units.

The employment linkages of homestays industry are even stronger. The employment per lakh unit of output for homestays is estimated as at 0.153 jobs. This means that in order to produce revenue of Rs. one crore of output in homestay sector, 15.3 jobs are required for the homestay sector. The employment multiplier of homestay sector is estimated to be 4.38. This is called employment linkage coefficient. This is interpreted as one additional job created in homestays industry results in the creation of an additional 3.38 jobs in the economy, summing up to the creation of a total of 4.3817 jobs in the entire economy. It implies that if homestay sector revenue increases by additional one crore, a total of 67 jobs will be created in the entire economy.

## 5. Concluding Remarks

The paper shows homestay sector has significant potential to the economy in terms of output and employment multiplier. However, apart from economic impact, homestays are also impacting society in various other means. The survey suggested that it helps in women empowerment as well as empowerment of the marginalised in the society. Since the investment requirement for homestay business is much lower compared to other sectors, it is easier for people in the remote areas to start homestay business. This can be a win-win scenario for the tourists as well as for the populace in the rural especially in the remote regions. The state government along

with the central ministry may proactively work towards promoting homestay business to help tourism industry further.

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