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ABSTRACT

Microeconomic Determinants of Domestic Tourism Expenditure in India

Using the nationally representative survey, we examine tourism participation decision and tourism expenditure by Indian nationals. We use two-part (hurdle) model to allow characteristics to have differential effect on decision to undertake an overnight trip and amount of expenditure conditional on taking the trip. Our conditional expenditure model includes common trip related characteristics in addition to socio-demographic characteristics used in participation. We also use unconditional quantile regression to allow for heterogeneity of the impact across tourism expenditure.

JEL Classification: Z3, O12

Keywords: tourism participation, expenditure, two-part model, unconditional quantile regression

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1 Introduction

In this paper, we examine the determinants of decision to take overnight trip and trip expenditure conditional on having taken overnight trip among Indian residents using a nationally representative household survey data from India. For this we use two-part model that separates the decision to participate and the amount of expenditure conditional on participation. We use a large set of variables that that can be classified as economic constraints and socioeconomic characteristics in decision of participation in tourism, while the explanatory variables for trip expenditure use trip related characteristics in addition to the economic constraints and socioeconomic characteristics. We also use unconditional quantile regression to capture the heterogenous impacts of various characteristics on the trip expenditure. Our study is based on survey that is representative of the entire population and contain information on who undertook overnight trip. Moreover, it also has a separate module that collects majority of trip relation information used in tourism demand literature.

While countries often tend to focus on international tourism due to the revenue earned through exports, domestic tourism remains the leading form of tourism. WTTC (2018) points out that the domestic tourism is the key driver of the tourism sector globally, accounting for 73% of total travel and tourism spending in 2017. While there are significant variations between countries, domestic contributions to travel and tourism reached 94% in Brazil and 87% in India (WTTC, 2018). Indian Ministry of Tourism compiles the number of domestic and foreign tourist visits to different parts of India based on information collected from hotels and other accommodation establishments. In 2018, total foreign tourist visits were 28.87 million, while number of domestic tourist visits in India during 2018 was 1854 million (GOI, 2019).¹ Domestic tourism remains key to driving tourism expenditure particularly in large countries such as China or India. For example, India possesses a large variety of climates ranging from extremely hot desert regions to high altitude locations with severely cold conditions like northern Europe. In addition, India also has a growing and sizeable

¹The number of Foreign Tourist Arrivals in India during 2018 was 10.56 million (GOI, 2019).

middle-class population and transportation infrastructure, such as railways and air services, across different regions. With the increasing purchasing power of the middle-class population, the importance of domestic tourism will increase considerably. Hence, it is important for policy makers to identify which factors influence participation in domestic tourism and how different factors affect the trip expenditure, especially the trip related factors.

The existing literature on tourism can be classified into two broad groups. First, macro-economic level studies that use aggregated data such as total arrivals and expenditure in a tourist destination or country (Crouch, 1994; Li et al., 2005; and Song and Lee, 2008). Second, studies that use micro data to examine microeconomic determinants of tourism expenditure. Among other criteria, a distinction can be made between studies that analyze expenditure at specific tourist destinations and others that regard tourism expenditure as a general item in the family budget (Alegre, Mateo, and Pou, 2013). Majority of existing micro-level studies use data collected from tourists at destination and are based primarily on data from foreign tourists (See Wang and Davidson, 2010; Brida & Scuderi, 2013 provide review of articles on micro-determinants).² Many studies have only investigated the expenditure on tourism ignoring the participation decision. Others have estimated the effect of socio-economic factors on participation in tourism without looking at the expenditures (e.g., Alegre and Pou, 2004). Only a limited number of studies have estimated the effect of socio-economic factors on both the participation and expenditure decisions (e.g., Alegrea, Mateo, and Poua, 2013). These studies have used normal household survey data that do not contain trip related characteristics. As a result, both participation and expenditure are modeled as a function of economic and socio-demographic characteristics.

Given the international literature on tourism demand, tourism demand in India has surprisingly received relatively less attention.³ Our study contributes to the existing literature

²Brida and Scuderi (2013) points out that samples that collect tourist expenditure deals with a broader problem, that is the production of probabilistic samples of tourists requires information on the population that are often unavailable.

³The authors could not find any study looking at the micro-determinants of tourist expenditure in India based on google search.

in the following ways. First, to our best knowledge, ours is the first study that examines the determinants of participation in domestic tourism and trip expenditure in India. Second, our study contributes to limited research that focuses on domestic tourism especially adding evidence from a large country. Third, since our data is representative of the population and contain trip related information, we are able to control for a large set of trip related characteristics in the amount of expenditure decision. Fourth, we contribute to a limited but growing literature that focuses on heterogeneity in the impact on tourist expenditure using conditional/unconditional quantile regressions.

The findings of the paper are following. First, the set of significant explanatory variables for the participation decision differs from that for the intensity of participation decision conditional on participation.

The rest of the paper is organized as follows. Section 2 details the data and explanatory variables used, and Section 3 lays out the empirical strategy. The results are discussed in Section 4, and the last section concludes.

2 Empirical Framework

2.1 Two-part model

When modelling the tourist expenditure, the high percentage of zeros may occur because of short recording periods that may not capture the infrequency of tourist activities taken by an individual. Since our data capture overnight tourist activities for last 365 days, the wide recall period will reduce the probability of missing tourist activity because of infrequent expenditure. Hence, the zero-tourist expenditure is the utility-maximizing decision for individuals and are actual outcomes. In this context, two-part or hurdle model is more appropriate. We use hurdle model (Wooldridge, 2002, p536-38) to separate the initial decision of $y = 0$ from the decision of how much y given positive y .⁴ A simple Hurdle model can

⁴Tobit model is another available alternative; however, it is identified only if the assumptions of normality and homoskedasticity are fulfilled. Moreover, it assumes that a single mechanism determines the choice

be written as follows:

$$P(y = 0|x_1) = 1 - \Phi(x_1\gamma) \quad (1)$$

$$\log(y)|(x_2, y > 0) \sim N(x_2\beta, \sigma^2) \quad (2)$$

where y is trip expenditure, x_1 and x_2 are vector of explanatory variables, γ and β are parameters to be estimated while σ is the standard deviation. Equation (2) stipulates that conditional on $y > 0, y|x_2$ follows a lognormal distribution. As shown in Figure 2, the log of trip expenditure is close to normal distribution. One can obtain an estimate of γ from a probit using $y = 0$ versus $y > 0$ as the binary response. Because of the assumption that conditional on $y > 0, \log(y)$ follows a classical linear model, the OLS estimator $\hat{\beta}$ is consistent. A consistent estimator of $\hat{\sigma}$ is the usual standard error from this regression. The OLS estimates in Equation (2) captures the effect for the individuals who actually incur expenditure on overnight trips.

2.2 Unconditional quantile regression

To capture the heterogeneity of impact of different characteristics on tourist expenditure, we use unconditional quantile regression proposed in Firpo, Fortin and Lemieux (2009). Unconditional quantile regression is used recently in tourism expenditure literature (Pérez-Rodríguez and Ledesma-Rodríguez, 2021; Sharma, Woodward, and Grillini, 2020). Unconditional quantile regression or a RIF-regression (Firpo, Fortin and Lemieux, 2009) is similar to a standard regression, except that the dependent variable, Y , is replaced by the (recentered) influence function of the statistic of interest. Consider $IF(y; \nu)$, the influence function corresponding to an trip expenditure y for the distributional statistic of interest, $\nu(F_Y)$. The recentered influence function is defined as $RIF(y; \nu) = \nu(F_Y) + IF(y; \nu)$, so that it aggregates back to the statistics of interest ($\nu(F_Y)$). In its simplest form, the approach assumes that

between $y = 0$ vs $y > 0$ and the amount of y given $y > 0$. In particular, $\partial P(y > 0|x)/\partial x_j$ and $\partial E(y|x, y > 0)/\partial x_j$ are constrained to have the same sign (Wooldridge, 2002, p536).

the conditional expectation of the $RIF(Y; \nu)$ can be modeled as a linear function of the explanatory variables.

$$E[RIF(Y; \nu)|X] = X\gamma \quad (3)$$

where the parameters γ can be estimated by OLS. In the case of quantiles, the influence function $IF(Y; q_\tau)$ is given by $(\tau - I\{Y \leq q_\tau\})/f_Y(q_\tau)$, where $I\{.\}$ is an indicator function, $f_Y()$ is the density of the marginal distribution of Y , and q_τ is the population quantile of the unconditional distribution of Y . As a result, $RIF(Y; q_\tau)$ is equal to $q_\tau + IF(Y, q_\tau)$, and can be rewritten as

$$RIF(y; q_\tau) = q_\tau + \frac{\tau - I\{y \leq q_\tau\}}{f_Y(q_\tau)} \quad (4)$$

RIF is first estimated by computing the sample quantile \hat{q}_τ and the density ($\hat{f}(\hat{q}_\tau)$) at that point using kernel methods. Then an OLS regression is estimated using the $RIF(Y; q_\tau)$ as dependent variable on the vector of covariates.

3 Data, variables and descriptive statistics

We use the Domestic Tourism Expenditure survey collected by the Indian National Sample Survey Organization (NSSO) during 1st July 2014 to 30th June 2015 (72nd round). The survey collected information on 645,852 individuals from 139,688 households (79,497 rural and 60,191 urban households) spanning over 8,001 villages and 6,061 urban blocks. The focus of the survey was on capturing details of domestic overnight trips (GOI, 2016). Information on household and individual characteristics are captured for all households and household members. The survey collects information on individuals' education, occupation, and age besides households' information such as household size, religion, social group, and household consumption expenditure. The survey also collects particulars of overnight trips completed

during the last 365 days. Overnight trip is defined as a duration of stay of more than 12 hours including 12 midnight to 5 A.M. Importantly, details were collected for all the overnight trips completed by the household during the reference period of last 365 days. The survey also collects information about the trips, including the party size, length of the trip, expenditure incurred on the trip, mode of transportation, staying place. Importantly, the survey also collects the main leading purpose of the trip without which none of the household members in that trip would have undertaken the trip. The leading purpose of the trip is categorized in three categories: 1) holiday, leisure, and recreation; 2) health and medical and 3) shopping.

We focus on trips whose leading purpose is classified as holiday, leisure, and recreation or shopping excluding the trips that were undertaken because of medical and health reasons.⁵ We further restrict our sample to trips undertaken by adult members (age 18 and above). Our dependent variable is trip expenditure per person where trip expenditure is aggregation of expenditure incurred on accommodation, food and drink, transport, shopping, recreation activities, and others expenditure including package expenditure if trip was undertaken under some tour package.

The literature has included a large set of explanatory variables which, following Wang et al. (2006) and Brida and Scuderi (2013), may be grouped in four main categories: economic constraints, sociodemographic, trip-related, and psychographic characteristics. We use a large set of explanatory variables that can be broadly categorized into economic constraints, socio-demographics, and trip related variables. Our data lacks any information that can be classified as psychographic characteristics. Wang et al. (2006) and Lehto, O’Leary, and Morrison (2002) stress the importance of psychological factors for the choice of destination and spending decisions. Brida and Scuderi (2013) report that most used psychographic characteristics refer to the trip experience. A further but still poorly explored category concerns general attitudes and opinions. They also find that the use of psychological variables in the literature is not very frequent, and their measurement remains an open question. Based

⁵The expenditure (and length) on (of) a trip undertaken primarily for health and medical reasons will be driven by the kind of sickness. The survey does not collect any health-related information.

on literature survey, Brida and Scuderi (2013) conclude that most frequently used variables relate to socio-demographic and travel related characteristics, as well as income. Table-1 provides the descriptive statistics of the variables used in our analysis. Below we describe the explanatory variables used in the paper using the taxonomy of Wang et al. (2006).

1) Economic constraints: as noted by Brida and Scuderi (2013), income is included in majority of empirical studies as economic constraint. Our data do not have income information; however, it collects total household monthly consumption expenditure. We use log of per capita monthly consumption expenditure (household consumption expenditure/household size) as economic constraint. Use of consumption expenditure as proxy for income in developing country context is quite common in economics literature. Weagley and Huh (2004) also use total expenditure as proxy of income.

2) Socio-demographic characteristics: we control for place of residence by using an indicator for urban rural areas, and indicators for states in India. Our explanatory variables also include gender, age, marital status, caste, religion, education, occupation, and household composition. For caste, indicators for Scheduled Castes (SC), Scheduled Tribes (ST), Other Backward Castes (OBC) is included in explanatory variables with higher castes as omitted group.⁶ We also include an indicator for Muslim to control for religion.⁷ Brida and Scuderi (2013) points out that a limited number of studies considered the race of the respondent or of the household head, and all of these papers have focus on the United States citizens. They find that out of 89 estimations that include race, more than half (49) finds race having a significant relationship with tourist expenditure. To capture household composition, we

⁶Indian society has historically been characterized by a high degree of social stratification governed by the caste system, which results in exclusion of certain groups from certain economic and social spheres. At the time of independence, the Indian Constitution identified the disadvantaged castes and tribes in a separate schedule of the constitution as Scheduled Castes and Scheduled Tribes (SC/ST) and extended affirmative action protection to these groups in the form of reserved seats in higher educational institutions, in public sector jobs, and in state legislatures as well as the Indian parliament. In addition to the SC/ST, the Government of India also group several castes who are socially and educationally backward together as Other Backward Castes (OBCs) and has extended few affirmative policy benefits to the OBCs since early 1990s. 27% of jobs in the public sector and seats in higher education has been reserved for the OBCs.

⁷Muslims constitute the largest religious minority group in India with a population share of 14.2% in 2011, and Government of India (2006) finds that their performance on many economic and education indicators are comparable to the SCs/STs.

include household size, number of children (members age less than 18), and whether the household is headed by female. Brida and Scuderi (2013) find that besides the mere number of people in the household, scholars have utilized the number of children defined as ‘of age less than 16 or 18’, or with no clear definition, whereas others counted the number of adults.

Bernini and Cracolici (2015) find that older people are less likely to participate in tourism, but once the decision to travel has been taken, they exhibit higher propensity to spend. Hence, to capture the nonlinearity across ages, we create age groups using the continuous age reported in data and use indicators for age groups 18-30, 41-50, 51-60, and 61 and above omitting age group 31-40. Education is captured through a set of indicators variable based on stages of schooling completed with below primary level as omitted group. Similarly, occupation of an individual is captured through a set of indicators described in Table-1 omitting self-employed group.

3) Trip related: Our data contain considerable information about the trip and majority of the trip related variables used in the literature is available. Our explanatory variables contain trip party size and number of children in the trip party. Length of stay based on number of nights stayed outside. Transportation mode is captured through a set of indicators described in Table-1. Majority of travelers use either bus or train to travel. Accommodation type is captured through a set of indicators. Brida and Scuderi (2013) report that accommodation was considered in only 17% of the studies they reviewed, and in most of them, it was found to be a relevant determinant of tourist expenditure. The travel distance is captured by where the destination was located. We include indicators for destination being outside district but within state, outside state but within country, or international destination with omitted group being destination within district. Only 0.4% of the travelers reported international destination. Hence, the sample is basically based on travel within country by Indian residents, i.e. domestic tourism.

Chen and Chang (2012) argue that trip arranged through intermediation constitute an additional cost but may provide arrangements that could yield substantial savings or, con-

versely, even further spending due to suggested additional or higher quality travel opportunities. To capture any intermediation, we include an indicator variable if the trip was arranged under a package where package is basically bundling of travel, activities, and hotel costs together by travel agents. Only 6.5 percent of travelers reported their trip arrangement under a package. We also control for holiday timing by including indicators for months of travel. About 30 percent of tourists reported May or June as their month of travel. Trip expenditure may be higher due to higher prices applied in the high summer season.

Brida and Scuderi (2013) report that previous travel experience is often included in empirical studies, although in most cases it does not turn out to be significant. Several studies (Pouta et al., 2006; Jang et al., 2004) suggest that repeat visitors spend less than first time visitors, while, other studies including Wang et al. (2006) and Wang and Davidson (2010) claimed that there is no significant difference in expenditure between first time and repeat visitors. To account for repeat visitors, we include indicators for number of trips taken in last 365 days is two, three or more with one trip omitted serving as base category.⁸ Only 8 percent of tourists reported taking two or more trips within last 365 days. Finally, we include an indicator variable to capture if the main reason for trip was shopping.

4 Results

4.1 Two-part model

Table 2 presents the results of our two-part model. Column (1) reports the marginal effects on the probability of an individual taking overnight trip, while column (3) of Table 2 reports the marginal effects on trip expenditure conditional on tourism participation. It is noteworthy that coefficients on many variables have opposite signs in participation and expenditure decisions (e.g., married, age categories, and regular salaried) justifying the use of two-part

⁸Number of trips taken in last 365 captures whether the person has more experience of travel. It differs from the repeat traveler variable used in literature that captures whether someone revisit the same venue.

model. Monthly per capita household consumption expenditure is statistically significant determinant of both participation and trip expenditure. Consistent with the hypothesis that tourism is a ‘normal good’, the coefficient on income is positive, meaning that the probability of a holiday increases as the income level goes up. Conditional elasticity of consumption expenditure is less than one. One percent increase in household per capita consumption expenditure increases overnight trip expenditure by 0.36%, while increases the probability of overnight trip by 2.6 percentage points. Note that the overall probability of taking overnight trip is only 3.8 percentage points, hence 2.6 percentage points increase probability is very large increase given low average. Individuals residing in urban areas are 1.4 percentage points more likely to take overnight trip compared with individuals residing in rural areas holding rest of factors same. Conditional on having taken overnight trip, tourists from urban areas spend only 2.5 percent higher compared with tourist from rural areas.

Women are marginally more likely to undertake an overnight trip compared to men, however, women spend 5.4 percent less compared to men conditional on having taken an overnight trip. Being married increases the probability of participation by 1.2 percentage points but reduces the trip expenditure by 4.8 percent condition on having taken the trip. Individuals from the Scheduled Castes and Other Backward Castes are less likely to take a compared to individual from Higher Castes trip by 0.7 and 0.8 percentage points, respectively. However, conditional on having taken the trip, there is no statistically significant difference between in trip expenditure between tourist belonging to Other Backward Castes and Higher Castes, while the tourists from Scheduled Castes spend 3.4 percent less. Although there is no statistically significant difference in participation between individuals from Scheduled Tribes and Higher Castes, tourists from Scheduled Tribes spend 5.7 percent less compared to tourists from Higher castes.

Individuals belonging to a large family are 0.4 percentage points less likely to take overnight trip, but conditional on having taken trip they spend 4 percent more on trip. While having child the household increases the probability of participation it reduces the

trip expenditure by 3 percent. Household head gender has no significant effect on either of the two decisions. Older individuals are less likely to take an overnight trip. For example, individuals in 51-60 and 60 plus age group are 0.7 and 1.6 percentage points less likely to take an overnight trip compared to individuals from age 31-40 age group. However, the trip expenditure shows a monotonous relation with age. Tourists in 15-60 and 60 plus age group spend 7.7 and 16 percent more compared to tourist in 31-40 age group.

Not surprisingly, education of individuals has a monotonous positive relation with both participation and trip expenditure. Compared with individual with below primary education, individuals with senior secondary degree or university degree are 2.1 or 3.0 percentage points more likely to take on overnight trip. This is a huge impact considering overall probability to take an overnight trip is only 3.8 percentage points. Similarly, tourists with senior secondary or university degree spend 17.0 or 29.5 percent more compared to tourist with less than primary school education. Tourists with university degree spend 12.5 percent more compared with tourists with senior secondary degree. Employment status affects both the probability of participation and expenditure. Compared to self-employed individuals, individuals employed with regular salaried jobs, or on daily wages are less likely to take an overnight trip. Tourists with employment status of daily wage worker, family worker, or unemployed spend considerably less compared with tourist who are self-employed. Although there is suggestive evidence that tourists with regular salaried jobs spend more compared to tourists who are self-employed, but the coefficient is only significant at 10% significance level. Tourists who reported being students also spend less conditional on having taken an overnight trip.

With regard to trip related variable, trip party size reduces the per person trip expenditure 6.8 percent. So, there is some economies of scale which is not surprising given that multiple members can share hotel room or cost of private transportation. Presence of children in the trip party also reduces trip expenditure. Longer stay increases the trip expenditure. Compared to travelling with hired/owned vehicle, travelling by bus reduces trip cost by 30

percent while a train travel increases trip expenditure by 3 percent. However, air travel increases trip expenditure by 113 percent compared to travelling by hired/owned vehicle. Accommodation type also have significant impact on trip expenditure. Compared to staying with friends and relatives, a hotel stay will increase trip expenditure by 107 percent, while staying at guest houses increase trip expenditure by 88.5 percent. This is not surprising as a hotel/guest house stay adds to the accommodation cost while staying with friend/relative probably is free accommodation.

Distance to travel destination also have significant effect of trip expenditure. In our analysis, distance is capture by indicators for destination locations. Compared to destination being within district, a travel destination outside district increases trip expenditure by 57 percent, while a travel destination outside state increases trip expenditure by 120 percent. Surprisingly a foreign destination increases the trip expenditure by the same amount as trip destination being outside state. The trip which is bought under tour package leads to higher trip expenditure suggesting that package trips probably more activities compared to self-arranged trips. A person who undertook three or more overnight trips in a year spend 10 percent less compared to a person who only undertook one overnight trip. Similarly, if the purpose of the trip is shopping, the trip expenditure increases by 135 percent. Compared to the month of January, tourists spend less in summer months which is surprising given higher demand for tourism in summer months.

4.2 Unconditional quantile regression

The OLS model in last section focuses on the mean neglecting the differing impact of particular variables across the trip expenditure range. Unconditional Quantile Regression (UQR) allows us to reliably analyze the impact of changes in the distribution of explanatory variables on quantiles of the unconditional distribution of the outcome variable (Sharma, Woodward, Grillini, 2020). Table 3 presents the results of UQR for tourists (applicable to the sample who actually undertook an overnight trip) at the selected quantiles of the trip expenditure.

The impact of monthly per capita consumption expenditure on trip expenditure is quite heterogeneous. While at the 10th percentile of trip expenditure distribution, a 10 percent increase in consumption expenditure increases tourist expenditure by 3 percent, at the 90th percentile of trip expenditure distribution it increases the trip expenditure by 4.2 percent. While at the lower end of the trip expenditure distribution, urban tourists spend considerably higher compared to rural tourists, but this reverses at the top end of expenditure distribution. Similar is the case for women tourists who spend more than men tourists at the top end of the trip expenditure distribution.

Tourists belonging to Scheduled Castes/Tribes spend less compared to tourists belonging to Higher Castes at lower end of trip distribution but no significant differences exist at median or higher end of trip expenditure distribution. The differences in trip expenditure across tourists of different age-groups are primarily in the upper half of the trip expenditure distribution. There are significant differences in contribution of accommodation type (hotel and guest house) to trip expenditure at different quantiles. Outside district destinations lead to relatively larger increase in trip expenditure at lower end of the trip expenditure distribution compared to the higher end of trip distribution. The tour arranged under a package lead to higher increase in trip expenditure at the higher quantiles of trip expenditure. Frequent travelers spend more on trip at the higher end of the trip expenditure distribution while less at the median or below of the trip expenditure distribution.

5 Conclusion

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