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DISCUSSION PAPER SERIES

IZA DP No. 15245

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**Mehtabul Azam**

*Oklahoma State University and IZA*

APRIL 2022

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## ABSTRACT

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# Microeconomic Determinants of Domestic Tourism Expenditure in India

Using a nationally representative household survey from India, we examine individuals' domestic tourism participation and trip expenditure decisions together. We control for a large set of explanatory variables broadly classified as economic, socio-demographic and trip related characteristics. We use two-part (hurdle) model to allow explanatory variables to have differential affects on each decision. We find that education is an important determinant for both the decisions. Moreover, trip-related characteristics (party size, stay length, accommodation type, travel mode, and destination) are also important determinants of trip expenditure in addition to economic and socio-demographic characteristics. The unconditional quantile regression results show the heterogeneity in the impact of many variables across the trip expenditure distribution. The differences in trip expenditure across age-groups are primarily in the upper half of the trip expenditure distribution. A trip arranged under a tour package leads to an increase in trip expenditure at the higher quantiles of trip expenditure distribution.

**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 undertake an overnight trip and how much to spend on the trip conditional on having undertaken an overnight trip among Indian residents using a nationally representative household survey data from India. For this we use the two-part model that separates the decision to participate and the amount of expenditure conditional on participation. We use a large set of explanatory variables that can be classified as economic constraints and socio-demographic characteristics in the decision of participation in tourism, while the explanatory variables for trip expenditure use trip related characteristics in addition to the economic constraints and socio-demographic characteristics. We also use unconditional quantile regression to capture the heterogeneous impacts of various characteristics on the trip expenditure. Our study is based on a household survey that is representative of the entire population and contains information on who undertook an overnight trip. Moreover, it also has a separate module that collects majority of trip related information used in tourism demand literature.

While majority of studies in tourism literature focus on international tourists, domestic tourism remains the key for the tourism sector. In 2017, while globally domestic tourism contributed 73% of total travel and tourism spending, its contribution was 87% for India (WTTC, 2018). According to GOI (2019), based on the information collected from hotels and other accommodation establishments, total foreign tourist visits were 28.87 million in 2018, whereas domestic tourist visits was 1854 million (GOI, 2019).<sup>1</sup> Domestic tourism remains key to driving tourism expenditure, especially in large countries such as China or India. For example, India not only possesses a huge population as a source of potential tourism demand, but also different climate zones such as tropical in the south to temperate and alpine in the Himalayan.<sup>2</sup> Moreover, there are distinct seasons promoting inter-region travel to get relief from extreme heat or cold, and well-developed transport infrastructure, such as

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<sup>1</sup>During 2018, 10.58 million foreign tourists arrived in India (GOI, 2019).

<sup>2</sup>Source: <https://www.mapsofindia.com/maps/india/climaticregions.htm>

railways and air services, across different regions. Although average income of Indians remain low compared to Western Europe/North America, the middle class population in India is sizable and growing. With the increasing purchasing power of the middle-class population, the importance of domestic tourism will increase further. Hence, it is important for policy makers to identify factors that 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 are based on time-series data on tourist arrivals or/and aggregated tourist receipts for a tourist destination or country (Crouch, 1994; Li, Song, and Witt, 2005; and Song and Li, 2008). Second, studies that use micro data to examine microeconomic determinants of tourism expenditure. Within this group, one set of studies analyze expenditure at specific tourist destinations (e.g., Marrocu, Paci, and Zara, 2015), while the other set of studies use tourism expenditure from household budgets (e.g., Alegre, Mateo, and Pou, 2013). Majority of the existing micro-level studies use data collected from tourists at destination and are based primarily on data from foreign tourists (Wang and Davidson, 2010; and Brida and Scuderi, 2013 provide survey of the literature on microeconomic determinants.).<sup>3</sup> Many studies focus on the expenditure on tourism and ignore the participation decision (e.g., Cai, 1998; Hung, Shang, and Wang, 2012; Marrocu, Paci, and Zara, 2015), while others examine the affects of socio-demographic factors on participation in tourism and ignore tourism expenditure (e.g., Alegre and Pou, 2004). Only a limited number of studies have looked at both the participation and expenditure decisions together (e.g., Alegre, Mateo, and Poua, 2013; Jang and Ham, 2009; and Wu, Zhang, and Fujiwara, 2013). Nonetheless, the studies that looked at both participation and expenditure decisions together often use tourism expenditure from household budget surveys that do not contain trip related characteristics. As a result, both participation and expenditure are modeled as a function of economic and

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<sup>3</sup>Brida and Scuderi (2013) points out that samples that collect tourist expenditure are often not a representative sample of the population.

socio-demographic characteristics.<sup>4</sup>

Given international literature on tourism demand, tourism demand in India has surprisingly received relatively less attention.<sup>5</sup> Our study contributes to the existing literature in the following ways. First, to our best knowledge, ours is the first study that examines the determinants of the participation in domestic tourism and trip expenditure in India. Second, our study contributes to the 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 decision on how much to spend. As stated earlier that the studies that have modeled both participation and expenditure decisions together lack the trip related information. Fourth, we contribute to a limited but growing literature that focuses on heterogeneity in the impacts of various characteristics on tourist expenditure using conditional/unconditional quantile regressions.

The findings of the paper are following. First, many socio-demographic explanatory variables have opposite impacts on the participation decision and the decision on how much to spend. Second, controlling for other factors, education of an individual plays a very important role in both participation and expenditure decisions. Higher educated individuals are more likely to undertake an overnight trip and also spend more on the trip. Third, we also find that the caste of a tourist affects the trip expenditure. Fourth, most of trip related variables such as party size, length of trip, transportation mode, stay place have significant impact on trip expenditure.

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

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<sup>4</sup>Moreover, given that the trip is identified based on positive expenditure on tourism reported by the household, both participation and expenditure decisions are modeled as a function of household head characteristics and not the members who actually undertook the trip. In addition, there is no distinction possible between an overnight or same-day trip as expenditures on both are clubbed in the family budget.

<sup>5</sup>The authors could not find any study looking at the microeconomic determinants of tourist expenditure in India based on the google search. Wang and Davidson (2010) based on the survey of literature on microeconomic modeling find the literature Western centric, and point out missing major new and emerging tourist markets from the literature.

discussed in Section 4, and the last section concludes.

## 2 Empirical Framework

### 2.1 Two-part model

When modeling the tourist expenditure, the high percentage of zeros may occur because of short recording periods that may not capture the infrequency of tourist activities undertaken 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, the two-part or hurdle model is more appropriate. We use the two-part model to separate the initial decision of  $y = 0$  from the decision of how much  $y$  given positive  $y$  (Wooldridge, 2002, p536-38).<sup>6</sup> A hurdle model can 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 that affect participation and expenditure.  $\gamma$  and  $\beta$  are parameters of interest while  $\sigma$  is the standard deviation. Equation (2) stipulates that conditional on  $y > 0$ ,  $y|x_2$  follows a log-normal distribution. As shown in Figure 1, the log of trip expenditure is close to normal distribution. An estimate of  $\gamma$  in Equation (1) can be obtained from a probit model using  $y = 0$  versus  $y > 0$  as the binary response. Because of the assumption that conditional on  $y > 0$ ,  $\log(y)$  follows a normal distribution, Equation (2) follows a classical linear model. Hence, the OLS estimator  $\hat{\beta}$  is

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<sup>6</sup>In the literature, Tobit model is also used alternatively; however, the assumptions of normality and homoskedasticity are necessary for identification. Critically, Tobit model constrains the marginal impacts of the explanatory variable to have the same sign for both participation and expenditure decisions (Wooldridge, 2002, p536).



consistent.<sup>7</sup> A consistent estimator of  $\sigma$  is the usual standard error from the OLS regression. The OLS estimates in Equation (2) captures the affects of explanatory variables on the trip expenditure for individuals who incur expenditure on overnight trips.

## 2.2 Unconditional quantile regression

To capture the heterogeneity of impact of different characteristics on trip expenditure, we use unconditional quantile regression or recentered influenced function (RIF) regression proposed in Firpo, Fortin and Lemieux (2009). Unconditional quantile regression is used recently in tourism expenditure literature (Pérez-Rodríguez and Ledesma-Rodríguez, 2021; and Sharma, Woodward, and Grillini, 2020). A RIF-regression (Firpo, Fortin and Lemieux, 2009; Fortin, Lemieux, Firpo, 2011) is similar to a standard regression where the dependent variable,  $y$ , is replaced by the recentered influence function (RIF) of the quantile of interest.

$$RIF(y; q_\tau) = q_\tau + \frac{\tau - I\{y \leq q_\tau\}}{f_Y(q_\tau)} \quad (3)$$

where  $I\{.\}$  is an indicator function,  $f_Y(q_\tau)$  is the density of the marginal distribution of  $y$  at quantile  $\tau$  ( $q_\tau$ ) of the unconditional distribution of  $y$ . We first compute the sample quantile  $\hat{q}_\tau$ , and use kernel methods to estimate the density ( $\hat{f}(\hat{q}_\tau)$ ) at that point. After that  $RIF(y; q_\tau)$  is used as the dependent variable in an OLS regression on the vector of covariates that affect the trip expenditure.

$$E[RIF(y; q_\tau)|x_2] = x_2\gamma_\tau \quad (4)$$

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<sup>7</sup>We model the actual expenditure on tourism as opposed to potential expenditure on tourism, and our interest lie in the affects of covariates on actual expenditure on tourism. The Heckman Selection model is alternatively used in the second stage in few studies in tourism literature. Dow and Norton (2003) argue that the Heckman Selection model is designed for latent variable modeling for potential outcomes. The trip expenditure outcome is fully observed variable. Zero values for actual trip expenditures indicate that zero Indian Rupees were spent. As long as zero expenditures are true zeros and are not missing data, then there is no selection problem to address (Dow and Norton, 2003). Dow and Norton (2003) also argue that although researchers could plausibly be interested in either the actual or the potential outcomes, for most policy issues, budgetary implications of actual expenditures remain the main interest.

where  $\gamma_\tau$  is marginal impact of the covariates at quantile  $\tau$  of the trip expenditure distribution.

### 3 Data, variables and descriptive statistics

We use the Domestic Tourism Expenditure survey collected by the Indian National Sample Survey Organization (NSSO). The survey was implemented between 1st July, 2014 and 30th June 2015, and 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 survey contains information on household and individual characteristics for all households and household members. It has information on individuals' education, occupation, and age besides households' information such as the household size, religion, social group, and household consumption expenditure. The main objective of the survey was to collect details of domestic overnight trips, where an overnight trip was defined as a trip for which the duration of stay is more than 12 hours including 12 midnight to 5 A.M (GOI, 2016). The survey collects information on all overnight trips undertaken by each household member during the last 365 days. Moreover, it identifies the household members who actually undertook the same trip. The survey also collects information about the trips, including the party size, length of the trip, expenditure incurred on the trip, mode of transportation, and staying place. Moreover, the survey also collects the main leading purpose of the trip without which the trip would not have been taken place. 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.<sup>8</sup> We further restrict our sample to the trips undertaken by adult members (age 18 and above). Our dependent variable is trip expenditure per person (total trip expenditure/trip party size)

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<sup>8</sup>The 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.

where trip expenditure is aggregation of expenditures incurred on accommodation, food and drink, transport, shopping, recreation activities, and other expenditure including package expenditure if the trip was undertaken under a tour package. All the analysis in the paper are carried out using the survey weight provided in the data. Figure 2 shows the number of overnight trips undertaken by individuals 18 and above in the last 365 days. Only 0.3 percent of individuals reported undertaking more than one trip. In the case of an individual taking multiple trips, we include only the trip with the longest length of stay or highest expenditure in the case of a tie based on length of stay. To distinguish those individuals, we create indicator variables for the number of trips undertaken is two, and three or more, and use these indicators as explanatory variables.

A large set of explanatory variables have been used in the tourism demand literature. Wang et al. (2006) and Brida and Scuderi (2013) pooled those in four groups: economic constraints, socio-demographic, 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. According to Brida and Scuderi (2013), trip experience is the most used psychographic characteristic. They find that few studies have used psychological variables; however, the measurement of these variables remains an open question. Based on literature survey, Brida and Scuderi (2013) conclude income, socio-demographic and travel related characteristics are the most frequently used variables. 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 collect total household monthly consumption expenditure. We use log of per capita monthly consumption expenditure (household consumption expenditure/household size) as economic constraint. The use of consumption expenditure as proxy for income in

developing country context is quite common in economics literature.<sup>9</sup>

**2) Socio-demographic characteristics:** we control for place of residence by using an indicator for urban 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 (SCs), Scheduled Tribes (STs), Other Backward Castes (OBCs) are included as explanatory variables with Higher Castes serving as the omitted group.<sup>10</sup> We also include an indicator for Muslim to control for religion.<sup>11</sup> Brida and Scuderi (2013) points out that few studies that considered the race of the respondent or of the household head are from the United States. 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 include household size, number of children (members age less than 18), and whether the household is headed by female. Wu, Zhang, and Fujiwara (2013) argue that a large household size may reduce individuals participation in tourism, however, conditional on participation, larger households spend more since they may need additional and more services. Brida and Scuderi (2013) report that different studies have used household size, number of children in household, and the number of adults.

Bernini and Cracolici (2015) find that although older people are less likely to participate in tourism, but they spend more conditional on participation. Hence, to capture the non linearity 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 indicator variables based on stages of schooling com-

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<sup>9</sup>Total expenditure is also used as a proxy for income by Weagley and Huh (2004).

<sup>10</sup>At the time of independence, the Indian Constitution identified the disadvantaged groups that were historically discriminated against and excluded from certain economic and social spheres as SCs and STs. Since independence, they have been provided with a reservation status where a certain percentage of seats in higher educational institutions, public sector jobs, state legislatures, and Indian parliament is reserved for them. The Indian government also group several castes who are socially and educationally backward as OBCs, and reserved 27% of jobs in the public sector and seats in higher education for the OBCs since 1990s.

<sup>11</sup>GOI (2006) finds that performance of Muslims, the largest religious minority, are comparable to the SCs and STs on many economic and education indicators.

pleted with below primary level as the 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 several 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 is based on number of nights stayed outside. Transportation mode is captured through a set of indicators described in Table-1. Majority of tourists use either bus or train to travel. Accommodation types are captured through a set of indicators. According to Brida and Scuderi (2013) literature survey, only 17% of the studies considered accommodation, and it was found a relevant determinant of tourist expenditure in most of them. The travel distance is captured by the location of the destination. 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 tourists 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 may constitute additional cost, but it may also result in savings. At the same time additional or higher quality opportunities through intermediation may result in additional expenditure. To capture any intermediation, we include an indicator variable if the trip was arranged under a tour package where the package is basically bundling of travel, activities, and hotel costs together by travel agents. Only 6.5 percent of tourists reported their trip arrangement under a tour 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 in the high demand summer season.

Previous travel experience is frequently used in empirical studies; however, it was found not significant in most cases (Brida and Scuderi, 2013). The findings regarding repeat visitors are not conclusive. Few (e.g., Pouta, Neuvonen, and Sievanen, 2006; and Jang et al., 2004)

find that repeat visitors spend less than first time visitors, while, others (e.g., Wang et al., 2006; and Wang and Davidson, 2010) find no significant difference in expenditure between first time and repeat visitors. To account for repeat visitors, we include indicators for number of trips undertaken in the last 365 days is two, three or more with one trip serving as base category.<sup>12</sup> Only 8 percent of tourists reported undertaking two or more trips within the last 365 days (Table 1). Finally, we include an indicator variable to capture if the main reason for the trip was shopping.

Table 2 presents the participation rate and (log of) trip expenditure conditional on undertaking an overnight trip for various categories. There exists substantial variation in the participation rate across different categories. While overall tourism participation rate, defined as the percentage of individuals (18 and above) who undertook an overnight trip in the last 365 days, is 3.8 percentage points, the participation rate is 6.9 percentage points for urban residents compared to only 2.3 percentage points for rural residents. Also, urban tourists spend more compared to rural tourists. Tourism participation rate among primary educated is only 2.6 percentage points compared to the participation rate of 9.5 percentage points among university graduates. Moreover, higher educated tourists spend more on trip. Tourism participation rate is 6.1 percentage points among the Higher Castes, while it is only 2.4 percentage points among the Scheduled Castes. Tourism participation rate is relatively lower among the Scheduled Tribes and Other Backward Castes. Tourists from the Higher Castes also spend more compared to tourists from the disadvantaged groups.

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<sup>12</sup>Number of trips undertaken in the 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.

## 4 Results

### 4.1 Two-part model

Table 3 presents the results of our two-part model. Column (1) reports the marginal affects on the probability of an individual taking an overnight trip, while column (3) of Table 3 reports the marginal affects 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 model. Monthly per capita household consumption expenditure is statistically significant determinant of both the participation and trip expenditure. The coefficient on consumption expenditure (used as proxy for income) is positive which is in line with the hypothesis of tourism being a ‘normal good’. The positive coefficient implies that the probability of a trip increases as consumption expenditure goes up. The conditional elasticity of consumption expenditure is less than one. One percent increase in the household per capita consumption expenditure increases overnight trip expenditure by 0.36%, while it increases the probability of an overnight trip by 2.6 percentage points. Note that the overall probability of undertaking an overnight trip is only 3.8 percentage points, hence 2.6 percentage points increase in the probability is a large increase given low average. Individuals residing in urban areas are 1.4 percentage points more likely to undertake an overnight trip compared with individuals residing in rural areas holding rest of factors same. Conditional on having undertaken an overnight trip, tourists from urban areas spend 2.5 percent more compared with tourists from rural areas.

Women are marginally more likely to undertake an overnight trip compared to men, however, women tourists spend 5.4 percent less compared to the men tourists conditional on having undertaken an overnight trip. Being married increases the probability of participation by 1.2 percentage points, but reduces the trip expenditure by 4.8 percent conditional on having undertaken the trip. Individuals from the Scheduled Castes and Other Backward

Castes are less likely to undertake an overnight trip compared to individuals from the Higher Castes by 0.7 and 0.8 percentage points, respectively. However, conditional on having undertaken the trip, there is no statistically significant difference in the trip expenditure between tourists belonging to the Other Backward Castes and the Higher Castes, while the tourists from the Scheduled Castes spend 3.4 percent less. Although there is no statistically significant difference in participation between individuals from the Scheduled Tribes and Higher Castes, tourists from the Scheduled Tribes spend 5.7 percent less compared to tourists from the Higher Castes.

If family size increases by one, it reduces the probability of an individual undertaking an overnight trip by 0.4 percentage points, however, conditional on having undertaken an overnight trip, tourists from larger families spend more on the trip. While having one more child in 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 two decisions. Older individuals are less likely to undertake 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 undertake an overnight trip compared to individuals from 31-40 age group. However, the trip expenditure shows a monotonous positive relation with age. Tourists in 51-60 and 60 plus age group spend 7.7 and 16.0 percent more compared to tourists in 31-40 age group.

Not surprisingly, education of individuals has a monotonous positive relation with both participation and trip expenditure. Compared with the individuals with below primary education, individuals with the senior secondary degree or university degree are 2.1 or 3.0 percentage points more likely to undertake an overnight trip. This is a huge impact considering overall probability to undertake an overnight trip is only 3.8 percentage points. Similarly, tourists with the senior secondary or university degree spend 17.0 or 29.5 percent more compared to the tourists with less than primary school education. Tourists with university degree spend 12.5 percent more compared with tourists with the senior secondary degree. Employment status affects both the probability of participation and expenditure.



Compared to the self-employed individuals, individuals employed with regular salaried jobs, or on daily wages are less likely to undertake an overnight trip. Tourists with employment status of daily wage worker, family worker, or unemployed spend considerably less compared with tourists 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 undertaken an overnight trip.

With regard to trip related variables, an increase in trip party size by one reduces the per person trip expenditure by 6.8 percent. So, there is some economies of scale which is not surprising given that multiple persons 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 traveling with hired/owned vehicles, traveling 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 traveling by hired/owned vehicle. Accommodation types 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 means free accommodation.

Distance to travel destination also has a significant affect on trip expenditure. In our analysis, distance is captured 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 took place as a part of tour package leads to higher trip expenditure suggesting that package trips probably have 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 undertook only 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 the summer months which is surprising given higher demand for tourism in the summer months.

## 4.2 Unconditional quantile regression

The OLS model in the last section focuses on the impacts of different characteristics on the mean trip expenditure and neglects the differential impacts of different variables at different part of the trip expenditure distribution. Unconditional Quantile Regression (UQR) allows us to look at the impact of explanatory variables on quantiles of the unconditional distribution of the outcome variable (Sharma, Woodward, and Grillini, 2020). Table 4 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 the trip expenditure distribution, a 10 percent increase in consumption expenditure increases trip expenditure by 3 percent, at the 90th percentile of the 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 the trip 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 the Scheduled Castes/Tribes spend less compared to tourists belonging to the Higher Castes at the lower end of trip expenditure distribution but no significant differences exist at median or higher end of the 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 the 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 the lower end of the trip expenditure distribution compared to the higher end of the trip expenditure distribution. The tour arranged under a package leads to larger increase in trip expenditure at the higher quantiles of the trip expenditure distribution. 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

Most studies that look at the microeconomic determinants of tourist expenditure focus on international tourists based on data collected from different destinations. However, in large countries such as India, the contribution of domestic tourists in total tourism expenditure is large relative to contribution of the foreign tourists. Hence, our objective is to understand the determinants of overnight trips undertaken by Indian residents for leisure/holiday purposes. For this, we adopt a two-part model that allows different characteristics to have differential affects in the participation decision and the decision on how much to spend on trip. Importantly, in our expenditure decision, we not only include economic constraints and socio-demographic characteristics but also a large set of trip related characteristics used in the literature. Moreover, we also use unconditional quantile regression to capture the heterogeneous affects of different characteristics at different part of the trip expenditure distribution. We use a large nationally representative survey data, collected by the Indian National Sample Survey, whose main objective was to collect information on overnight trips.

Our results suggest that in spite of the huge absolute numbers of domestic tourists in India, the percentage of individuals undertaking an overnight trip for leisure/holiday purposes remains low. The probability of participation is not only positively related to consumption expenditure, but also with education levels. A university graduate is 3.2 percentage points more likely to undertake a trip for leisure compared to a below primary educated person

which translates into a 177 percent increase in participation (the participation rate among below primary educated is 1.8 percentage points). Moreover, a tourist with a university degree spends 29.5 percent more compared to a tourist with a below primary education. Hence, an increase in living standards over time and improvement in educational profile of the population will potentially lead to increased participation rate that will add a significant number of new domestic tourists. This forebode well for domestic tourism in India. Inter-state visits increase the trip expenditure considerably, hence campaigns promoting inter-state tourism can benefit domestic tourism industry. While low spender tourists from urban India spend more, rural tourists spend more among the high spender tourists. Hence any promotional campaign regarding inter-state tourism also should target rural residents.

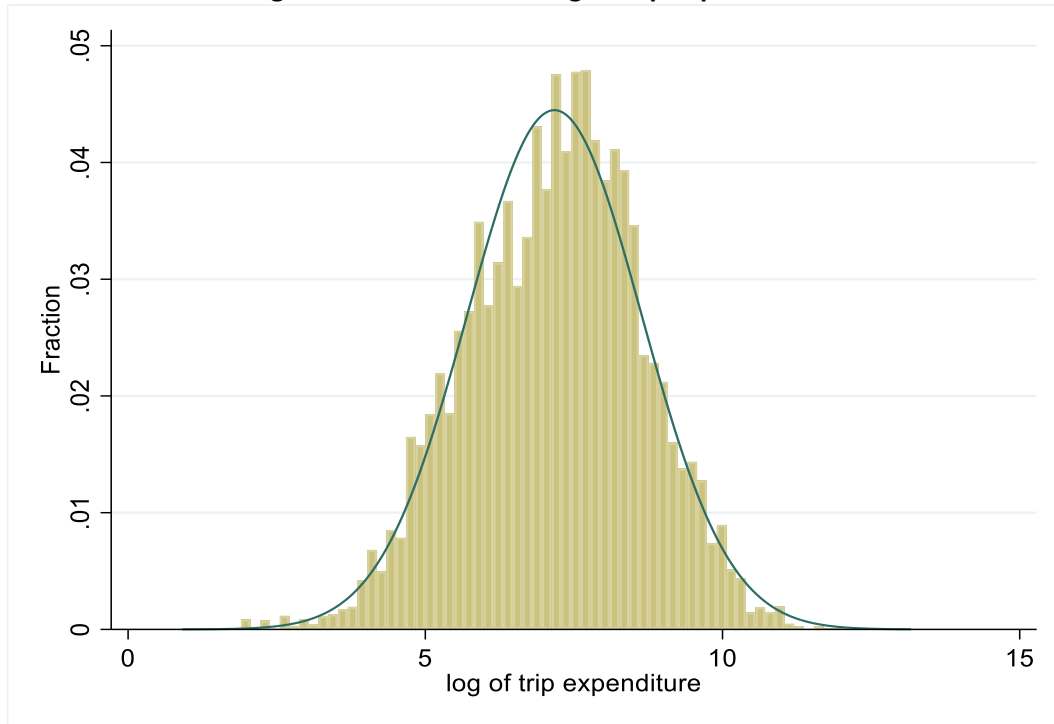
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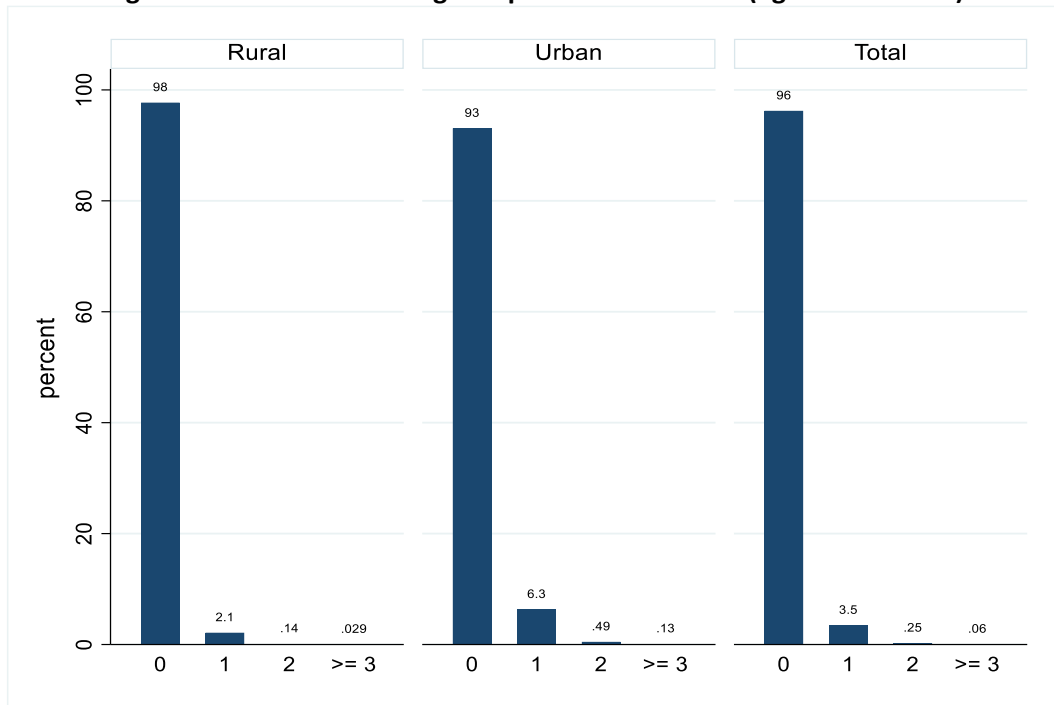
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**Figure 1: Distribution of log of trip expenditure**



**Figure 2: Number of overnight trips taken for leisure (age 18 and above)**





**Table 1: Descriptive statistics**

	Participation Decision		Expenditure	
Number of Observations	431,880		34,973	
	Average	Std. Dev.	Average	Std. Dev.
Took overnight trip	0.038	0.191		
Log of per capita consumption expenditure	7.384	0.564	7.811	0.684
Urban	0.319	0.466	0.585	0.493
Female	0.493	0.500	0.486	0.500
Married	0.751	0.433	0.779	0.416
Scheduled Caste	0.187	0.390	0.120	0.325
Scheduled Tribe	0.088	0.283	0.068	0.252
Other Backward Caste	0.432	0.495	0.340	0.474
Muslim	0.123	0.328	0.088	0.283
Household (HH) Size	5.258	2.618	4.646	2.251
Number of age<18 in HH	1.611	1.550	1.336	1.319
HH head female	0.091	0.288	0.084	0.277
Ag group				
18-30	0.370	0.483	0.386	0.487
31-40	0.233	0.422	0.278	0.448
41-50	0.173	0.378	0.179	0.384
51-60	0.119	0.324	0.101	0.301
61 and above	0.106	0.307	0.055	0.229
Education Level				
Below primary	0.387	0.487	0.184	0.387
Primary	0.124	0.330	0.086	0.281
Middle	0.149	0.357	0.139	0.346
Secondary	0.127	0.332	0.159	0.366
Senior Secondary	0.117	0.321	0.190	0.392
University	0.096	0.295	0.243	0.429
Employment				
Self employed	0.177	0.382	0.184	0.388
Unpaid family worker	0.091	0.288	0.070	0.255
Regular salaried	0.107	0.308	0.194	0.395
Daily wage worker	0.155	0.362	0.066	0.248
Unemployed	0.013	0.114	0.012	0.110
Student	0.068	0.251	0.101	0.301
Domestic duties	0.328	0.470	0.336	0.472
Rentiers/pensioner	0.026	0.160	0.026	0.159
Others	0.036	0.186	0.011	0.105

*Table 1 continues...*

*Table 1 continues...*

	<i>Participation Decision</i>		<i>Expenditure</i>	
	Average	Std. Dev.	Average	Std. Dev.
<b>Trip related</b>				
Log of per person trip expenditure			5.798	1.495
Party size			2.975	1.593
Number of age<18 in trip			0.811	1.019
Number of nights			5.954	8.313
Transport mode				
Others			0.025	0.157
Bus			0.431	0.495
Railways			0.338	0.473
Air			0.019	0.135
Own/hired vehicle			0.187	0.390
Stay place				
Hotel			0.280	0.449
Guest house			0.037	0.189
Dharamshala			0.076	0.264
Friends or relatives			0.549	0.498
Others			0.058	0.234
Destination				
Within district			0.186	0.389
Outside district within state			0.419	0.493
Outside state within country			0.391	0.488
International			0.004	0.067
Trip bought under package			0.065	0.247
Trip season				
January			0.062	0.242
February			0.059	0.235
March			0.062	0.241
April			0.088	0.283
May			0.168	0.374
June			0.130	0.337
July			0.057	0.231
August			0.083	0.275
September			0.052	0.221
October			0.110	0.313
November			0.058	0.234
December			0.072	0.258
Number of overnight trips taken in past 365 days				
One			0.918	0.275
Two			0.066	0.248
Three or more			0.016	0.126
Purpose of trip-shopping			0.029	0.168

*Note: survey weights are used.*

**Table 2: Participation rate and trip expenditure**

	P(overnight trip>0)	Log of trip expenditure
Overall	0.038	7.172
<b>By Area:</b>		
Rural	0.023	6.488
Urban	0.069	7.657
<b>By Gender:</b>		
Male	0.038	7.345
Female	0.037	6.990
<b>By Education:</b>		
Below primary	0.018	6.364
Primary	0.026	6.478
Middle	0.035	6.815
Secondary	0.047	7.125
Senior secondary	0.061	7.436
University	0.095	8.061
<b>By Age group:</b>		
18-30	0.039	7.100
31-40	0.045	6.983
41-50	0.039	7.278
51-60	0.032	7.485
61 and above	0.020	7.713
<b>By Castes:</b>		
Scheduled Tribes	0.029	6.553
Schedules Castes	0.024	6.596
Other Backward Castes	0.030	6.947
Higher Castes	0.061	7.570
Observations	431,853	34,934

**Table 3: Determinants of participation and expenditure on overnight trips**

	(1)	(2)	(3)	(4)
	P(overnight trip>0)		Log of trip expenditure	
Method	Probit dP()/dx	Se	OLS Coef	Se
Log of per capita consumption expenditure	0.026***	(0.001)	0.358***	(0.010)
Urban	0.014***	(0.001)	0.025**	(0.012)
Female	0.003**	(0.001)	-0.054***	(0.014)
Married	0.012***	(0.001)	-0.048***	(0.015)
Scheduled Caste	-0.008***	(0.001)	-0.034**	(0.015)
Scheduled Tribe	-0.002	(0.002)	-0.057***	(0.021)
Other Backward Caste	-0.007***	(0.001)	0.014	(0.011)
Muslim	-0.008***	(0.002)	0.024	(0.016)
Household size	-0.004***	(0.000)	0.039***	(0.003)
Number of members <18 age	0.005***	(0.001)	-0.028***	(0.007)
Household head is female	-0.000	(0.002)	-0.005	(0.017)
<i>Age group (omitted: 31-40)</i>				
18-30	-0.001	(0.001)	-0.010	(0.013)
41-50	-0.003**	(0.001)	0.047***	(0.014)
51-60	-0.007***	(0.002)	0.077***	(0.017)
60 and above	-0.016***	(0.002)	0.160***	(0.024)
<i>Education (omitted: below primary)</i>				
Primary	0.003**	(0.001)	-0.010	(0.018)
Middle	0.009***	(0.001)	0.091***	(0.016)
Secondary	0.013***	(0.002)	0.092***	(0.016)
Senior Secondary	0.021***	(0.002)	0.170***	(0.017)
University	0.030***	(0.002)	0.295***	(0.017)
<i>Employment (omitted: self-employed)</i>				
Unpaid family worker	-0.002	(0.002)	-0.083***	(0.021)
Regular salaried	-0.007***	(0.002)	0.029*	(0.015)
Daily wage worker	-0.014***	(0.002)	-0.098***	(0.020)
Unemployed	-0.009***	(0.003)	-0.087**	(0.042)
Student	0.004	(0.003)	-0.061***	(0.023)
Domestic duties	-0.006***	(0.002)	-0.000	(0.018)
Rentiers/pensioner	-0.005*	(0.003)	-0.042	(0.032)
Others	-0.018***	(0.003)	0.030	(0.044)

**Table 3 continues...**

**Table 3 continues...**

	(1)	(2)	(3)	(4)
	P(overnight trip>0)		Log of trip expenditure	
<b>Trip related</b>				
Party size			-0.068***	(0.005)
Number of age<18 in trip			-0.094***	(0.009)
Number of nights			0.022***	(0.001)
<i>Transport mode (omitted: own/hired vehicle)</i>				
Others			-0.454***	(0.030)
Bus			-0.292***	(0.013)
Railways			0.031**	(0.014)
Air			1.136***	(0.035)
<i>Stay place (omitted: friends/relatives)</i>				
Hotel			1.074***	(0.013)
Guest house			0.885***	(0.024)
Dharmasala			0.672***	(0.018)
Others			0.365***	(0.020)
<i>Destination (omitted: within district)</i>				
Outside district within state			0.573***	(0.013)
Outside state within country			1.206***	(0.016)
International			1.196***	(0.066)
Trip bought under package			0.772***	(0.019)
<i>Trip season (omitted: January)</i>				
February			0.043*	(0.025)
March			-0.001	(0.024)
April			0.036	(0.023)
May			-0.061***	(0.020)
June			-0.017	(0.021)
July			-0.084***	(0.025)
August			-0.151***	(0.023)
September			-0.062**	(0.026)
October			-0.023	(0.022)
November			-0.020	(0.025)
December			-0.055**	(0.024)
<i>Number of overnight trips taken in past 365 days (omitted: one)</i>				
Two			-0.026	(0.018)
Three and above			-0.111***	(0.035)
Purpose of trip is shopping			1.348***	(0.027)
Constant			4.572***	(0.087)
Observations	431,853		34,934	
R-Squared			0.704	

Note: Marginal impacts are reported in probit. Standard errors are in parenthesis. All the models include state fixed effects. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

**Table 4: Determinants of participation and expenditure on overnight trips, Unconditional Quantile Regression**

	(1)	(2)	(3)	(4)	(5)
	Q10	Q25	Q50	Q75	Q90
Log of per capita consumption expenditure	0.298***	0.306***	0.295***	0.393***	0.420***
Urban	0.277***	0.323***	-0.077*	-0.092**	-0.093*
Female	-0.267***	-0.140**	-0.090**	0.077*	0.193***
Married	-0.034	-0.111*	-0.086*	0.072	-0.003
Scheduled Caste	-0.267**	0.014	-0.022	0.071*	0.066
Scheduled Tribe	-0.448***	-0.321***	0.007	0.087	0.084
Other Backward Caste	0.261***	0.144***	-0.089**	-0.027	-0.124***
Muslim	-0.120	0.074	0.035	-0.167***	-0.068
Household size	0.081***	0.032	-0.005	0.034***	0.075***
Number of members <18 age	-0.090	-0.039	0.011	0.006	-0.039
Household head is female	0.178	0.102	-0.036	0.015	-0.154***
<i>Age group (omitted:31-40)</i>					
18-30	0.085	-0.005	-0.068	0.051	-0.010
41-50	0.088	-0.095	-0.005	0.115***	0.166***
51-60	0.094	-0.018	0.006	0.231***	0.154**
60 and above	0.306***	0.083	0.089	0.323***	0.279***
<i>Education (omitted: below primary)</i>					
Primary	-0.177	0.018	0.037	0.055	0.071
Middle	0.123	0.253***	0.125**	0.036	0.079
Secondary	-0.024	0.254***	0.195***	0.093**	-0.007
Senior Secondary	0.016	0.269***	0.342***	0.135***	0.035
University	-0.024	0.316***	0.429***	0.415***	0.434***
<i>Employment (omitted: self-employed)</i>					
Unpaid family worker	-0.126	-0.268**	-0.047	-0.020	-0.069
Regular salaried	0.009	0.084	0.110**	-0.005	-0.063
Daily wage worker	-0.228	-0.132	-0.119*	-0.030	-0.040
Unemployed	-0.521*	-0.180	-0.054	0.045	-0.087
Student	0.089	0.023	-0.062	-0.092	-0.107
Domestic duties	0.092	0.062	0.085	-0.060	-0.215***
Rentiers/pensioner	-0.171	-0.000	-0.035	-0.040	0.071
Others	0.095	0.121	0.022	-0.115	-0.283**

*Table 4 continues...*

**Table 4 continues...**

	(1)	(2)	(3)	(4)	(5)
	Q10	Q25	Q50	Q75	Q90
<b>Trip related</b>					
Party size	0.034	-0.021	-0.081***	-0.147***	-0.116***
Number of age<18 in trip	-0.159**	-0.127***	-0.148***	-0.019	0.019
Number of nights	0.012**	0.022***	0.027***	0.019***	0.028***
<i>Transport mode (omitted: own/hired vehicle)</i>					
Others	-1.400***	-0.998***	-0.454***	0.100*	1.378***
Bus	-0.201**	-0.520***	-0.501***	-0.214***	0.025
Railways	0.225***	-0.040	-0.046	-0.011	0.200***
Air	-0.181**	-0.436***	-0.063	1.418***	5.516***
<i>Stay place (omitted: friends/relatives)</i>					
Hotel	0.516***	0.997***	1.427***	1.325***	1.081***
Guest house	0.546***	1.095***	1.211***	0.826***	0.394***
Dharmasala	0.896***	1.366***	0.872***	0.198***	-0.032
Others	0.678***	0.770***	0.316***	0.128**	0.067
<i>Destination (omitted: within district)</i>					
Outside district within state	1.595***	1.308***	0.339***	-0.044	-0.167***
Outside state within country	1.688***	1.827***	1.276***	0.855***	0.524***
International	1.948***	1.677***	1.001***	0.744***	0.619*
Trip bought under package	0.249***	0.185***	0.324***	0.930***	2.403***
<i>Trip season (omitted: January)</i>					
February	0.116	0.120	0.069	-0.042	0.074
March	-0.021	0.065	-0.007	-0.089	0.046
April	0.116	-0.099	0.009	0.022	0.208**
May	-0.135	-0.112	0.057	-0.080	0.221**
June	-0.042	-0.058	-0.044	-0.067	0.144*
July	0.122	-0.183	-0.104	-0.064	0.213**
August	-0.182	-0.221**	0.083	-0.102	0.054
September	-0.083	-0.242**	0.013	-0.033	0.174
October	-0.247*	-0.080	0.031	0.048	0.177**
November	-0.081	-0.219**	-0.008	-0.016	0.340***
December	-0.189	-0.082	-0.043	-0.064	0.150
Number of overnight trips taken in past 365 days (omitted: one)					
Two	0.007	0.047	-0.103*	-0.044	0.195**
Three and above	0.245	-0.440**	-0.279**	-0.044	0.441*
Purpose of trip is shopping	0.923***	1.423***	1.564***	1.331***	1.462***
Constant	2.194***	3.885***	5.906***	5.828***	5.808***
Observations	34,934	34,934	34,934	34,934	34,934
R-Squared	0.275	0.452	0.544	0.469	0.399

*Note: All the models include state fixed effects. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$*