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Social influence and bandwagon effects in tourism travel

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ABSTRACT

This paper studies bandwagon effects in tourism travel decisions. We examine how social influence affects individual decisions (i) to take a vacation trip, and (ii) the choice of destination. We use representative microdata for 28 European countries between 2014 and 2016 involving more than 60,000 individuals. Our empirical model accounts for the potential endogeneity of the social influence effect using a control function approach. Our results show that tourism participation and abroad travelling exhibit bandwagon effects: both are positively influenced by the share of people in the region of residence (NUTS 2) that also travels and that travels abroad. We also find that (i) bandwagon effects are heterogeneous across countries, and (ii) social effects are larger among non-travellers in the previous year.

Introduction

A growing body of literature acknowledges that individual decisions are influenced by the social environment and their peers. The idea is that an increase in the prevalence of a behaviour at the group level increases the probability of such behaviour at the individual level (Brock & Durlauf, 2001; Manski, 1993). As a result, consumers' consumption decisions are not only explained by goods' intrinsic utility; the share of people that also consumes such good is another relevant factor. In demand analysis, this is commonly referred to as 'bandwagon effects', defined as people's tendency to adopt or imitate certain behaviours or styles because others are doing so. Bandwagon effects arise through different causal mechanisms, including conspicuous consumption (Veblen, 1899), identity theories (Akerlof & Kranton, 2000) and social learning under uncertainty (Banerjee, 1992), among others.

In the tourism context, some studies have documented that taking a vacation trip helps people to signal their personality and show off their success and status, which can lead to imitation and social contagion processes (Bronner & de Hoog, 2018; Correia et al., 2016; Phillips & Back, 2011). Individuals continuously interact with other family members, workmates, friends, neighbours, or even strangers, either personally or through online social networks. In doing so, they learn about others' consumption decisions. This leads to a sort of 'contagion' in preferences by which their subjective evaluation of a tourist destination might be affected by the share of other people in the reference group that travels there. Most of the attention has been devoted to how *small* social networks influence travel decisions (Liu et al., 2019; Mutalib et al., 2017; Pan et al., 2021; Yang et al., 2021). However, bandwagon effects at more aggregate levels have been less studied in the tourism literature.

This paper studies the effect of others' vacation plans on individual tourism participation (to take a vacation trip) and destination choice (abroad versus domestically) in the context of a summer holiday trip. Similar to Walker et al. (2011), we define a field effect variable to capture how social influence affects individual vacation preferences. Consistent with the economic theory of bandwagon effects originally developed by Leibenstein (1950), we hypothesise that an increase in the share of people in the

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region of residence that plans to go on holidays and to travel abroad increases the probability of both decisions at the individual level, ceteris paribus. As we discuss later in the paper, we model *global* interaction effects in the sense of Brock and Durlauf (2001). To this end, we use representative survey microdata for 28 European countries during 2014–2016 involving more than 60,000 individuals. Therefore, our identification strategy exploits geographical and temporal variation in tourism patterns at NUTS 2 level (228 regions) to examine whether 'what others do' matters for individual choices. Since we study both participation and destination choice, we identify distinct effects for each decision.

The identification of social influence effects imposes several methodological challenges, as highlighted by Manski (1993) and Soetevent (2006). The observed correlation between the average prevalence of the participation decision and the choice of an international destination on the one hand, and individual decisions on the other, might stem from (i) shared unobservable characteristics at the reference group level (correlated effects) and (ii) potential simultaneity between individual and group choices (reflection problem). In line with related applications in the peer effects literature (e.g., Duarte et al., 2014; Powell et al., 2005), our empirical strategy tackles this through using instrumental variables in a two-stage procedure. First, we remove the source of variability that arises from sharing the same environment using regional characteristics and the sociodemographic profile of the reference group as instruments. Second, we estimate a Heckman probit model (Van de Ven & Van Praag, 1981) that accounts for sample selection using a control function approach that corrects for endogeneity (Wooldridge, 2015). Our analysis also considers sociodemographic characteristics, past travel frequency and country fixed effects. Therefore, our modelling approach provides a clean estimate of the impact of social influence on travel patters net of habit formation and other sources of heterogeneity in preferences.

This paper contributes to the literature in different ways. First, several experiments in social psychology and marketing research have studied bandwagon effects in different settings, focusing on its antecedents and moderators (Eastman et al., 2018; Goldsmith & Clark, 2012; Oyedele & Goenner, 2021; van Herpen et al., 2009). We, instead, provide field evidence using revealed preferences on how peoples' travel decisions are influenced by the decisions made by others. While the referred lab experiments have provided relevant insights on the topic, it seems necessary to analyse real-world data to establish how important social influence is in practice. Second, to the authors' knowledge, bandwagon effects in tourism travel have only been formally analysed by Wu et al. (2013) for the case of Japan. Although some recent studies in tourism have documented that travel patterns are affected by the social visibility of travelling (Boley et al., 2018; Josiassen & Assaf, 2013; Liu et al., 2019; Yang et al., 2021), there is little evidence on bandwagon effects at more aggregate levels (regions). We expand the work by Wu et al. (2013) by studying *global* interaction effects in the sense of Brock and Durlauf (2001), not only on tourism participation but also on destination choice in a unified econometric model. In doing so, we consider different years and countries. This further allows us to examine heterogeneity in bandwagon effects per country/area. Furthermore, we inspect how social influence relates to past travelling habits. As a result, our findings have important theoretical and practical implications related to the social multiplier effects of policy interventions.

Literature review

Causal mechanisms behind interdependent preferences and bandwagon effects

Traditional neoclassical theory of consumer behaviour assumes that individual utility functions depend on the characteristics of the goods and are independent of each other's preferences. As such, people make consumption decisions in isolation, abstracting from others' choices. Accordingly, market demand curves are just the horizontal summation of individual demands. However, Leibenstein (1950) relaxes this assumption and introduces the concept of 'bandwagon effects' in consumer demand by which market demand is not necessarily additive. That is, the consumption behaviour of any individual is not independent of the consumption of others. The bandwagon effect represents the desire of people to purchase a commodity to get "into the swim of things" (Leibenstein, 1950, p. 189). Later on, Pollak (1976) is among the first that develops a model in which preferences depend on others' consumption. Based on this framework, Alessie and Kapteyn (1991) and Kapteyn et al. (1997) have empirically shown that preference interdependence is an important determinant of consumer expenditure. Since then, a fairly robust stream of research in economics (Bobonis & Finan, 2009; Duarte et al., 2014; Gaviria & Raphael, 2001; Grinblatt et al., 2008; Powell et al., 2005), marketing (Bahri-Ammari et al., 2020; Mainolfi, 2020; Oyedele & Goenner, 2021) and psychology (Kastanakis & Balabanis, 2012; van Herpen et al., 2009) documents that consumers' individual decisions are affected by others' behaviour and choices in many different contexts.

There are several different mechanisms that explain bandwagon effects. One of them is conspicuous consumption. Veblen's Theory of Leisure Class (Veblen, 1899) defines this concept as people's tendency to spend money to exhibit their wealth and status to others through consuming exclusive goods, also referred to as positional goods. When goods are fashionable and help to signal social status, individuals get additional utility as they can show off it over their peers. Bourdieu (1984) redefined the concept of conspicuous consumption through the introduction of cultural capital. In modern societies, conspicuousness in consumption does not necessarily relate to social class but also to lifestyles. This makes that observed bandwagon effects caused by conspicuousness are nowadays more associated with cultural backgrounds (Jinkins, 2016), the degree of urbanization (Currid-Halkett et al., 2019) and self-concept orientation (Kastanakis & Balabanis, 2014) than to wealth.

Beyond conspicuousness, bandwagon effects also emerge because of personal identity, understood as a person's sense of self. In a seminal paper, Akerlof and Kranton (2000) provide a theoretical foundation of how identity affects economic decisions. A review of self-concept and how it affects consumer decisions can be found in Reed (2002). Leaving pecuniary payoffs aside,

individuals mimic the behaviour of others because of social norms, aspirations, and the desire of conformability with the people they wish to be associated with. Adherence to social customs in the spirit of Akerlof (1980) creates some sort of *consumption norms* that individuals follow, thereby purchasing what others purchase (see on this Corneo & Jeanne, 1997). Put another way, some consumption decisions have a symbolic value. In the marketing and social psychology literatures, the wish to conform with others' consumption patterns has been widely documented (Bahri-Ammari et al., 2020; Eastman et al., 2018; Shayan et al., 2017). As discussed in Kastanakis and Balabanis (2012), consumers' status-seeking predispositions, susceptibility to normative influence and need for uniqueness are factors that moderate bandwagon behaviour.

A third channel is social learning and herding behaviour under uncertainty and informational cascades (Banerjee, 1992; Bikhchandani et al., 1992, 1998). When there is some incertitude about the quality/characteristics of a good, individuals learn from others' choices. That is, they tend to first observe the behaviour of preceding individuals to, based on observed outcomes, subsequently make an informed choice. From this perspective, the consumption of others serves as a quality heuristic. Under this framework, if the outcomes of prior decision makers are satisfying, subsequent decision makers are predicted to follow them and make the same purchase decisions (observational learning), leading to consumption cascades that produce the commonly observed bandwagon effects. A well-known example of social learning that produces bandwagon effects is movie consumption, whose quality ex ante is uncertain (Lee et al., 2015; Moretti, 2011). A similar reasoning could be done in tourism consumption.

Empirical evidence on bandwagon effects and social influence in tourism

Tourism travel can be nowadays considered a form of consumption with symbolic meaning, by which individuals project a social self-concept through showing off their travel experiences (Moran et al., 2018; Todd, 2001). Several studies show that tourists attach great importance to the visibility of their travel experiences to others (Boley et al., 2018; Bronner & de Hoog, 2021; Josiassen & Assaf, 2013), mainly through social self-concept (i.e., the desire to impress friends and other people). Correia et al. (2016) report that people enjoy travel experiences that give them a sense of social status and improve their social standing. Bronner and de Hoog (2018) study conspicuous consumption in holiday choice and note that "60% of vacationers agree that the way people spend their summer holidays says something about what kind of a person someone is" (p. 96). As a result, status and identity demonstration are important factors for explaining repeat visits (Correia & Kozak, 2012), long-haul travelling intentions (Bianchi et al., 2017) or travelling to some destinations (Phillips & Back, 2011).

The widespread use of online social networks has increased social visibility and the capacity to signal memorable trips and experiential purchases to peers. Several studies have shown that travellers' motivation is partly driven by their desire to share their experiences on social media (Lo & McKercher, 2015; Munar & Jacobsen, 2014), which positively impact post-purchase return intention and well-being (Lee & Oh, 2017). Consistent with the social psychology literature, taking a vacation is an experiential good that is more connected to the self than other material purchases because people enjoy showing and telling others about their trips (Oliveira et al., 2020; Sedera et al., 2017; Su et al., 2020).

A growing body of literature documents that travellers' preferences are affected by the behaviour and choices made by their peers. Cicognani et al. (2021) provide evidence that access to information on prior ratings that are above the average positively influences the consumers' rating of a hotel. Mutalib et al. (2017) show that successful experiences by friends and relatives are among the most relevant push factors for medical tourism. Pan et al. (2021) conduct a discrete choice experiment in which respondents choose a destination before and after being informed about the destination image of social network members. They find that individuals update their preference after receiving feedback, no matter whether they have their own prior image or not. Drawing on social comparison theory, Liu et al. (2019) report that millennials are more willing to visit a destination when their peers posted something about it. In a recent study, Yang et al. (2021) document that tourists are susceptible to invidious comparisons in tourism experiential purchases, with eudaimonic happiness acting as key resistance factors to negative emotions.

Local versus global interaction effects and social influence

Most of the existing literature on bandwagon effects has focused on *local* interaction effects, by which individual conform to the behaviour of small reference groups (friends, relatives, neighbours). However, the development of social media has made that people interact and receive information from many sources, making their reference group wider than in the past. The diffusion of word-of-mouth communication through social networks has the capacity to quickly translate into demand shifts through social learning (Campbell, 2013). In a study of social learning with friends and strangers, Zhang et al. (2015) theoretically show that the stranger network becomes more effective at providing quality judgements as the network grows. This suggests that in modern societies reference groups go beyond the immediate environment, producing bandwagon effects that emanate at more aggregate levels. Brock and Durlauf (2001) develop an analytical framework to study social influence in complex heterogeneous economies in which interaction effects spread at aggregate levels. These authors characterize discrete choices when individuals experience private and social utility from their choices. Under certain assumptions, they show that in equilibrium individual utility is affected by small changes in the average behaviour at aggregate levels in cases in which the population size is arbitrary large. A similar characterization of global social influence is developed in Ioannides (2006). Therefore, we postulate the following hypotheses:

H1. The probability of taking a vacation trip at the individual level is positively affected by the average prevalence of tourism participation in the region of residence.

H2. The probability of travelling abroad (conditional on travelling) is positively affected by the average prevalence of abroad travelling in the region of residence.

To the authors' knowledge, Wu et al. (2013) is the only study that formally investigates the impacts of social interactions with people from the same prefecture on tourism participation. Their results confirm that individual participation in tourism activities is positively influenced by the behaviour of other people. Our research aims to contribute to this scarce evidence by also considering bandwagon effects in the destination choice decision.

Data

Database

Our database is drawn from the 2014, 2015 and 2016 waves of *Preferences of Europeans towards Tourism*. This survey belongs to the Flash Eurobarometer, a series of periodically surveys conducted by the European Commission for the purposes of knowing European citizens' opinions about different topics. This survey is concerned about the travel patterns of residents in the 28 Member States of the European Union and some other European countries. Specifically, about 30,000 randomly selected European citizens over 15 take part in the study each year. Since in each wave the sample is different, the database is a pool of cross-sectional units comprising a total of 81,179 individuals from 28 countries. The countries considered are: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom. Respondents from Macedonia, Turkey, Montenegro, and Moldavia are excluded because their data started being collected in 2015. After excluding observations with missing values in some variables, we have valid information for 61,590 individuals.

The surveys are carried every year during January–February. Most of the surveys are web-based computer-assisted telephone interviews, although some of them are face-to-face. In each wave, respondents are asked about their past year main holidays and their plans for the current year. By 'main holidays' the survey refers to trips performed during the summer period. Standard sociodemographic characteristics are also collected.

Variable definition and descriptive statistics

Dependent variables

We define a binary indicator labelled *travels* that takes value 1 if the respondent declares she will go on holidays and 0 otherwise. Importantly, those who do not know yet at the time of the survey are considered missing values. Respondents that declare they will go on holidays are subsequently asked whether they will travel domestically or abroad. Specifically, they report the destination country. For this subsample, we define a binary indicator that takes value 1 if the respondent declares she will travel abroad (*tr_abroad*) and 0 otherwise (domestically).

On average, 77% of the sample declares to be willing to travel during the summer. Out of them, 53% plan to travel outside the country. Figs. 1 and 2 map the average share of respondents that plan to take a vacation trip (*travels*) and, among them, the share that intends to travel abroad (*tr_abroad*) per country of residence. As shown, Northern European countries like Sweden, Finland, Iceland, Ireland or The Netherlands exhibit the largest participation shares. Concerning the destination, residents in Belgium, Luxembourg, Ireland, Denmark and Austria are the ones who mostly prefer abroad trips.

Measures of social influence

For capturing bandwagon effects in tourism travel, for each individual in the sample we define a field variable similar to Walker et al. (2011) calculated as the share of respondents in respondent's place of residence j (NUTS 2) that travels ($\overline{travels_{ij}}$) and the share of prospective travellers that plan to travel abroad ($\overline{tr\_abroad_{ij}}$) per year, after subtracting the individual contribution to the average as follows:

$$\overline{travels_{ijt}} = \frac{1}{n-1}\sum_{i=1}^{n} travels_{ijt} \quad \forall i \in j \text{ for } t = 2014, 2015, 2016 \tag{1}$$

$$\overline{tr\_abroad_{ijt}} = \frac{1}{n-1}\sum_{i=1}^{n} tr\_abroad_{ijt} \quad \forall i \in j \text{ for } t = 2014, 2015, 2016 \tag{2}$$

where n is the number of individuals in the sample living in region j, for $j = 1, \ldots, 228$. Therefore, the 28 countries are disaggregated into 228 regions. In this way, these field variables vary across years, regions and individuals within regions.

This way of defining social influence in the context of discrete choices is theoretically consistent with Leibenstein (1950), who note that individual latent utility can be expressed as a function of the people that demand the same commodity excluding him/her. Importantly, variation in group sizes (NUTS 2) is relevant for the identification of social influence (Davezies et al., 2009).

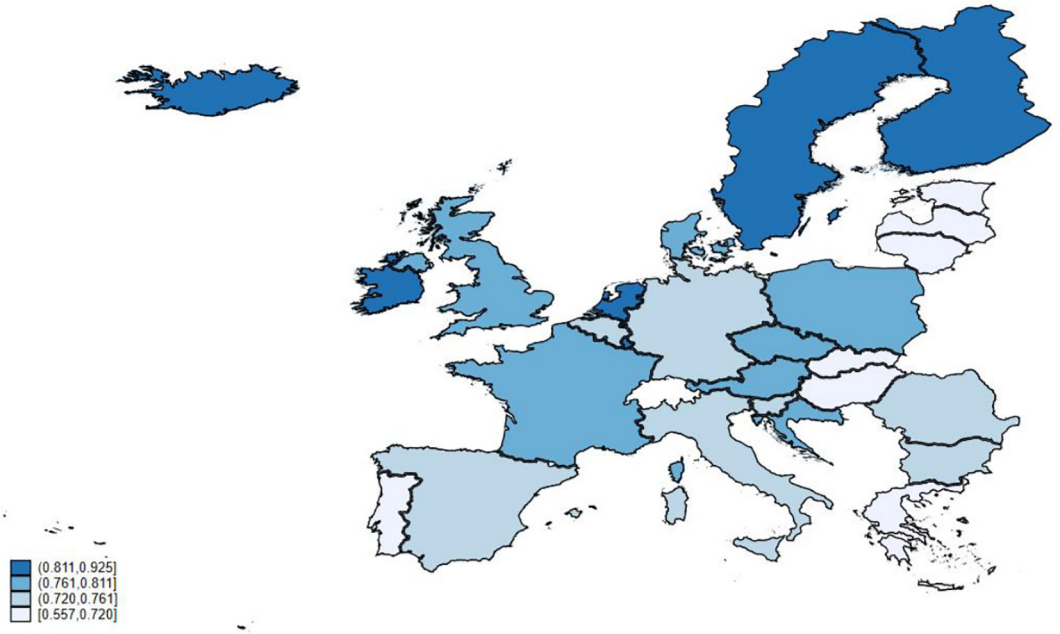

Fig. 1. Average share of respondents that plan to take a leisure trip (*travels*) by country.

Fig. 3 presents a kernel density plot of the distributions of $\overline{travels_{ijt}}$ and $\overline{tr\_abroad_{ijt}}$ in the sample. The vertical lines indicate the mean values. Participation shares per region ($\overline{travels_{ijt}}$) range between 0.45 and 1, with a mean value equal to 0.77. Abroad travelling ratios among travellers ($\overline{tr\_abroad_{ijt}}$) are more heterogeneous; whereas in some regions most people plan to travel domestically, in some others a substantial share prefers international destinations.

We acknowledge that the adopted definition of the relevant group based on the region of residence could be subject to objections. In principle, individual behaviour might be more likely to be influenced by the immediate spatial locality (e.g., neighbourhood) so that NUTS 2 regions could be perceived as too broad geographic units. In this regard, some studies

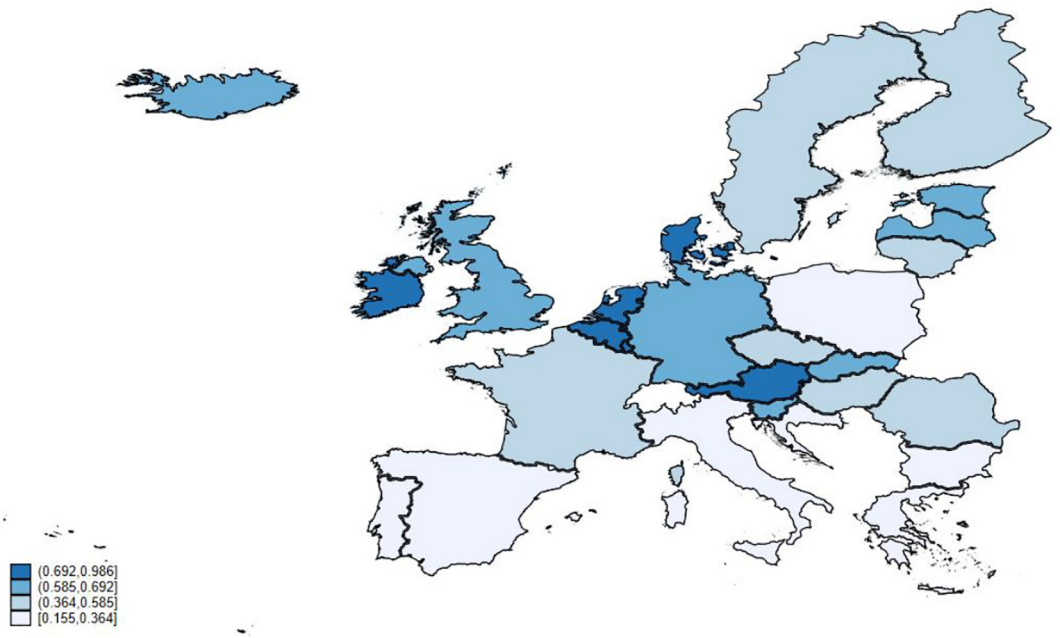

Fig. 2. Average share of respondents that plan to take a leisure trip abroad (*tr_abroad*) by country.

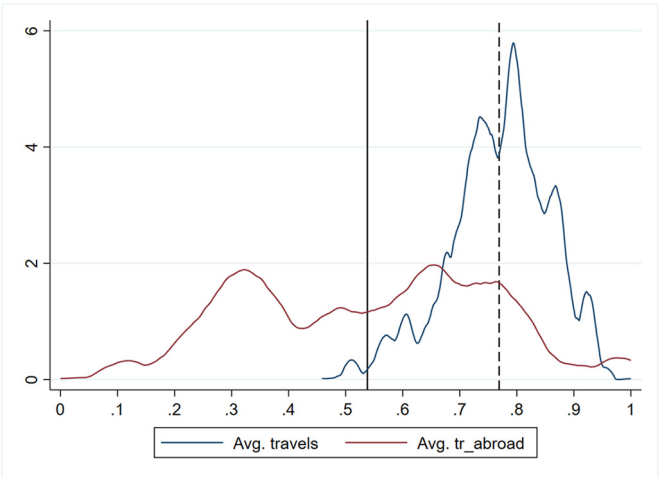

Fig. 3. Kernel density plot for the shares of tourism participation and abroad travelling.

consider social influence at the neighbourhood level (Bobonis & Finan, 2009; Norton et al., 1998; Walker et al., 2011) so that agent interactions are *local*. However, it is not clear whether neighbourhoods are the relevant reference group because bandwagon effects in tourism travel are likely to spread at more aggregate levels. As discussed before, *global* interactions in the sense of Brock and Durlauf (2001) appear to be more appropriate in this specific context. Alternatively, we could consider the social group as those with the same sociodemographic characteristics, in line with Kapteyn et al. (1997). However, this approach would have two important caveats. First, it is not easy to determine which sociodemographic characteristics should be selected. Second, within NUTS 2 regions, it would be problematic to calculate the field variables defined in (1) and (2) for some profiles when they represent a tiny share. Altogether, our definition of the reference group seems to be valid approximation to the unknown true reference group and follows the lines of Charles et al. (2009) and Wu et al. (2013).

Control variables

Both the decision to travel and the choice of destination seem to be affected by past travel behaviour. In this vein, there is evidence of habit formation in tourism by which taste for travelling is developed though consumption (Boto-García, 2022; Wu et al., 2013). In the survey, respondents are asked whether they went on holiday past year and, if so, the chosen destination. Based on this, we define a dummy for having went on holidays past year (*travelled*) and two dummies for whether they travelled domestically or abroad (*travelled_dom* and *travelled_abroad*, respectively). Additionally, respondents are asked the total number of trips made past year, either for personal or labour-related reasons. This variable is labelled *numtrips* and accounts for the intensity of past travelling habits.

The tourism literature acknowledges that participation in tourism activities and the choice of destination depends on personal characteristics (Alegre & Pou, 2004; Eugenio-Martin & Campos-Soria, 2010) and income (Alegre et al., 2009; Boto-García, 2022). The dataset contains information on gender, age, educational level, household size, and whether the respondent lives in a big city, a town or a rural area. Unfortunately, the survey does not provide information on income. Nonetheless, respondents are asked whether the economic situation has made them to modify their travel plans. Specifically, the wording of the question is: *Does the current economic situation have an impact on your holiday plans for this year?* Around 46% of respondents declare not to be affected by the economic situation when planning their holidays. By contrast, a non-negligible 12% declare they cannot afford a holiday trip, whereas 21% indicate they have to change their expenditure. To partially control for the effect of income, we define a dummy variable labelled *econsit* that takes value 1 if the respondent declares her personal economic circumstances have made her to change her travel plans.

The labour market situation is another significant predictor of tourism-related decisions (Alegre et al., 2013) because it affects both time availability and the budget constraint. We have information of the labour situation of the respondent: self-employed, employee, manual worker, civil servant, retired, unemployed, student and inactive. Considering these variables in the analysis is particularly important because they could also help to control for income differences and opportunity costs of time.

Summary statistics of the above defined variables are presented in Table 1. Around 54% of the sample took a vacation trip the previous year; 22.7% travelled domestically and the remaining 31% travelled abroad. On average, respondents took 5.3 trips in the previous year considering both leisure and labour-related purposes. Almost 42% of the sample are males, with an average age of 53.2 years. Most respondents attain 20 or more years of schooling (44.5%) and are employed in a firm (26.2%) or retired (34.8%). The average household size is 2.28 people, and the sample is quite balanced with respect to the place of residence, with 31.8% living in a rural area, 38.7% living in a middle-populated town and the remaining 28.8% residing in a large city. Finally, around 54% declare the economic situation has forced them to change their holiday plans.

Table 1
Descriptive statistics.

Variable	Definition	Mean	SD	Min	Max
travels	=1 if plans to take a leisure trip	0.770			
tr_abroad[a]	=1 if plans to travel abroad (vs domestically)	0.538			
$\overline{travels}$	Share of respondents in the region of residence that plan to travel discounting the respondent	0.770	0.088	0.458	1
$\overline{tr\_abroad}$	Share of respondents in the region of residence that plan to travel abroad discounting the respondent	0.538	0.214	0	1
travelled	=1 if went on holidays past year	0.543			
travelled_dom	=1 if went on holidays domestically past year	0.227			
travelled_abroad	=1 if went on holidays abroad past year	0.315			
numtrips	Number of trips (leisure and labour-related)	5.341	13.55	0	365
age	Age in years	53.272	17.113	15	98
male	=1 if male	0.417			
prim_education	=1 if no full-time education or up to 15 years old	0.127			
sec_education	=1 if 16–19 years of schooling	0.381			
high_education	=1 if 20 or more years of schooling	0.445			
educ_still	=1 if she is still studying	0.047			
housesize	Household members	2.286	1.162	1	20
rural	=1 if lives in a rural area or village	0.318			
town	=1 if lives in a middle-sized town	0.387			
bigcity	=1 if lives in a big city	0.288			
selfemployed	=1 if self-employed	0.091			
employee	=1 if employee in a firm	0.262			
manworker	=1 if manual worker	0.073			
civilser	=1 if civil servant	0.059			
retired	=1 if retired	0.348			
unemployed	=1 If unemployed	0.047			
student	=1 if student	0.044			
housekeeper	=1 if housekeeper	0.059			
otherlaborsit	=1 if other labour situation	0.014			
econsit	=1 if declares the economic situation has made her change her holiday plans	0.541			
y2014	=1 if 2014 wave	0.322			
y2015	=1 if 2015 wave	0.340			
y2016	=1 if 2016 wave	0.338			
Observations		61,590			

[a] *tr_abroad* has 47,400 valid observations because they are only observed for those who plan to travel.

Empirical strategy

Model

Assume individuals have an unobserved latent utility function for the consumption of tourism travel. Assume also there is a preference formation process (Kapteyn et al., 1978) by which the value assigned to travelling depends on past consumption habits (habit formation) and the consumption by others in the reference group (interdependent preferences) in the spirit of Pollak (1976). If we allow for heterogeneity in preferences based on sociodemographic characteristics (Pollak & Wales, 1981), then the latent utility of tourism travel (U^*) can be expressed as:

$$U^* = f(H,S,X) + e \tag{3}$$

where H captures past tourism consumption (habits), S refers to the share of people in the reference group that travels (social influence), X denotes a set of sociodemographic characteristics and e is a disturbance term.

Therefore, individual demand for tourism (participation decision and destination choice) is assumed to increase when tourism demand by other people in the reference group also increases (Brock & Durlauf, 2001), everything else being equal. The component S in individuals' latent utility captures bandwagon effects stemming from either conspicuousness, social learning under uncertainty or self-identify from the binary choice. The model in (3) is therefore a combination of individual-level and aggregate data in which social effects are embedded in individual preferences as described in Blume et al. (2015).

A Heckman Probit model

The decision to travel domestically (vs abroad) is only observed for the subsample of respondents that plan to take a vacation trip. Since travellers self-select based on observable and unobservable factors, we propose a Probit model with sample selection (Heckman Probit). This is a two-equation model comprising a selection and an outcome equation that are estimated jointly using a Full Information Maximum Likelihood estimator (FIML).

The model structure of the proposed Heckman Probit is the following:

1) *Selection equation*:

$$travels^{*}_{itcj} = \alpha_1 + \beta_1 X_i + \gamma_1 FE_c + \varphi_1 YEAR_t + \omega_1 \overline{travels_{ij}} + \varepsilon_{1i} \tag{4}$$

where i denotes each respondent in the sample, for $i = 1, \ldots, N$; t refers to the period, for $t = 2014, 2015, 2016$; c indicates the country of residence, for $c = 1, \ldots, 28$; j is the region within the country (NUTS 2) where the respondent lives, for $j = 1, \ldots, 228$; $travels^{*}_{itcj}$ is the latent utility of travelling; X_i are respondent's individual characteristics; FE_c are a set of country fixed-effects; $YEAR_t$ are time effects; $\overline{travels_{ij}}$ is the field variable that captures the proportion of people in respondent's region of residence j that travel; α_1 is a constant term; ω_1 captures the bandwagon effect; β, γ, φ and δ are vectors of coefficients to be estimated; and ε_{1i} is a random error term. The inclusion of the country fixed effects captures any heterogeneity in travel patterns stemming from push factors like climate conditions or transport accessibility (Eugenio-Martin & Campos-Soria, 2010) at the country level.

2) *Outcome equation*:

$$tr\_abroad^{*}_{itcj_{|travels=1}} = \alpha_2 + \beta_2 X_i + \gamma_2 FE_c + \varphi_2 YEAR_t + \omega_2 \overline{tr\_abroad}_{ij} + \varepsilon_{2i} \tag{5}$$

where $tr\_abroad^{*}_i$ is the latent utility of travelling abroad (vs domestically) conditional on travelling; $\overline{tr\_abroad}_{ij}$ is the proportion of people in region j that travels abroad; the rest of explanatory variables are the same as defined above; ω_2 captures the bandwagon effect; and ε_{2i} is a random error term.

The selection issue is considered by allowing the error terms ε_{1i} and ε_{2i} to be bivariate correlated (Van de Ven & Van Praag, 1981) so that:

$$\begin{pmatrix} \varepsilon_{1i} \\ \varepsilon_{2i} \end{pmatrix} \sim N\left(0, \begin{matrix} 1 & \rho \\ \rho & 1 \end{matrix}\right) \tag{6}$$

where $\rho = Corr\ (\varepsilon_{1i}, \varepsilon_{2i})$.

Endogenous bandwagon effects

The two variables defined for capturing bandwagon effects on travel decisions are likely to be endogenous for two reasons. First, unobserved factors that impact average travel patterns in a region also influence the respondent, yielding correlation between the field variables and the error terms. This is the so-called *correlated effects* (Manski, 1993). Second, there might be a two-way simultaneity by which the decision to travel by individual i also spells over her peers (*reflection problem*).

If we let aside the sequential process of the vacation decisions and take the two equations as independent, the endogeneity of $\overline{travels_{ij}}$ in the selection equation reduces to a standard Probit model with a continuous endogenous variable:

$$travels^{*}_{itcj} = \alpha_1 + \beta_1 X_i + \gamma_1 FE_c + \varphi_1 YEAR_t + \omega_1 \overline{travels_{ij}} + \varepsilon_{1i} \tag{7}$$

$$\overline{travels_{ij}} = \delta_1 + \pi_1 Z_{ij} + \delta_1 R_{jt} + v_{ij} \tag{8}$$

where Z_{ij} is a set of instrument variables in the reduced-form Eq. (8). The same reasoning applies to the outcome equation:

$$tr\_abroad^{*}_{itcj} = \alpha_2 + \beta_2 X_i + \gamma_2 FE_c + \varphi_2 YEAR_t + \omega_2 \overline{tr\_abroad}_{ij} + \varepsilon_{2i} \tag{9}$$

$$\overline{tr\_abroad}_{ij} = \delta_2 + \pi_2 Z_{ij} + \delta_2 R_{jt} + u_{ij} \tag{10}$$

To address the endogeneity of the field variables in each equation, we use as instruments the average sample characteristics per region excluding individual i (i.e. $\bar{X}_{ij} = \frac{1}{n-1}\sum_{i=1}^{n} X_i, \forall i \in j$). The use of this type of identifying instruments follows Powell et al. (2005), Gaviria and Raphael (2001) and Duarte et al. (2014). Although Manski (1993) suggested that the propensity of an individual to behave in certain way might vary with the characteristics of the people in their reference group (*contextual effects*), we assume that individual decisions are not affected by the sociodemographic profile of their neighbours *conditional on their individual characteristics*. This is a common assumption in related studies (Duarte et al., 2014; Gaviria & Raphael, 2001; Powell et al., 2005). Importantly, we specify the same set of variables X_i in the structural Eqs. (7) and (9) as the ones used to construct the

average background characteristics taken as instruments in Z_{it}. As the study by von Hinke et al. (2019) proves, excluding some of the covariates used to construct the instruments would produce inconsistent estimates.

To get clean estimates of the bandwagon effect, we need to remove from the field variables the source of variability that emerges from sharing the same environment (correlated effects). To this end, the reduced-form Eqs. (8) and (10) are expanded with a set of regional characteristics for each period (R_{jt}). The inclusion of this type of information is similar to Norton et al. (1998). Specifically, the regional characteristics R_{jt} include GDP (in logs), household disposable income (in logs), population density and unemployment rate. This information is retrieved for each year and region from Eurostat. Therefore, the bandwagon effect is net of confounding macroeconomic regional effects.

The endogeneity issue is addressed using the control function approach (Wooldridge, 2015). We first estimate Eqs. (8) and (10) by OLS and get the residuals. Subsequently, these residuals are added to Eqs. (4) and (5), respectively (together with the field variable) and the Heckman Probit is estimated by Maximum Likelihood. This method is also known as two-stage residuals inclusion (2SRI). The reader is referred to Terza et al. (2008) for further details. Because the Heckman Probit uses the residuals from Eqs. (8) and (10) rather than the true error terms, the asymptotic sampling variance needs to take this extra source of variation into account. Consistent with Karaca-Mandic and Train (2003), standard errors are bootstrapped for correct inference.

Results

Endogeneity and validity of the instruments

The first part of the analysis consists of addressing the endogeneity of the field variables and the validity of the instruments. Since this cannot be directly examined in the Heckman Probit model, we estimate both Instrumental Linear (2SLS) and Instrumental Probit (IV Probit) regressions for Eqs. (7)–(8) and (9)–(10), separately. The corresponding estimates can be found in Supplementary Material.

Table 2 presents Durbin and Wu-Hausman tests for endogeneity, R-squared and F statistics for first-stage regressions, Sargan and Basman test for overidentifying restrictions for the linear case, and a Wald test of exogeneity for the IV Probit. As seen, $\overline{travels}_{ij}$ is not endogenous in the selection equation according to Durbin, Wu-Hausman and Wald tests. Studies by Norton et al. (1998) and Powell et al. (2005) also report that their peer effects measure does not suffer from endogeneity. By contrast, $\overline{tr\_abroad}_{ij}$ is endogenous in the outcome equation. In both cases, Sargan and Basmann tests indicate that the instruments satisfy the overidentifying conditions. Importantly, the F statistic on the joint significance of the instruments in the first stage exceeds 10, the threshold proposed by Staiger and Stock (1997) for linear IV inference to be reliable.

Although only $\overline{tr\_abroad}_{ij}$ seems to be endogenous in the outcome equation, we apply the control function approach to both equations. By introducing the residuals from the reduced-form equation that conditions on the sociodemographic profile and the macroeconomic characteristics of each region, we capture the bandwagon effect in a cleaner way. Additionally, under the assumption of exogeneity of $\overline{travels}_{ij}$ in the participation equation, the residuals should not have any explanatory power and therefore this could be used as an alternative test of exogeneity (Smith & Blundell, 1986).

Model results

Table 3 presents the coefficient estimates and Average Marginal Effects (AME, in %) of the Heckman Probit for each equation for the variables of interest. The full table with all the coefficients can be found in Supplementary Material, Table A3. In the outcome equation, the AME are *conditional* marginal effects. As indicated above, the residuals from the reduced-form Eqs. (7) and (9) are introduced in both equations, which are jointly estimated by FIML. Standard errors have been bootstrapped after 1000 repetitions. Surprisingly, the error terms of the two equations are not statistically correlated. This implies that there are no selection effects conditional on the vector of explanatory variables.

Starting with the participation equation, the social influence variable aimed at capturing bandwagon effects is positive and statistically significant, in line with Wu et al. (2013). A marginal increase in the share of individuals that plan to take a leisure trip in the region of residence is associated with a 9.9% increase in the probability of travelling at the individual level. Therefore, there is evidence that, ceteris paribus, those who live in regions with greater participation shares are (individually) more likely to travel.

Table 2
Tests for endogeneity and validity of the instruments.

		Selection equation Statistic (p-value)	Outcome equation Statistics (p-value)
2SLS	Durbin	1.78 (0.182)	10.92 (0.001)
	Wu-Hausman	1.77 (0.182)	10.91 (0.001)
	R^2	0.76	0.91
	F	1699.2	346.81
	Sargan	19.47 (0.426)	19.97 (0.396)
	Basmann	19.46 (0.427)	19.95 (0.397)
IV Probit	Wald: $p = 0$	1.78 (0.181)	7.43 (0.006)

Table 3
Coefficient estimates and AME of Heckman Probit regression.

	Participation equation (*travels*)		Outcome equation (*tr_abroad*)	
Explanatory Variables	Coeff. (SE)	AME (%)	Coeff. (SE)	AME (%)
$\overline{travels}$	0.466**	9.945**		
	(0.197)			
*residuals_*$\overline{travels}$	−0.033	−0.693		
	(0.222)			
$\overline{tr\_abroad}$			0.972***	27.150***
			(0.124)	
*residuals_*$\overline{tr\_abroad}$			−0.205**	−5.722**
			(0.092)	
travelled	1.087***	25.486***		
	(0.016)			
travelled_dom			−0.475***	−14.205***
			(0.041)	
travelled_abroad			1.044***	34.095***
			(0.043)	
SocDem controls	YES		YES	
Time fixed effects	YES		YES	
Country Fixed Effects	YES		YES	
Constant	0.524***		0.343***	
	(0.167)		(0.133)	
ρ	−0.087			
	(0.097)			
Log Likelihood	−46,767.61			
Observations	61,590			
Selected	47,400			
Nonselected	14,190			

Bootstrapped standard errors after 1000 replications in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

The residuals from the reduced-form equation are not significant, which is consistent with the Durbin and Wu-Hausman tests reported in Table 2.

We find that having taken a leisure trip in the previous year is associated with 25.5% higher probability of taking a vacation trip. Specifically, the travelling likelihood increases (at a decreasing rate) with the number of trips undertaken in the previous year (+0.43% per additional trip, on average). This is consistent with evidence presented in Alegre et al. (2009) and Boto-García (2022) showing habit formation in tourism by which past participation increases the taste for travelling. We also document that participation decreases with age (−0.42% per year) and if the individual declares that the economic situation has influenced her travel plans (−12.0%). The latter is in line with Alegre et al. (2010), who document that budget constraints are the main barrier to tourism participation. Similarly, living in a rural area is associated with a lower participation likelihood (−2.2%) relative to living in a large city. This matches the results by Boto-García (2022). By contrast, the probability of taking a vacation trip is higher among males (+1.3%) and high-educated individuals (+10%) and increases with the number of household members (+0.84% per person). Finally, the likelihood of taking a vacation trip is significantly lower among unemployed people (−1.4%), with civil servants and students exhibiting the largest participation probabilities relative to inactive individuals (+8.0% and 8.1%, respectively). These results are in line with previous evidence on the determinants of tourism participation (Alegre et al., 2010, 2013; Alegre & Pou, 2004; Eugenio-Martin & Campos-Soria, 2010).

Moving to the outcome equation, the residuals from the reduced-form equation are statistically significant, which highlights the importance of considering the endogeneity of the field variable to avoid inconsistent estimates. A marginal increase in the share of people in the place of residence that travels abroad translates into 27.1% increase in the probability of also travelling outside the country. The magnitude of the social influence is notably larger in this case, which suggests that bandwagon effects are more relevant for explaining destination choice than tourism participation. This result is consistent with Bronner and de Hoog (2018), who show that choosing a foreign country as the vacation destination exhibits the highest identity demonstration score.

Similar to the participation equation, the estimates show that having travelled abroad in the previous year is associated with a 34.1% greater probability of doing it again. By contrast, having travelled domestically in the previous year reduces the probability of travelling abroad by 14.2%. Moreover, the probability of taking an abroad trip also increases (at a decreasing rate) with the number of trips undertaken the previous year (0.06% per trip, on average). All together, these results further reinforce the importance of habit persistence in travel patterns, not only in tourism participation but also on destination choice. Additionally, the taste for international trips is greater among the high-educated (+2.7%), students (+8%) and self-employed (+7.2%) but decreases with age (−0.19% per year) and household size (−0.82% per member). Living in a rural area or a town (relative to a large city) are also associated with a lower probability of taking an international trip (−3.9% and − 1.0%, respectively), in line with Eugenio-Martin and Campos-Soria (2010). Similarly, bad economic circumstances deter abroad travelling (−3.0%). However, we do not detect gender differences in this case. A stepwise estimation with a sequential introduction of the controls is presented in Supplementary Material. LR tests support the need for incorporating the controls in the regression.

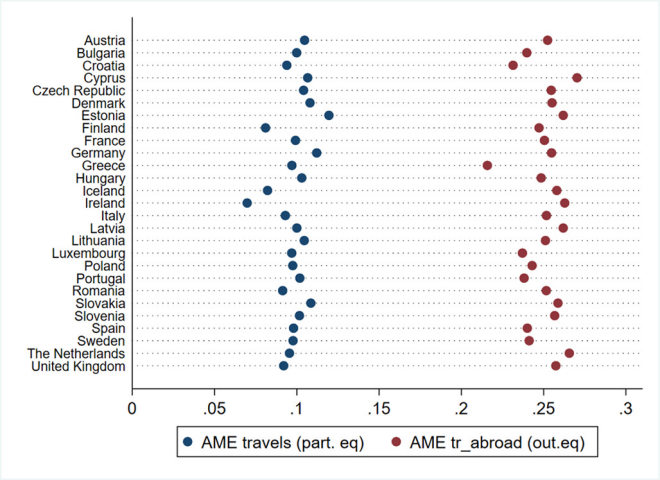

Fig. 4. Average marginal effects (AME) on the participation and outcome equations per country of residence.

Heterogeneous bandwagon effects

To explore heterogeneity in the bandwagon effect, we exploit the non-linearity of the model and compute the AME for the selection equation and the conditional AME for the outcome equation for each country, separately. Fig. 4 represents the AMEs on *travels* and *tr_abroad* for each country. We present the point estimates (in times one) but all of them are statistically significant at 95% confidence level. Belgium is excluded because it acts as the reference category.

There is some variability in the estimated bandwagon effects across European countries. The social influence of abroad travelling appears to be larger in Cyprus (0.270), The Netherlands (0.265) and Ireland (0.263) and quite reduced in Greece (0.216) and Croatia (0.231). Additionally, Estonia is the country with the greatest bandwagon effect for participation (0.119) and Ireland the one with the lowest (0.069).

As a further extension, we classify the countries into four groups: Northern (Denmark, Finland, Sweden, Estonia, Latvia, Lithuania and Iceland), Southern (Spain, Italy, Portugal, Greece and Cyprus), Central (Austria, France, Germany, The Netherlands, Belgium, Luxembourg, United Kingdom and Ireland,) and Eastern (Czech Republic, Poland, Romania, Bulgaria, Croatia, Hungary, Slovenia and Slovakia) countries. Next, we repeat the analysis by country group. The coefficient estimates for the key variables of interest ($\overline{travels}$ and $\overline{tr\_abroad}$) in the participation and outcome equations are shown in Fig. 5. The full estimation results are presented in Table A5 in Supplementary Material.

Consistent with the differences in AME per country presented in Fig. 4, we document that bandwagon effects are heterogeneous across geographic areas. Bandwagon effects in tourism participation mainly hold for Central and Southern countries, being non-different from zero for Eastern and Northern countries. For the abroad versus domestic trip choice, bandwagon effects increase as we move from Southern to Eastern and to Central countries, being non-significant for Northern countries. This highlights that potential cultural differences might also explain observed bandwagon effects.

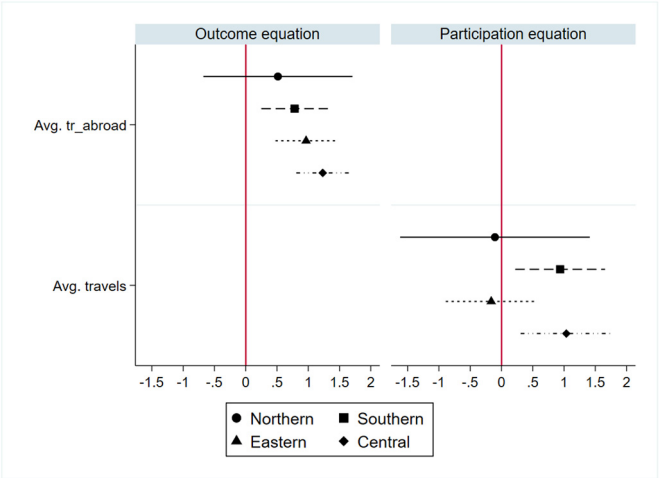

Fig. 5. Coefficient estimates and confidence intervals from separate regressions by country group.

Table 4
Average marginal effects (AME) evaluated at different subsamples of the data.

$\overline{travels}$	AME if *travelled* = *1* 0.068**	AME if *travelled* = *0* 0.145**
$\overline{tr\_abroad}$	AME if *travelled_dom* = *1* 0.285***	AME if *travelled_abroad* = *1* 0.265***

*** $p < 0.01$.
** $p < 0.05$.

Finally, Table 4 presents the AME of the bandwagon effects from Table 3 conditional on whether the individual (i) took a vacation trip the previous year and (ii) if so, travelled domestically or internationally. Interestingly, we document that the magnitude of the social influence effect is in both cases higher for non-participants. In other words, bandwagon effects on travelling propensities (intention to travel abroad) are greater for those who did not travelled in the previous year (travelled domestically). Therefore, the social multiplier effect of others' behaviour on individual tourism participation and destination choice appears to be particularly important for inducing (i) non-tourists to travel and (ii) domestic tourists to travel abroad.

Conclusions

Summary of findings

This paper analyses how individual travelling decisions are affected by the mean travel behaviour of other people living in their region of residence (i.e., bandwagon effects). Since people nowadays like sharing with others experiential purchases through social networks, tourism travel is a leisure activity that is subject to social influence. Unlike other studies that examine *local* social effects in tourists' preferences considering small reference groups (Boley et al., 2018; Liu et al., 2019; Pan et al., 2021), we examine *global* effects in the sense of Brock and Durlauf (2001), according to which individuals fare incentives to conform to the average travel patterns of other people living in the same regional area.

Exploiting survey microdata for more than 60,000 citizens from 28 European countries for the years 2014, 2015 and 2016, our results show that marginal increases in the share of people in the region of residence (NUTS 2) that aim to travel and that plan to travel abroad increase the individual probabilities of also travelling and travelling internationally by 9.9% and 27.1%, on average. This indicates individual choices are indeed affected by others' choices. Consistent with our theoretical background, this likely emerges due to potential conspicuousness, social learning under uncertainty and the need to build a social identity. There is also evidence that bandwagon effects are heterogeneous across countries and geographic areas, which suggests potential cultural differences in consumption cascades. Importantly, social influence is higher among non-travellers in the previous year. Therefore, bandwagon effects appear to be quantitatively larger for inducing non-tourists to travel and domestic tourists to opt for an international destination.

Contribution and implications

The paper makes a relevant contribution to the literature on bandwagon effects. Although there is abundant research on the topic, real-world empirical evidence is scarce. The paper is among the first that credibly test for bandwagon effects and social influence using a large dataset of revealed preferences for 28 European countries. Although we cannot completely rule out omitted confounders, our econometric analysis does a good job at identifying bandwagon effects with precision. We estimate a Heckman Probit in which tourism participation and destination choice are jointly modelled. We construct two field variables capturing participation and abroad travelling shares at NUTS 2 regional level per year. To tackle the reflection problem and the existence of correlated effects, we apply a two-stage approach in which the average background characteristics at the regional level as used as instruments. Some other macroeconomic variables like household disposable income, unemployment rate, GDP and population density are also considered in the reduced-form equation to remove the part of the social influence effect that stems from regional differences. We apply a control function approach by which the residuals from the auxiliary first-stage equations are introduced into the selection and outcome equations as additional controls (Terza et al., 2008). Since we also condition out on sociodemographic characteristics, past travelling habits, and country fixed effects, we provide the first cross-country evidence on the positive influence of others' travel patterns on individual trip choices.

From a theoretical viewpoint, the paper illustrates that social influence is an important determinant of individual travel decisions. Our empirical results add field evidence to the theory of bandwagon effects. Quantitatively, the magnitude of the marginal effects is large compared to other factors like sociodemographic characteristics or past travel habits. This is particularly true for the abroad versus domestic destination choice, which is found to be greatly affected by where other people in the same region travel to. Therefore, studies on travel decisions must start to recognize the non-negligible role played by social influence in shaping individual preferences. The methodology implemented in the paper could be a promising way to consider it in related analyses.

Our findings have practical implications for policy makers and hospitality managers. The “social multiplier” effect documented in European tourism indicates any policy intervention that enhances average tourism participation in a region (e.g., a marketing campaign, travel vouchers) has the power to generate multiplicative effects through bandwagon consumption. In this regard, the fact that bandwagon effects are greater in magnitude among non-participants in the previous year indicates that increases in the

share of people in the region of residence that travels act as a nudge for non-travellers to take a vacation trip. Bandwagon effects in tourism consumption are not only relevant for the recovery of the sector after COVID-19 pandemic but also for the sustainability of tourism activities. Our findings could be extended to tourists' preferences for ecotourism and sustainable practices (Beall et al., 2021).

Limitations and avenues for future research

The work has some limitations. As mentioned before, the definition of the reference group is subject to debate. Future studies should extend our work by considering the social influence of distinct reference groups. Our analysis assumes a directional relationship between social influence and individual choices. Future studies should extend our work using asymmetric modelling (Woodside, 2019). Another flaw is that we cannot ascertain the specific causal mechanism through which bandwagon effects arise, since they appear to be the result of a plethora of factors. In this vein, it would be interesting if we had information about whether individuals use online social networks or talk with friends or mates about travel plans. This is left as an avenue for future research. Moreover, future studies should incorporate into the analysis the role of personality traits (Shayan et al., 2017) or the connection of bandwagon effects in tourism travel with personal well-being and happiness.

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Author contribution

The two authors equally contributed to the content of the work.

CRediT authorship contribution statement

David-Boto-García: Conceptualization, Methodology, Software, Formal analysis, Writing - original draft preparation, Writing – review & editing. **José Baños:** Supervision, Validation, Writing – review & editing.

Declaration of competing interest

The authors have no conflict of interest to state.

Appendix A. Supplementary material

Supplementary material to this article can be found online at https://doi.org/10.1016/j.annals.2022.103366.

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