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Spanish experience in the use of data generated by the private sector with an application to estimation of tourism data[1]

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[1] This contribution was prepared for the conference. The views expressed are those of the authors and do not necessarily reflect the views of the European Central Bank, the Bank of Spain, the BIS, the IFC or the other central banks and institutions represented at the event.

Spanish experience in the use of data generated by the private sector with an application to estimation of tourism data

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Abstract

In Spain, Tourism basic statistics (responsibility of the National Statistical Institute _NSI_ and traditionally based on surveys) are an important input for the compilation of the Travel item of the Balance of Payments (BOP) (responsibility of the Bank of Spain _BoS_). In recent years, due to the challenges associated with the collection of data from persons, especially during the COVID-19 pandemic, both statistics/agencies have explored the access to data generated by private sector using two different approaches: based on either a specific arrangement or taking advantage of a regulatory framework. In this article, we describe the Spanish experience in the use of two of these new data: mobile phones positioning and payment card data.

NSI Spain uses mobile phone positioning data and bank card transactions as auxiliary information to tourism surveys with the objective of improving the geographical breakdown of tourism expenditure (both inbound and outbound). The use of these sources of information allows obtaining new products with a granularity in terms of origin/destination of tourists that would be impossible to achieve using traditional techniques, without increasing the cost of the statistics and the burden on the informant. Nonetheless, it poses some challenges in terms of quality assurance and sustainable access. The results are published as experimental statistics, but the ultimate aim is to integrate them with traditional tourism surveys.

Connecting with the use of bank card transactions, at present, BoS (as well as other National Central Banks in the euro area), is exploring the use of the information on card payments collected in virtue of the European Central Bank Regulation on Payments statistics 2020/2011. This regulation is addressed to Payment Service Providers (PSPs) and introduces new requirements with the aim of improving the quality of the data used for compilation of the trade in goods and services in BOP. An essential feature of the new card data is the information on Merchant Category Codes (MCC), which classify a business by the type of goods or services produced. Moreover, the regulation provides an extensive geographical breakdown by country of terminal of the transaction. In the article, we will also describe the main results of the analysis carried out so far paying attention to its potentialities and limitations specifically focused on the estimation of Travel debits.

Contents

1. Introduction

External statistics have always been crucial to monitor the health of open economies. In the current globalised system, boosted by digitalisation and by the high speed and huge magnitude and complexity of financial flows, good and timely external statistics are even more crucial.

In this context, in order to fulfil the user's requirements of information (in terms of timeliness and granularity) it is increasing relevant to make use of new data sources and to promote the sharing of information among statistical agencies at national level and among countries. As the recent COVID pandemic has shown, this has been especially relevant in the estimation of Tourism data.

In Spain, Tourism basic statistics are responsibility of the National Statistical Institute _NSI_ while the Travel item of the Balance of Payments (BOP) is responsibility of the Bank of Spain _BoS_. Tourism basic statistics are traditionally based on surveys and at the same time consist of the main input for the compilation of the credits of the Travel item of the BOP. Travel BOP debits mainly rely in credit card data in combination with NSI operations. The aim of this article is to describe NSI and BoS experience in the use of two new data sources for the estimation of Tourism data: mobile phones data and card payments data.

As concerns NSI, it is making a considerable effort to produce some experimental statistics in the field of tourism that rely on data of different nature: obtained through web scraping techniques, bank card data and mobile phone data, among others. In the first part of the article, we present the main features of the experimental statistics elaborated by NSI for measuring trips made by foreign tourists in Spain using data from mobile phone networks. The main goal of this project has been to produce and publish data about movements of non-resident visitors with a more detailed level of geographical granularity than the inbound border survey (FRONTUR) and to improve its timeliness. The article presents the methodology followed to adapt mobile phone data into concepts in the field of tourism statistics, and the dissemination in the NSI web page.

In relation to BoS, in the second part of the article we present the main features of the card payments data collected by this institution, both in virtue of a national agreement with a card scheme and also of the European Central Bank Regulation on Payments statistics 2020/2011. This regulation is addressed to Payment Service Providers (PSPs) and collects information on card payments with cards issued by resident PSPs. The main strengths and limitations of card data for the estimation of BOP Travel debits are highlighted, and a project of experimental statistics that BoS plans to publish based on the data from the regulation is described. In spite of certain limitations, the information included in the regulation on the Merchant category codes (MCCs) represents an important progress to improve the quality of the estimation of Travel in BOP. A conclusion from our analysis is that the cooperation among statistical institutions (at national and international level) and the contact with declarants will be essential to achieve a better use of this data.

2. Measuring tourism flows using data from mobile phone networks

2.1 Information available at NSI

According to the Spanish Tourism Satellite Account of Spain in 2019, before the pandemic, tourism accounted for 12.6% of GDP and generated 12.7% of total employment. Given the importance of this sector, not only as a generator of wealth, but also as an element favouring the economic and social development of regions, it is essential to have a tourism statistics system that provides quality, disaggregated and timely information.

NSI Spain disseminates information for the knowledge of this area, based on traditional surveys:

- From the supply side: Tourist Accommodation Occupancy Surveys[1].
- From the demand side: to measure inbound tourism and its expenditure (FRONTUR and EGATUR[2]), and domestic tourism (both internal and outbound) with the Resident Tourism Survey[3].
- General business and employment surveys, both short-term and structural.
- To synthesise all this information, the Tourism Satellite Account is compiled.

For the compilation of all these statistics, the manuals, and recommendations of the UNWTO[4] and Eurostat[5] are followed.

In the current context of an increasingly digitalised society, and with a growing number of public and private organisations that have new data sources, NSIs are working to be able to use them in the production of official statistics. The general objective is to improve the granularity and timeliness of the statistics, without losing quality and preserving the confidentiality of the data used.

[1] As an example, Hotel Occupancy Survey:

https://www.ine.es/dyngs/INEbase/en/operacion.htm?c=Estadistica_C&cid=1254736177015&menu=ultiDatos&idp=1254735576863

[2] FRONTUR:

https://www.ine.es/dyngs/INEbase/en/operacion.htm?c=Estadistica_C&cid=1254736176996&menu=metodologia&idp=1254735576863

EGATUR:

https://www.ine.es/dyngs/INEbase/en/operacion.htm?c=Estadistica_C&cid=1254736177002&menu=metodologia&idp=1254735576863

[3] Resident Travel Survey:

https://www.ine.es/dyngs/INEbase/en/operacion.htm?c=Estadistica_C&cid=1254736176990&menu=ultiDatos&idp=1254735576863

[4] https://www.unwto.org/tourism-statistics/on-basic-tourism-statistics-irts-2008

https://www.unwto.org/tourism-statistics/on-economic-contribution-of-tourism-tsa-2008

[5] https://ec.europa.eu/eurostat/web/products-manuals-and-guidelines/-/ks-gq-14-013

In the field of tourism, several experimental statistics are being carried out at NSI Spain[6]:

- Measurement of the number of tourist dwellings in Spain and their capacity: information obtained with webscraping techniques.
- Estimation of occupancy in tourist accommodation using data from digital platforms: in collaboration with Eurostat, which in turn has an agreement with the main accommodation platforms in Europe.
- Foreign visitor expenditure on their visits to Spain: using information on transactions made in Spain with foreign bank cards.
- Distribution of resident expenditure on their visits abroad by country of destination: using information on transactions made abroad with bank cards issued by Spanish banks.
- Measurement of tourism flows based on the position of mobile phones: estimation of outbound, inbound and domestic tourism flows.

  It is this last experimental statistic that will be explained in greater detail below.

The complexity of the positioning data captured by a mobile phone antenna, their transformation to adapt them to the definitions of the field of tourism and the processing necessary to obtain a set of aggregated data that allows statistical processes to be applied, has involved the development of a series of algorithms. These algorithms have been developed by each of the mobile telephone operators participating in this project, with continuous interaction on the part of NSI Spain. Since the beginning of this project at the end of 2020, NSI Spain and each operator have worked together, analysing the results, detecting systematic differences and obtaining conclusions, until a set of algorithms has been constructed that convert the positioning data into variables that follow international definitions for measuring tourist flows.

2.1.1 Mobile network information available at NSI

All the data used in this project are generated by the mobile networks of the mobile telephone operators. These networks consist mainly of mobile devices with SIM cards and the antennas with which they communicate.

The location of mobile phones is estimated from the mobile phone antennas. This implies that the location of a mobile phone is not established with complete accuracy, and the error depends on the concentration of mobile antennas (more accurate the higher the concentration of antennas).

The information on the location of the phones is anonymised and processed by each company, with the NSI receiving only aggregated and tabulated data, and not having access at any time to individual records of any element of the mobile network.

[6] The methodologies and figures can be found here:

https://www.ine.es/en/experimental/experimental_en.htm

The basis of this project is formed by the network events generated by the communication between mobile devices and antennas:

- Mobile devices (switched on and in coverage) communicate continuously with the antennas to which they are connected.
- Each antenna is assigned a theoretical geographical coverage area or cell. All mobile devices physically located in a cell connect to that antenna. The coverage area of a cell varies widely (from a few hundred metres to several kilometres), depending on the density of the network in an area. Thus the density is higher in urban areas than in rural or sparsely populated areas.

Network events are classified into the following two types:

- Active events: when a call is made or received, a text message, an email is received, an app is used or updated, web pages are browsed, or the device is turned on or off. In addition, when the device is active and moves, it generates records in the antennas to which it is connected, leaving a record of its new location.
- Passive events: these are generated when the device is switched on and moving but no action is being performed.

For the global project to measure both domestic and inbound tourism flows, the following will be considered:

- Domestic tourism: events generated by mobile devices that are customers of an operator and their connections to the operator's network.
- Outbound tourism: mobile devices that are customers of an operator and connect to mobile networks outside the country.
- Inbound tourism: mobile devices of international operators that connect to the network of Spanish companies.

As the methodologies are similar and in order not to make this document repetitive and extensive mentioning similar concepts or processes, we are going to focus on inbound tourism, i.e., the measurement of trips made by foreign tourists in Spain.

2.2 The use of mobile phone data at NSI: experimental statistics complementary to tourism basic statistics

2.2.1 Main objective

The main objective of this project is to produce and publish data about movements of non-resident visitors with a more detailed level of geographical granularity than FRONTUR and to improve its timeliness.

The improvements achieved by using this source of information in the field of inbound tourism include the following:

- The set of individuals on which the operators have information is much larger than the FRONTUR sample. Considering that most of the population has a mobile phone and that the main operators have around a 25% market each, the

coverage of each of them exceeds by far the FRONTUR sample size by far, and therefore the estimate of trips that they can make through their algorithms is much more accurate.

- By having a much larger number of individuals for whom information on their journeys is available, the geographical disaggregation that can be provided is much broader. Currently, the information provided in FRONTUR is at Autonomous Community level. With this project, it is extended to the municipal level.
- In terms of timeliness, the NSI Spain publishes the results of FRONTUR for a reference month, some 30-35 days after the end of it. It is under analysis whether in the medium term an advance estimate could be given using this source of information.
- On the other hand, FRONTUR provides monthly information for a reduced list of source countries. With this experimental statistic monthly information can be provided for the complete list of countries (if there are data for a minimum number of trips, to keep confidentiality).
- A frequent problem with this survey is a large variability when disaggregated geographically. This is due to the small sample sizes at certain levels of disaggregation. Using the information from mobile phones, more accurate and robust rates of variation are obtained when disaggregated by either trip destination or country of origin.

The objective of this operation, in the short term, is to provide a rapid and highly detailed estimate of the number of foreign tourists visiting Spain based on innovative sources and processes, which can be used to complement the estimates provided by FRONTUR.

In the medium term, an integration of both operations will be pursued, thus combining the speed and granularity of the former with the detail of the characteristics of tourists' trips (purpose of the trip, type of accommodation, etc.) provided by the second.

Before explaining the methodology of this statistical operation, a summary of strengths and limitations of this new source of information is presented:

Table 1. Strengths and limitations of using positioning mobile phone data

Strengths	Limitations
High granularity	Access to information conditional on contracts
Improved timeliness and punctuality (specially for internal and outbound tourism)	Adaptation of network information to statistical definitions
Large coverage on population	Lack of information on other important variables
No respondent burden	Changes in technology affect data

2.2.2 Methodology

Main characteristics

These are the main characteristic of this statistic:

- POPULATION SCOPE: The target population consists of mobile telephony users from other countries using the networks of the operators participating in this project. And the target population includes non-residents visiting Spain.
- SCOPE OF THE STUDY: The scope of the study is non-resident tourists travelling to Spain.
- GEOGRAPHICAL SCOPE: Trips made by non-resident tourists in Spain are analysed.
- TIME SCOPE: The study period for which results will be obtained is the month. Information is available from July 2019.
- STUDY VARIABLES AND CLASSIFICATION: The study variables are the number of tourists, overnight stays and average duration of the trip. The classification variables are: Autonomous Community, province and municipality, for the main destination of the trips, and country of origin.

Basic concepts

For the development of this project, FRONTUR's definitions and concepts, which follow international methodologies and standards, have been adjusted and adapted to the information available to mobile telephone operators and their networks.

Definitions of the most relevant concepts within the scope of tourism statistics and mobile networks are included in the table below.

Table 2. Definitions in tourism statistic and mobile network fields

Concept	Tourism Statistics	Mobile Networks
Tourism trip and tourist	All journeys with a main destination outside the person's place of usual residence, involving an overnight stay away from the place of usual residence and lasting less than one year, considering that the main purpose of the trip, including business, leisure or other personal reasons, other than employment in an enterprise established in the place visited. In the case of inbound tourism, the persons reside abroad, and the destination of their trip is in Spain.	A mobile phone non-resident in Spain is considered to have crossed the entry border to a geographical location in Spain, when the mobile has been detected in Spain between 22:00 and 6:00 on a given day D of the month under observation, and furthermore the mobile has continued to be detected in Spain after 6:00. The journey ends the day on which the mobile is not detected in Spain between 22:00 and 6:00, having been detected in Spain in the hours before 22:00.

	They are round trips and end when the person leaves our country. A tourist is any person who makes a tourism trip. In the field of inbound tourism, a person who travels several times to Spain in the same month will be counted as many times as he/she travels. In other words, if a French person comes to Spain three times in the month of April, he/she will count as three French tourists.	
Overnight stay	Generically, it corresponds to the number of consecutive nights that a person overnight stay in Spain as part of a trip.	In inbound tourism, a mobile phone resident in country B, other than Spain, is considered to have stayed overnight in Spain when a day D has been detected in Spain continuously between 22:00 and 6:00. The number of overnight stays during the journey of a non-resident shall be determined as the number of consecutive nights that the mobile has been detected in Spain continuously between 22:00 and 6:00.
Main trip destination	The destination where the most time has been spent, measured in number of overnight stays.	The main destination of a trip for a non-resident mobile phone in Spain is that geographical location within the national territory where the most time was spent, measured in number of overnight stays, i.e. the place where the mobile has spent the highest number of overnight stays. Given that a given day is considered to have been spent in a given place when the mobile phone has been detected continuously at that location between 22:00 and 6:00, the main destination is the place where the mobile phone has

	been detected in that time slot for the most days.

Although these definitions could be found simple, there are a list of situations which the mobile phones are not detected by antennas for a while. For all those situations NSI Spain and each operator work together to find solutions and design the correct algorithm to calculate an accurate estimation.

Data collection

NSI Spain receives tabulated and aggregated data prepared by each operator. It is important to stress the fact that NSI Spain does not have individual device information at any time. It only receives the aggregated information provided by the mobile telephone operators.

For each month, operators send files including number of tourist and overnight stays, by country of origin, and by Autonomous Community, province and municipality of destination.

We always work on the premise that the data on the breakdowns requested are provided for those that have enough observations associated with them. Otherwise, they are aggregated into 'rest' categories.

Data processing

PROCESSING DATA FROM OPERATORS

The files that mobile telephone operators send monthly to the NSI detail the number of tourists and overnight stays by Autonomous Community, province and municipality of destination made by non-resident tourists in Spain, including the country of origin.

The NSI carries out a prior filtering of the same, to adapt their format before processing the information they contain.

ESTIMATION OF TOTALS BY PROVINCE-COUNTRY

For the estimation of tourists, the information supplied by the three operators is integrated, at provincial and country of origin level, to take into account all roaming agreements and coverage provided by the three operators to mobile telephony users of foreign companies in Spain.

The information from the three operators is cross-checked internally to ensure that the results obtained are congruent and consistent.

The criteria adopted for the final estimate of the number of trips by province and country are also applied to the estimate of overnight stays.

ESTIMATES BY REGION AND MUNICIPALITY

Once the trips and overnight stays by province-country have been calculated, the results by Autonomous Community-country, national total-country are calculated by adding the corresponding province-country data.

For the calculation of the estimates by municipality, a percentage distribution of the data by province-country is carried out.

1. For each operator and for each province-country crossing, the percentage of trips made in each municipality is calculated.
2. For each province-country junction, the average of the three percentage structures obtained in the previous point is calculated.
3. Adjustments are made so that the total sum of the percentage structure is 100.
4. The percentages obtained are applied to the trip estimates for that province-country crossing.

The same apportionment method is used for overnight stays.

The final estimates obtained are checked against auxiliary sources which are used to validate and refine the results.

Data publication

The variables to be published are:

- Number of tourists
- Number of overnight stays.
- Average duration of trips.

The classification variables are:

- Geographical - Destination of the trip: national, Autonomous Communities, provinces and municipalities.
- Geographical - Origin of the trip: continent, countries.

The following tables are published monthly:

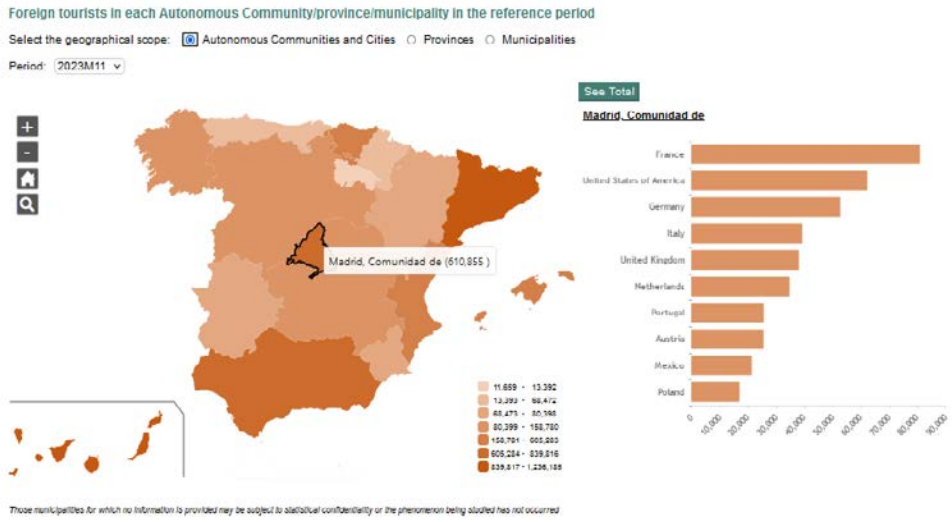
- No. of tourists, overnight stays and average duration per month by continent and country of residence.
- No. of tourists, overnight stays and average duration per month by Autonomous Community of main destination, broken down by continent and country of residence.
- No. of tourists, overnight stays and average duration per month by province of main destination, broken down by continent and country of residence.
- Monthly Excel file with the data of tourists by municipality of main destination, broken down by continent and country of residence.

The publication is completed by the following infographics:

- World map, marking by colours according to value ranges, the number of tourists by country of residence.

A similar map, putting the focus at continent level is also available. Moreover, placing the cursor on a country, the data for the last month is displayed and on one side you can see a graph with the available monthly series.

– Maps by Autonomous Community: marking by colour according to the range of values, the number of tourists whose main destination of their trips has been each autonomous community. Selecting a specific community, a graph is displayed with the number of tourists broken down by country of residence in the selected community.



Similar maps at province and municipal level are also available.

It is important to underline, again, that confidentiality is one of the important pillars of this project. Those crossings origin-destination with less than 30 tourists are hidden.

All those maps, the data series, and methodological documents for inbound tourism, but also for outbound and domestic tourism can be consulted here:

https://www.ine.es/experimental/turismo_moviles/experimental_turismo_moviles.htm?L=1

2.2.3 Description of the results

The results of the official statistics are now published and these experimental statistics on the number of tourists and trips provide different results. This is done to point out the differences in the data using different sources. These differences do not follow a constant pattern. There are months in which FRONTUR provides a higher number of tourists, and in others a lower number of tourists than that provided by the mobile phones. These differences will disappear when both sources are integrated.

The level of detail provided by the mobiles, at the level of countries of origin and municipality of destination (in the case of inbound tourism) was what prompted the publication of the results of the experimental statistics, although at an aggregate level the results were different.

2.2.4 Next steps

So far, the actions carried out with the data provided by the mobile phone operators have been explained. But there are still many steps to be taken to achieve the integration of this source of information with traditional surveys, which are necessary to obtain the variables that characterise trips.

- Estimation of excursions using this new source of information.
- Estimation of trip stages and not only the main destination of trips.
- To be able to estimate the number of tourist trips made by residents within their province of residence.

The use of new information sources in the field of official statistics is already a reality, but their use must be guided by the principles of the European Statistics Code of Practice.

3 Card payments data for BOP Purposes

3.1 Information available at BoS

As it was mentioned above, NSI is currently using card payments data for the elaboration of an experimental statistics on the distribution of the expenditure made by foreign visitors on visits to Spain. In this section we describe the experience in the use of card data by BoS oriented to the estimation of BOP Travel debits.

3.1.1 Data provided on the basis of a national agreement

At present, the Payment Systems Department of BoS (PAY) provides data to the Statistics Department (STAT) referred to transactions settled with bank cards issued against accounts in Spain. These data are reported by the society Sistema de Tarjetas y Medios de Pago S.A (STMP) on a voluntary basis in virtue of a national agreement. STMP shareholding consists of banks and other payment services providers (PSPs) to

whom STMP offers regulatory compliance, business intelligence and fraud prevention. More specifically, STMP reports monthly and quarterly payments data broken down by the channel of the transaction: Automated Teller Machines (ATMs), Point of Sale Terminals (PSTs) (non-remote) and e-commerce (remote[7]). In addition, quarterly data inform about the counterpart area of the transactions specifying: Euro Zone, European Union, European Free Trade Area and Rest of the world. For non-remote transactions (withdrawals and payments in PST) the geographical information refers to the area where the ATM or PST is located. For remoted transactions, the geographical breakdown refers to the area where the business center is located (with independence of the location of the terminal). The timeliness of the data is approximately 30 days after the reference period for monthly data and 75 days in the case of quarterly data.

3.1.2 Data provided in virtue of EU-ECB Regulation

Since April 2022, STAT has started to directly collect data[8] referred to the EU Regulation 2020/2011 of the European Central Bank (ECB regulation from now on) that amends Regulation (EU) No 1409/2013 on payments statistics. In particular, the information included in Table 9[9] of the Regulation, "Quarterly reporting of payment transactions involving non-MFIs", which is reported by the resident issuing PSPs. It covers domestic and cross-border payments transactions[10] specifying: bank transfers, direct debits, card based payments transactions, e-money payments and cheques. As concerns card payments, the data include transactions with cards issued by resident PSPs (except cards with an e-money function only)[11] regardless of the location of the payment brand under which the payment transaction has been made[12]. The Table details those payments initiated electronically[13], which are further broken down into

7 In addition to transactions carried out through internet they also include transactions carried out through mail or phone.

8 In the Spanish case, the Balance of Payments Divisions is also responsible of the delivery of the data to ECB.

9 In addition, there is some information that can be exploited for BOP compilation collected in semiannual frequency in Table 6 Payment transactions per type of terminal involving non-MFIs.

10 It follows Article 2(8) of Regulation (EU) 2015/751 in virtue of which a cross-border payment transaction means a card-based payment transaction where the issuer and the acquirer are located in different Member States or where the card-based payment instrument is issued by an issuer located in a Member State different from that of the point of sale. In addition, Article 2(9) of the same regulation establishes that a domestic payment transaction means any card-based payment transaction which is not a cross-border payment transaction.

11 It doesn't cover payments carried out using other methods of payment as PayPal, N26 or Revolut. In the case of Revolute transactions, the code 6012 - Financial Institutions – Merchandise, Services, and Debt Repayment includes the recharge of the Revolut card that may refer to Travel related payments, but also to payments of other nature carried out in the home country or in the country of visit.

12 The PSP acquirer of the transaction may be resident or non-resident while in the data reported nationally the acquirer is a non-resident PSP.

13 Card-based payment transactions which are initiated at an EFTPOS, ATM or other physical terminal that allows electronic payment initiation or remotely by electronic means of information transmission

initiated remotely[14] and initiated non-remotely. In both cases (remote and non-remote), the merchant category code (MCC)[15] is reported when available. Moreover, cross-border card payments initiated remotely are reported to identify the country in which the point of sale is located, while cross-border card payments initiated non-remotely are reported to identify the country in which the physical terminal is located[16]. The timeliness of data is 30 days after the end of the quarter of reference. In table 3 we specify the main differences between the data provided on the basis of a national agreement and this dataset.

Table 3. Comparison national vs EU-ECB Regulation card payments data

	Data collected on the basis of a national agreement	Data collected in virtue of ECB regulation
Mandatory	NO	YES
Internationally harmonized	NO	YES
Data provider	Central scheme STMP (to PAY Department)	Resident issuing PSPs (to STAT Department)
Frequency	Monthly Quarterly	Quarterly
Timeliness	M+30d Q+75d	Q+30d
Geographical breakdown	Euro area, EU, EFTA, Rest of the world	Individual country (Geo 6)
Breakdown available:		
-ATM withdrawals	YES	NO
-PSTs non-remote	YES	YES
-PSTs remote	YES	YES
-Merchant category code	NO	YES

[14] It applies Article 4(6) of Directive (EU) 2015/2366 that establishes that remote payment transactions are those initiated via internet or through a device that can be used for distance communication.

[15] A four-digit number (listed in ISO 18245) for retail financial services that is used to classify the business by the type of goods or services it provides. The list covers 339 MCC codes specified in the technical application of BoS Circular 2/2022 available at the site https://www.bde.es/webbe/en/estadisticas/temas/sistemas-pago.html.

[16] It corresponds to a list Geo 6 of 239 geographical codes available in the auxiliary tables of the technical application of BoS Circular 2/2022.

3.2 The use of card payments data in BoS

3.2.1 The estimation of BOP Travel debits

Since the year 2002, when the euro was physically introduced, as a result of the consequent loss of information on the exchange of banknotes (a key feature of the procedure used until then), the procedure for estimating the BOP Travel debits[17] has used, to a lesser or greater extent, information on card payments. At the beginning, year on year evolution rates of bank cards and transfers were used in combination with the information still available on the weight of each mean of payment in the total of Travel related transactions. At present, in the absence of updated information on the importance of each mean of payment, card payments year on year evolution rates are still used in combination with other data sources.

More specifically, we use the monthly and quarterly data provided by PAY to calculate a Travel related aggregate vis a vis the rest of the world (with no geo breakdown) as the sum of: a) ATM withdrawals, b) non-remote payments and; c) part of the remote ones. In order to estimate the part of the remote payments that corresponds to Travel transactions, we use data published by the National Commission of Markets and Competition on the breakdown of e-commerce by activity sector (in particular, we select as touristic the following activities: Travel agencies and tour operators, Hotel and similar accommodation establishments-hotels, motels and resorts, automobile rental agencies and artistical, sport and recreational shows). The yearly evolution of that Travel related aggregate is used to estimate Travel BOP debits in levels extrapolating historical BOP data. In addition, the results of the NSI's Residents' travel survey (ETR)[18] and "mirror" data (travel credits published by the main counterpart countries) are used to estimate the geographical breakdown of BOP Travel debits. Finally, in accordance with international methodological guidelines, imputed consumption of rental services during the length of the stay are also recorded for Spanish resident owners of real estate located abroad[19].

A very important limitation of the Spanish method is that the year on year evolution rates of BOP debits could be distorted due to differences over the time in the prevalence of cards as mean of payment. In addition, the geographical breakdown

[17] As it is indicated in the sixth edition of IMF BOP manual (par 10.86), travel debits cover goods and services for own use or to give away acquired from other economies by residents during visits to these other economies. This heading doesn't include the expenses in international transportation that are registered in the heading of passenger transport services.

[18] The ETR is a continuous survey designed principally to provide monthly, quarterly and annual estimates of travel by the population of residents in Spain and its main features (destination, duration, reason, accommodation, means of transport, expenditure, sociodemographic characteristics of travellers, etc.). This survey gives continuity to the statistic of Spanish Residents' Domestic and Foreign Travel (FAMILITUR), with results from February 2015 onwards.

[19] The estimates of such imputed payments are made by the NSI in relation to the National Accounts and combine information on overnight stays of travellers in their own home, average size of homes and average rental expenses in secondary homes. The information sources for payments are the ETR and the Household budget survey (EPF, by its Spanish abbreviation) corrected against the purchasing power parity index of the main counterpart countries and the consumer price index, and data obtained from the population and housing census and the Continuous household survey (ECH).

of the ETR doesn't allow to publish a detail breakdown due to insufficient sample size in the survey.

3.2.2 Potential use of the new data collected on the basis of EU-ECB Regulation

Besides the current use of card payments for the estimation of BOP Travel debits, at present we are exploring how to take advantage of the new information collected in virtue of ECB Regulation 2020/2011. The objective is to disseminate new experimental statistics complementary to BOP Travel debits.

The most relevant feature of the new data is the information on the merchant category code (MCC) both for remote and non-remote transactions. As it is mentioned above, the MCCs describe the economic activity of the merchant. Initially MCCs were formed following ISIC[20] - the UN classification on economic activity[21].

Though the MCC may not provide an accurate description of the products acquired, it enables obtaining a breakdown into goods and services very useful for identifying those in principle typically related to trips abroad. Furthermore, MCC is also helpful for isolating goods and services that can be digitally delivered[22] and therefore can provide a powerful basis for estimating households imports related to digital trade (goods and services _touristic and non-touristic). Besides that, the new card payments data offer a very detailed geographical information by individual country difficult to cover with other type of data collection systems such as surveys.

In section 3.3 below detailed information is provided on the method that we plan to follow in order to produce these new statistics.

3.2.3 Strengths and limitations of using card payments data for BOP Travel purposes

Both as regards the current use and the plans for the future, before entering into next section, it is worth highlighting the strengths and limitations of using card payments data for BOP purposes. The main strengths of using card payments data in comparison to other data sources used for BOP purposes are: a) low cost of compilation, b) adequate frequency and timeliness and c) high sustainability (especially relevant in the Covid period). In spite of these strengths, the use of card transactions also presents strong limitations. Among others, three can be noted. The first one, is that it only covers transactions paid for by card; purchases by other means are excluded. The second one is that it requires assuming that the country of residence of the cardholder coincides with the one of residence of the card issuer.

[20] The International Standard Industrial Classification of All Economic Activities (ISIC).

[21] The MCCs are maintained by ISO 18245 and are used by payment card institutions, for example, MasterCard and Visa, in order to classify the transactions carried out. MCCs are assigned, by the bank or financial institution processing the debit/credit card payments on behalf of the merchant, although it is not mandatory for them to follow and in some cases the list is not enough updated.

[22] According to the Handbook on Measuring Digital Trade (2023), digitally delivered trade is defined as: "all international trade transactions that are delivered remotely over computer networks".

The third one, is that there may be a difference between the period in which the payment is carried out and the period in which the consumption takes place. Finally, additional distortions can be mentioned due to: a) the merchant location of corporate groups (for example, a multinational merchant could use its principal place of business) and b) due to the presence of transactions routed through Digital intermediation platforms (DIPs), some assumptions are needed to separate the intermediation fee from the good or service intermediated and furthermore, the intermediated good or service may or may not be imported.

Table 4. Strengths and limitations of using card payments data

Strengths	Limitations
Low cost of compilation	Only covers transactions paid for by card
Adequate frequency and timeliness	The country of residence of the cardholder may be different from the country of issuance
High granularity	The period in which the payment is carried out may be different from the period in which the consumption takes place
High sustainability	The location information can reflect corporate structures and other distorting factors rather than geographical reality
Breakdown into goods and services may be possible based on MCCs	Transactions routed through DIPs require valuation and geographical adjustments
Homogeneous dataset across countries	The product breakdown based on MCCs likely to be inexact

3.3 New experimental statistics complementary to BOP Travel debits

Taking advantage of the new information available collected on the basis of the EU Regulation 2020/2011 of the ECB, we plan to disseminate data on card payments abroad that could be in principle related to the consumption of travellers broken-down by MCC (groupings) and country (individual). In the next sections we describe the main features of the methodology applied to the data and the results that we have obtained.

3.3.1. Methodology

Selection of MCC codes

For the purpose of the estimation of those purchases that in principle could be related to the Travel item of the BOP a selection of MCC is necessary.

In this sense, the Travel Workshop group (TWS)[23] has carried out an analysis of the MCC that according to their definition[24] should be considered Travel related. The objective of the group is to define a selection of codes Travel related that may serve as reference for compilers[25]. For the analysis described in this article we base on a first selection of MCC carried out in the framework of TWS[26]. In general, most of the MCC in non-remote payments are considered related to Travel but in the case of remote payments the inclusion of some categories is more doubtful, and a discussion based on theoretical/practical aspects was necessary.

More specifically, the following adjustments can be mentioned:

a. MCCs to be excluded always:

– Likely to be business to business services (B2B): Management, consulting and public relations services, advertising services, stenographic and secretarial support services, etc. To be recorded under Other non-touristic services headings in BOP

– Corresponding to goods and services that can be digitally delivered: digital goods media books, movies, music, games, applications, betting and gambling, etc. To be recorded under the BOP headings of Goods or Other non-touristic services.

– Referred to high value and durable goods: precious stones and metals, watches and jewelry, durable goods — not elsewhere classified, etc. In theory only transactions below the customs thresholds should be included under the Travel heading (under Goods if above the threshold). From a practical point of view, given the difficulty to isolate that amounts, the recommendation is to exclude these codes in all cases.

– Related to contracted services that could be linked to second residencies: general contractors — residential and commercial, carpentry and electrical contractors, etc. To be recorded under Other non-touristic services or in Direct investment depending on the amounts.

– Transportation services likely to be international: airlines and air carriers (not elsewhere classified), motor freight carriers and trucking — local and long distance, etc. To be recorded under Transport services.

– Referred to transfers and remittances: wire transfers and money orders, money send intra and inter country, etc. To be recoded under Secondary income, Capital account or Financial account.

[23] The WS Travel brings together a set of compilers from European countries together with international organizations and has investigated different issues related to the question of the integration of the ECB regulation data in BOP compilation. Several subgroups have worked with the objective of elaborating guidance notes to analyze different aspects related to the integration of the ECB regulation data in the estimation of Travel in BOP. In particular, five guidance notes were elaborated covering the topics: Merchant Category Codes, Integration of Payment Statistics and other sources, Accrual Principle, Travel Agencies Intermediation and Residence Issues (case of use approach).

[24] As a reference we consider the document Visa Merchant Data Standard Manual (2023).

[25] Every country can adapt the list taking into account their own specific features.

[26] The work of the WS in relation to the suggested list of Travel related MCCs is still in progress.

b. MCCs to be excluded only for remote transactions:

– Clothing and shoes stores: men's and women's clothing shops, furriers and fur shops, children's and infants' wear shops, etc. To be recoded under Goods.

– Health and education codes: doctors and physicians, nursing and personal care facilities, hospitals, correspondence schools, etc. To be recorded under Other non-touristic services.

– Referred to miscellaneous stores: groceries and supermarket, department stores, etc. To be recorded under Goods.

– Transportation services likely to be local/domestic: bus Lines, railways, etc.

Travel agencies and tour operator's specific adjustments

In the case of Travel agencies and tour operators (4722), apart from accommodation, the payments may include international transportation and fees. In order to filter out the amounts not corresponding to travel, we use information obtained from the ETR and from a specific module on Tour operators (TTOO). More specifically the weight of transport in the total expenditure of Spanish residents in domestic and international trips[27] and the weight of fees in touristic packages total expenditure are supposed to be booked with a Travel agency.

Digital intermediation (DIPs) geographical re-allocation

For transactions channelled through DIPs (like Booking or Airbnb), the geographical allocation corresponds to the country where the business of the platform is sited. This means that, on the one hand, the payments could be including transactions linked to trips carried out in Spain, and on the other hand, that the geographical allocation of the "genuine" cross-border transactions could be distorted. This is especially relevant (although not exclusively) in the case of the MCCs: Lodging, hotels, motels and resorts (MCC 7011), Travel agencies and tour operators (MCC 4722) and Theatrical producers (except motion pictures) (MCC 7922). These codes mainly concentrate their amounts in countries of terminals Netherlands, United Kingdom and Luxembourg (where the online operators that provide these services internationally are located).

With the objective of correcting the amounts registered in those codes, we adopt the following approach. We estimate the part corresponding to transactions related to trips carried out in Spain booked by Spanish residents through online platforms using information from the Tourist Resident Survey (ETR) on the percentage that represent the tourist expenditure by those visitors in domestic trips in Spain in the total tourist expenditure in domestic and cross-border trips. Once deducted that amount, we distribute the rest of the payments ("genuine" cross-border) by country using the geographical breakdown of the amounts registered in the code Lodging, hotels, motels and resorts (MCC 7011) for non-remote payments[28]. This geographical

[27] We consider the total expenditure for the adjustment since the code includes trips to domestic and international destinations booked using DIPs.

[28] Other alternatives explored were the geographical breakdown of guest nights spent at short-stay accommodation offered via collaborative economy platforms from the experimental statistics

breakdown reflects the location of the physical terminal of the hotel where payments are carried out. The assumption is that the geographical distribution of the services booked via DIPs should not differ greatly from that for accommodation services paid in presence.

Other adjustments

Finally, we adopt a more conservative approach excluding some MCCs that not of a clear touristic nature and that in the case of remote payments seems to be more related to services consumed by residents in Spain (Cable services for instance).3.3.2 Description of the results

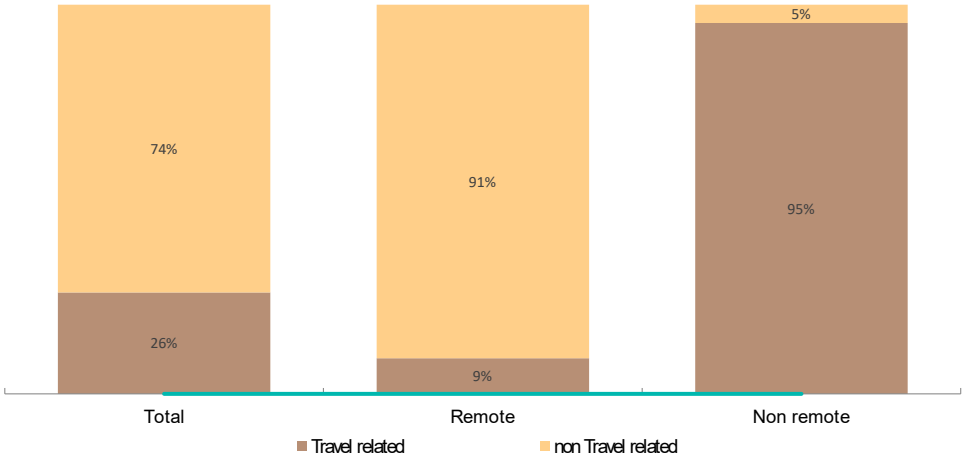
In the next graph we compare for 2022 the total card payments collected in Table 9 of the Regulation (travel related and not travel related), to the results that we have obtained applying the methodology previously explained (travel related) and to the Travel BOP debits. As it can be seen, the Travel related payments represent approximately a 26% out of the total card payments. Most of non-remote payments (95%) are considered Travel related. Nonetheless, for remote payments only 9% of total card payments are considered Travel related. Main MCCs excluded are related to digital goods and services, betting and gambling and wire transfers (see section 3.3.1 above)[29]. In terms of BOP Travel debits, the Travel related card payments estimate represents a 58% approximately[30].

published by Eurostat (it has the limitation that it doesn't include data on night stays in hotels), the geographical breakdown of the tourist expenditure by country of residence booked using accommodation platforms from ETR (the main limitation is that the geographical breakdown is limited), and the geographical breakdown of night stays estimated using mobile phone positioning data from the experimental statistics published by NSI.

29 In particular, the three main MCCs not related to Travel (representing approximately a 30% of total remote transactions) are: Miscellaneous and specialty retail outlets, Betting, including Lottery Tickets, Casino Gaming Chips and Wire transfers and money orders.

30 Another component that is relevant for estimation of Travel debits is that of ATM withdrawals that are reported nationally. If we add that component to the aggregate calculated for card payments the percentage would be a 64% of Travel debits.

GRAPH 1. TRAVEL RELATED PAYMENTS IN CARD DATA (%)



With respect to the main MCCs Travel related, in the following table we group the codes selected in ten categories[31] representing a percentage of approximately a 70% of total Travel related payments. The main three categories correspond to accommodation services (lodging, hotels and others), expenses in bars, restaurants and eating places, and Travel agencies and tour operators. The ranking is different in the case of remote and non-remote payments. In the case of remote payments, the main categories are related to travel agencies and tour operators, accommodation services and theatrical producers. In the case of non-remote payments, the main categories are bars, restaurants and eating places, accommodation services and food shops and supermarkets.

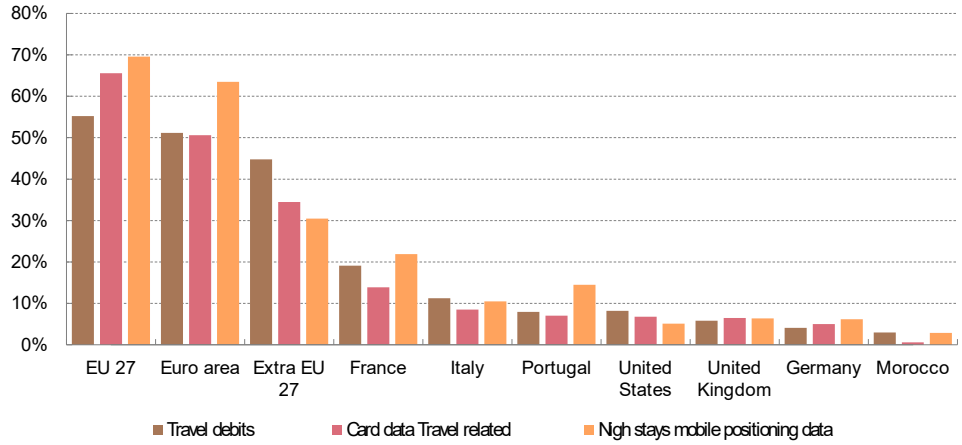
Table 5. Main categories of MCC Travel related 2022

Category	Total	Remote	Non remote
Lodging - hotels, motels and resorts	20%	30%	16%
Bars, restaurants and eating places	14%	0%	20%
Travel agencies and tour operators	11%	39%	1%
Food shops and supermarkets	10%	0%	13%
Family clothing shops	4%	0%	6%
Service stations	4%	0%	5%
Automobile Rental Agency	3%	5%	3%
Theatrical producers	2%	8%	0%
Electronic, video and photograph shops	1%	0%	2%
Department stores	1%	0%	2%

In the next graph we show the geographical breakdown of Travel debits, card related payments and night stays estimated from mobile positioning data (experimental statistics published by NSI).

[31] In order to group MCCs we have used the information published in the Visa Standards Manuals.

GRAPH 2. GEOGRAPHICAL BREAKDOWN OF TRAVEL DEBITS, CARD DATA AND MOBILE POSITIONING DATA 2022



The weight of payments to EU countries is lower in BOP Travel debits than in card payments, and both are smaller than the weight in mobile positioning data[32]. The weight of the payments to euro area countries is similar in card data than in Travel debits, and lower to that in mobile positioning data[33]. For France, Italy and Portugal, the weight in Travel debits is higher than in card data[34]. The weights of card payments to United Kingdom and Germany are a bit higher to the corresponding weights in Travel debits, while for the United States and Morocco the weight in Travel debits is higher than in card data. The mobile phone positioning data show a higher weight than for Travel debits for France, Portugal and Germany and a smaller weight for Italy, the United Sates and Morocco than those registered in Travel debits.

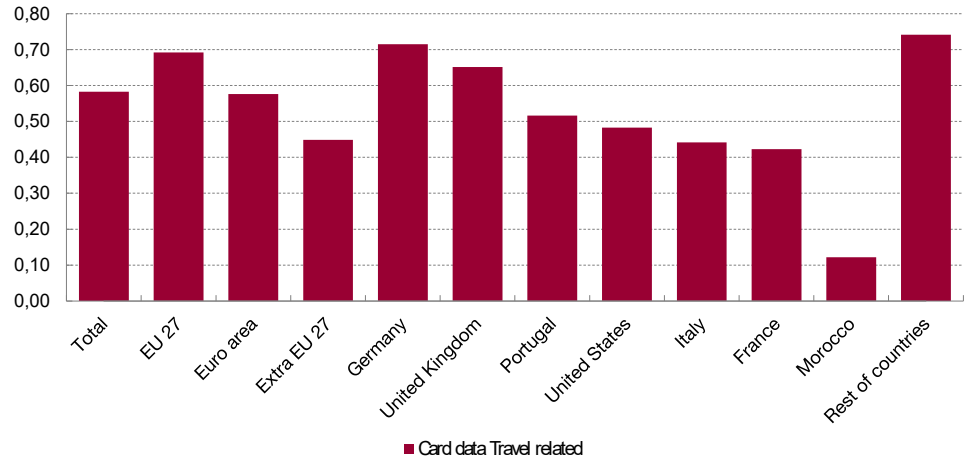
Finally, in the next graph we represent the ratio of card payments to Travel debits. It can be seen that the values of the ratio differ across areas and within areas, across countries. The ratio is higher for EU countries than for non EU countries. Among countries, the ratio for card data is higher for Germany and United Kingdom than for Portugal, Italy and France.

[32] It may be reflecting the higher prevalence in the use of mobile phone with SIM cards of national phone operators in trips to EU destinations than to non EU destinations.

[33] The weight of EU countries not belonging to the euro area is much higher in card data than in Travel debits due to mainly the higher weight of Nordic EU countries in card data than in Travel debits. Although deeper research involving declarants of transactions with those countries is required, a first analysis concluded that this would be partly reflecting transactions declared by PSPs that provide payments services from Spain to Nordic countries and that would correspond to transactions among non-Spanish residents.

[34] In the case of France and Portugal, a possible explanation it is that payments of Spanish cross-border workers using cards issued in those countries may be relevant and are not captured in card data.

GRAPH 3. RATIO CARD DATA ON TRAVEL DEBITS 2022



For Morocco the ratio is quite low which may indicate that cards issued by resident PSPs are less used as a mean of payments for those trips, for example due to a greater importance of trips related to visits to family and friends, or trips of cross-border workers (they would be using cash or cards issued in Morocco for payments in a higher extent). This is also the case of other countries with a high weight in the immigration population resident in Spain (as Dominican Republic or Colombia) for which we observe relatively low values of the ratio of card payments to Travel debits.

As it is mentioned before for Portugal and France, the difference between residency of the traveller and the residency of the card issuer (for example for Spanish cross-border workers using cards issued in that countries) may be an issue to explain their lower weight of card data than for other countries.

The opposite holds for cases of large ratios for Germany and United Kingdom (and others with ratios larger than one such as Ireland, Netherlands or Andorra), that may be reflecting the importance of the card payments carried out by residents in those countries with cards issued by Spanish PSPs (not to be included in Travel).

These are examples that illustrate some of the limitations in the use of card data for estimation of BOP Travel debits.

3.3.3 Way forward

In the future, improving the method previously explained will require: a) to continue participating in the Travel WS discussions, b) to intensify the contacts with Payment services providers reporting card payments data in order to clarify the nature and geographical allocation of some transactions, c) to cooperate with NSI in investigating how to combine card payments data with other sources and d) to be active in data sharing with counterpart countries. Apart from this, the use of card payments data for the estimation of Digital commerce in general should be explored.

4 Conclusions

In this article, we show that the use of data sources generated by the private sector is very relevant to improve the quality of the external statistics in the field of Tourism.

Firstly, the use of mobile phone data is a great challenge for NSI Spain. The potential of this source of information is indisputable, as it makes it possible to know the number of tourists at a level of detail that would be unthinkable if a traditional survey were used. The NSIs must be committed to its incorporation into the official statistics collection systems, bearing in mind the following aspects (applicable not only to the use of mobile phone data):

- Integration with traditional statistics: in general, mass databases do not cover all information needs. In the specific case of mobile and tourism, the number of tourists can be estimated, but not the characteristics of their trips or expenditure, so it will be necessary to integrate them with the results of traditional surveys and/or card transaction data in order to have complete information.
- Continuity and sustainability of access to information sources:
- Collaboration with the providers of the information: as we are not working directly with the microdata, but with processed and aggregated results, it is necessary to work collaboratively with the providers to ensure that their processing complies with the definitions of the study. There needs to be constant communication to ensure that the processes that are developed are working properly.

Secondly, despite their limitations, card payments data provide a powerful basis for measuring households imports of goods and services (in general) and of travel expenditures (in particular). Compared to other data sources, they have great advantages in terms of timeliness and granularity. In this sense, the new information available on MCCs represents an important progress. Nonetheless, it is still a challenge to solve some geographical issues (both related to residency and to counterpart countries). Besides that, it will be essential to capture its precise weight in the total of cross border transactions. To this aim, it will be necessary to continue sharing experiences across countries and to intensify the cooperation with NSI especially as regards how to combine card data with other data sources (mainly household surveys and mobile phones positioning data).

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BANCO DE ESPAÑA
Eurosistema

INE
Instituto Nacional de Estadística

SPANISH EXPERIENCE IN THE USE OF DATA FROM MOBILE PHONE NETWORKS AND CREDIT CARD DATA

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INTERNATIONAL STATISTICAL CONFERENCE

Banco de España, Madrid

12-13 February 2024

PRESENTATION BLOCKS

I. MEASURING TOURIST FLOWS USING DATA FROM MOBILE PHONE NETWORKS – INSTITUTO NACIONAL DE ESTADÍSTICA

II. USE OF CARD PAYMENTS DATA FOR BOP PURPOSES - BANCO DE ESPAÑA

I. MEASURING TOURIST FLOWS USING DATA FROM MOBILE PHONE NETWORKS

1. NEW SOURCES OF INFORMATION IN TOURISM STATISTICS FIELD

2. EXPERIMENTAL STATISTIC: MEASUREMENT OF INBOUND TOURISM FROM THE POSITION OF CELL PHONES

A. NEW SOURCES OF INFORMATION IN TOURISM STATISTICS FIELD

Experimental

A. Banking transaction with credit cards

- Distribution of the expenditure made by foreign visitors on visits to Spain.
- Distribution of expenditure by residents on their visits abroad by country of destination.

B. Web scraping data

Measurement of the number of tourism dwellings in Spain and their capacity.

C. Privately held data

Estimation of tourist accommodation occupancy using data from digital platforms.

D. MNO data

Measurement of national and inbound tourism from the position of cell phones.

A. NEW SOURCES OF INFORMATION IN TOURISM STATISTICS FIELD

https://www.ine.es/en/experimental/experimental_en.htm

Available experimental statistics

Company Demographic Profile

Distribution of expenditure by residents on their visits abroad by country of destination

Estimation of tourist accommodation occupancy using data from digital platforms

Studies on mobility based on mobile phone

Distribution of the expenditure made by foreign visitors on Visits to Spain

Multidimensional Quality of Life Indicator (MQLI)

Rental Housing Price Index (RHPI)

Measurement of Large Company Daily Retail Trade

Measurement of the Number of Tourist Dwellings in Spain and their Capacity

Measurement of National and Inbound Tourism from the position of cell phones

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Measurement of National and Inbound Tourism from the position of cell phones

B. MEASUREMENT OF NATIONAL AND INBOUND TOURISM FROM THE POSITION OF CELL PHONES

- *Agreement with 3 MNOs:*
  - *Telefónica*
  - *Vodafone*
  - *Orange*

- *Monthly data provided:*
  - *July 2019 – december 2019*
  - *2020*
  - *2021*

- *Extension for 3 years: 2022, 2023 and 2024*

Main objective: Measure No. of tourist (resident and non-resident), brokendown by origin and destination of trips.

GRANULARITY
PUNCTUALITY
BURDEN REDUCTION

B. MEASUREMENT OF NATIONAL AND INBOUND TOURISM FROM THE POSITION OF CELL PHONES

- Work in cooperation with MNOs to adapt the information recorded in their databases to tourism concepts and definitions.
- NSI Spain integrates the information sent by the three companies.
- Great results for trips and overnightstays for inbound, outbound and domestic(*) tourism.
- Work in progress: sameday-trips and domestic tourism in the same province of residences.

B. MEASUREMENT OF NATIONAL AND INBOUND TOURISM FROM THE POSITION OF CELL PHONES

INBOUND TOURISM

- Variables:
  - Tourists
  - Overnightstays
  - Average stay
- Monthy
- Country of origin (200)
- Destination at NUTS2, NUTS3 and municipality level.

OUTBOUND TOURISM

- Variables:
  - Tourists
  - Overnightstays
  - Average stay
- Monthy
- Country of destination (200)
- Origin at NUTS2, NUTS3 and municipality level.

DOMESTIC TOURISM

- Variables:
  - Tourists
  - Overnightstays
  - Average stay
- Monthy
- Only inter-province trips
- Origin and destination at NUTS2, NUTS3 and municipality level.

Confidentiality: INE only receives files with aggregated data

(we don't have access to individual records nor can identify individuals).

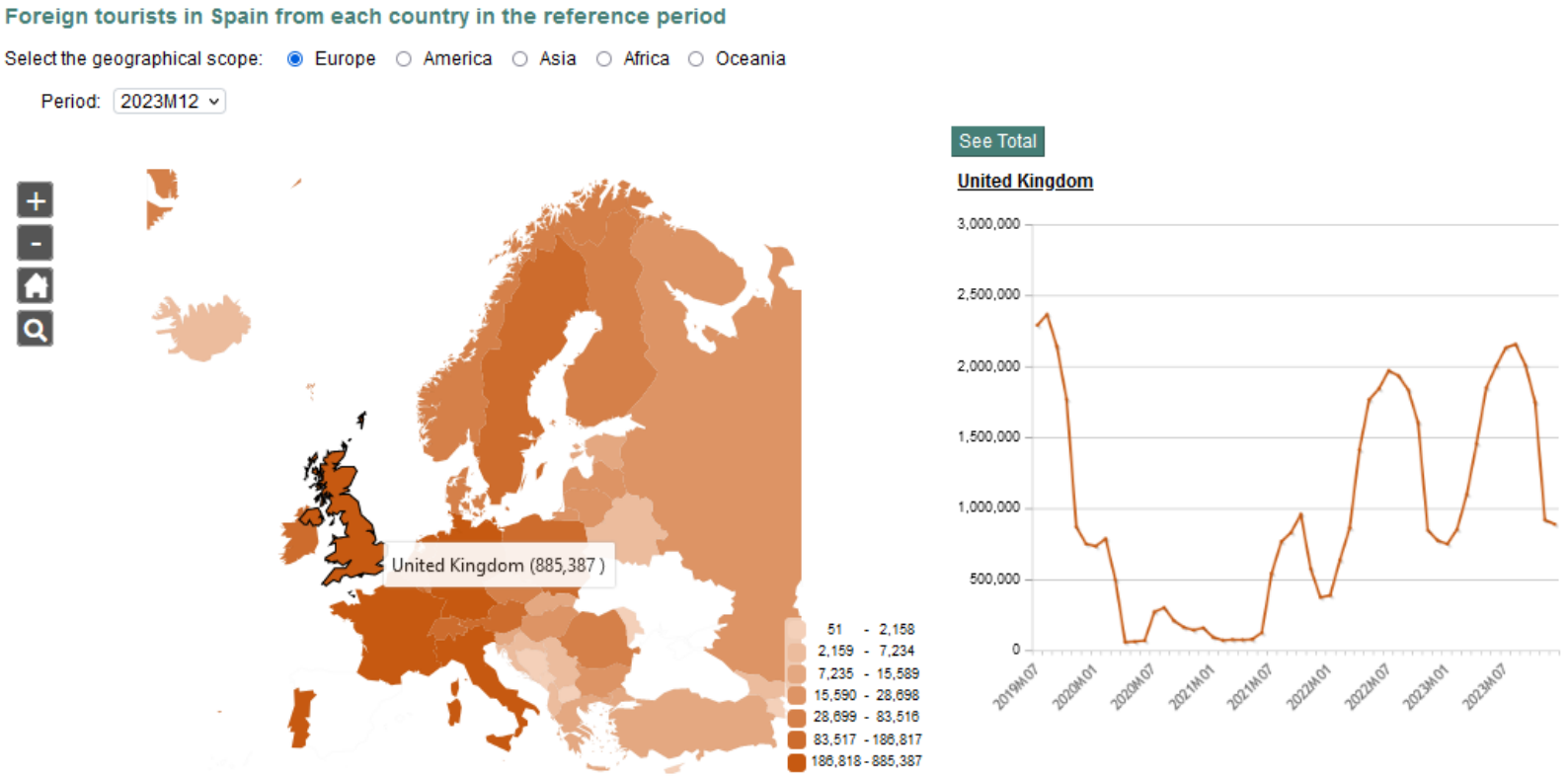
Only cells with 30 tourists or more are published

INBOUND TOURISM FROM THE POSITION OF CELL PHONES

World map: painting with colour intensity the countries of origin of tourists to Spain

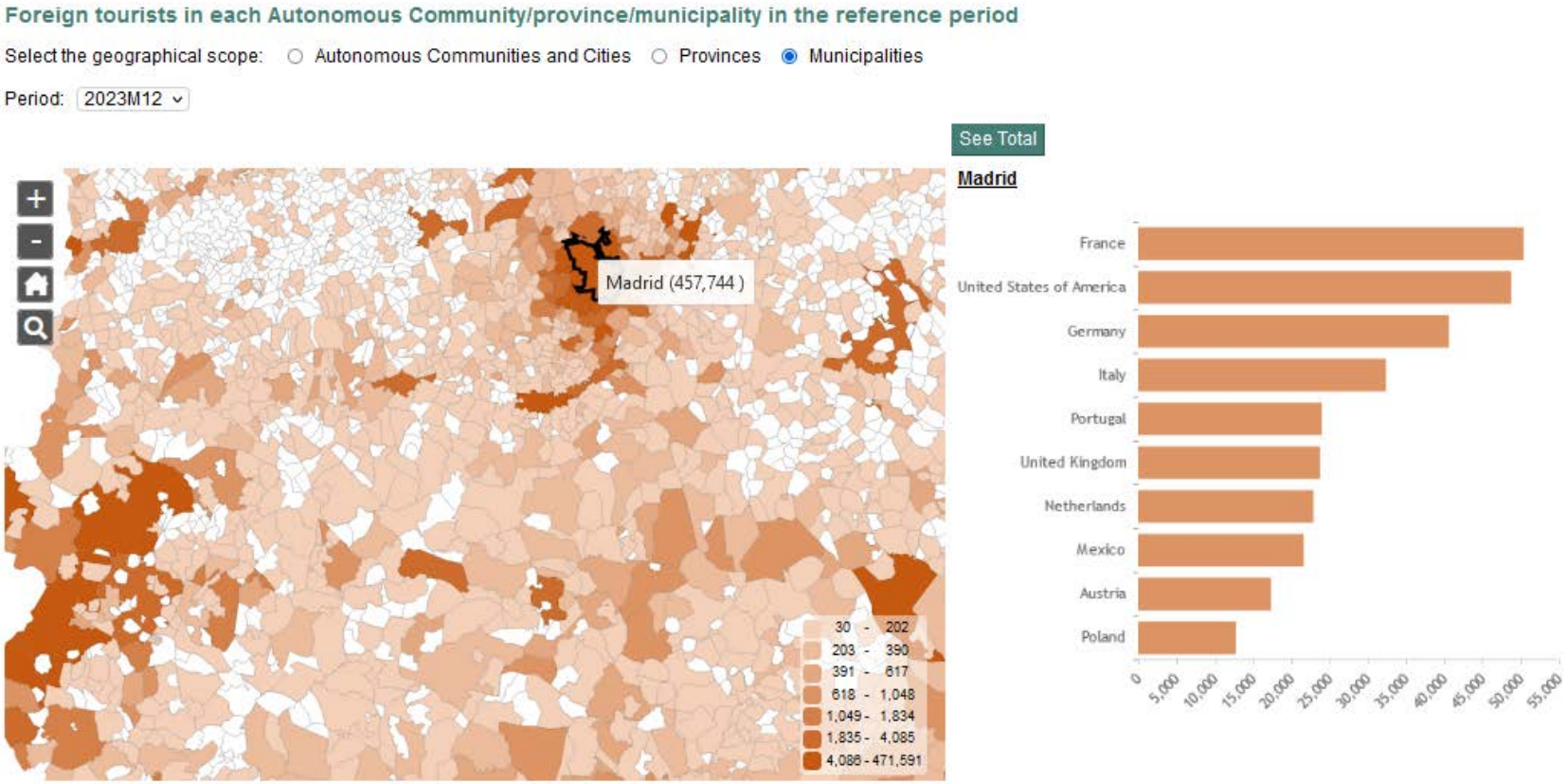
Link to INE website

INBOUND TOURISM FROM THE POSITION OF CELL PHONES



Map for each continent, painting with colour intensity the countries of origin of tourists to Spain

INBOUND TOURISM FROM THE POSITION OF CELL PHONES



Maps for municipalities, painting with colour intensity according the number of tourists and a graph for the main countries of origin.

INBOUND TOURISM FROM THE POSITION OF CELL PHONES

Municipalities with the highest number of foreign tourists for the main outbound countries

United Kingdom	Germany	France	The Netherlands	Italy
Calvià	Palma	Barcelona	Barcelona	Barcelona
Benidorm	Calvià	Madrid	Madrid	Madrid
Barcelona	Capdepera	Roses	València	Sant Josep de sa Talaia
Adeje	Barcelona	Jonquera, La	San Bartolomé de Tirajana	Formentera
Arona	Pájara	Palma	Sant Josep de sa Talaia	València
Sant Josep de sa Talaia	San Bartolomé de Tirajana	Lloret de Mar	Palma	Eivissa
Palma	Sant Llorenç des Cardassar	Donostia/San Sebastián	Málaga	Palma
Tías	Muro	Irun	Santa Eulària des Riu	Calvià
Marbella	Madrid	Castelló d'Empúries	Marbella	Ciutadella de Menorca
Yaiza	Alcúdia	Sevilla	Torremolinos	Arona

PROS & CONS

- Granularity
- Punctuality
- No burden (no interviews required)
- Large coverage

- Original MNO database not adapted to tourism definitions
- More variables required (main trips charactaristics or expenditure)
- Changes in technology affect data
- Access to information by contracts

FINAL REMARKS

- ✓ The new sources of information are a great opportunity for the producers of statistics since they will allow us to provide much more **frequently, timely and detailed information**.
- ✓ It is important to reach **agreements** with the owners of the information to access the databases.
- ✓ It will be necessary to work together with the owners of the information to develop **new methodologies to integrate the new sources into the traditional statistics**.
- ✓ The **definitions used in tourism surveys should be reviewed** to see if new sources of information can capture the same concepts.
- ✓ Reputational impact of data transfers. **Data confidentiality.**

II. CARD PAYMENTS DATA FOR BOP PURPOSES

1. INFORMATION AVAILABLE AT BANCO DE ESPAÑA
2. USE OF CARD DATA FOR BOP PURPOSES
3. PROS AND CONS
4. NEW EXPERIMENTAL STATISTICS
5. CONCLUSIONS

CARD PAYMENTS DATA (I): INFORMATION AVAILABLE AT BANCO DE ESPAÑA

NATIONAL AGREEMENT AND EU-ECB REGULATION (PAYMENTS ABROAD FROM 2022 DATA ONWARDS)

At present, two different types of data sets:

DATA COLLECTION:	ON THE BASIS OF A NATIONAL AGREEMENT	IN VIRTUE OF EU-ECB REGULATION ON PAYMENT STATISTICS (2020/2011)
Mandatory	NO	YES
Internationally harmonized	NO	YES
Data provider	Central scheme	Resident issuing PSPs
Frequency	Monthly and Quarterly	Quarterly
Timeliness	M+30d and Q+75d	Q+30d
Geographical breakdown	Areas (euro, EU, EFTA, rest)	Individual countries (Geo 6)
ATM withdrawals	YES	NO
PSTs remote	YES	YES
PSTs non-remote	YES	YES
Merchant category code	NO	YES

Similar coverage ratio national/EU-ECB reg=0.94 for 2022

CARD PAYMENTS DATA (II): THE USE OF THESE DATA

Since 2002, BOP Travel debits are estimated on the basis of card data collected on the basis of national agreement

- Provided by the Payments Systems Department of Banco de España
- We consider growth of rates instead of levels (no information on the weight of card payments)
- Complementary data sources: National Commission of Markets and Competition (e-commerce by activity), Residents travel survey (geo details), mirror data (geo details)

At present, studying how to use the new EU-ECB 2020/2011 Regulation data

- For the estimation of BOP Travel debits, international cooperation in the framework of the Travel Workshop
- In the short run, working in the dissemination of a new experimental statistics

CARD PAYMENTS DATA (III): PROS AND CONS

STRENGHTS	LIMITATIONS
- Low cost of compilation	- Partial (and unknown) coverage
- Adequate frequency and timeliness	- Assumption on residency: card holder=card issuer
- High granularity	- Cash principle vs accrual
- High sustainability	- Distortions in geo data (due to digital intermediation platforms (DIPs) among others)
- Beakdown into goods and services may be possible based on MCC	

More tan 300 MCC

Miscellaneous and specialty retail outlets
Lodging - hotels, motels and resorts
Travel agencies and tour operators
Betting, including Lottery Tickets, Casino Gaming Chips
Wire transfers and money orders
Eating places and restaurants
…

CARD PAYMENTS DATA (IV): NEW EXPERIMENTAL STATISTICS

WORK IN PROGRESS – TRAVEL RELATED CARD PAYMENTS

SELECTION OF MCCs

Starting point = work carried out in the Travel WS = 200 aprox. out of 340.

- **MCCs always excluded** goods or services digitally delivered (games), related to international transport, etc.
- **MCCs to be excluded for remote transactions**: clothing and shoes stores for instance.

SPECIAL ADJUSTMENTS

For corrections we use information from the Tourist Resident Survey (ETR)

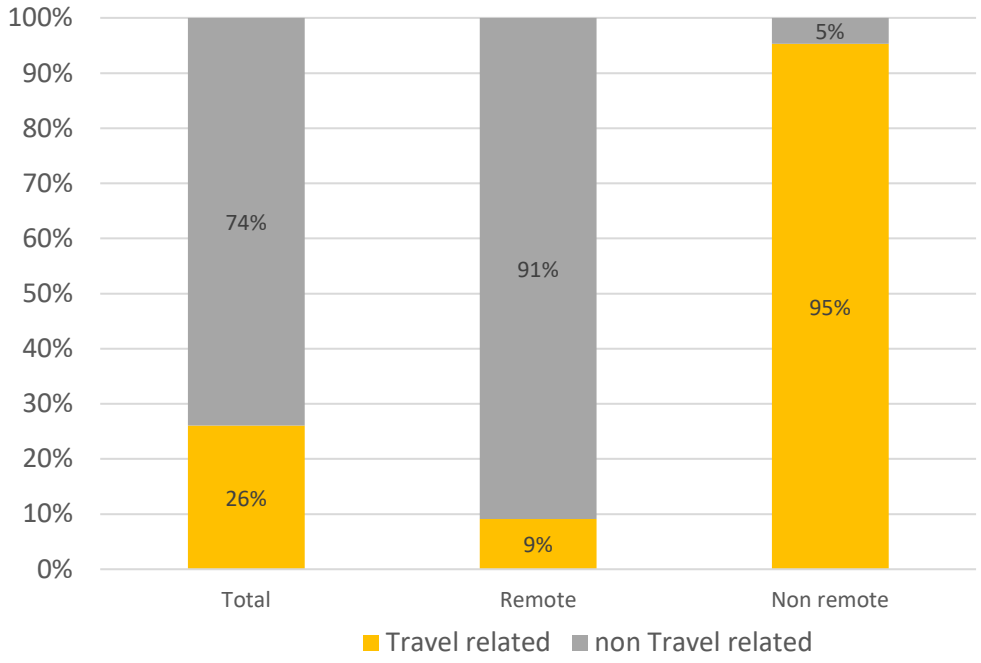
- **Travel agencies and TTOO**: deduction of international transportation and intermediation fees.
- **Lodging, hotels, motels and resorts; Travel agencies and TTOO and Theatrical producers:** geo reallocation and deduction of expenditure in domestic trips for transactions routed through Digital intermediation platforms (DIPs), concentrated in LU, NL and GB.

CARD PAYMENTS DATA (V): RESULTS (I)

WORK IN PROGRESS – TRAVEL RELATED CARD PAYMENTS

- A 26% of card payments are Travel related (95% of non remote payments, and 9% of remote payments), representing near a 60% of Travel debits

Graph 1. Card data breakdown Travel and non-Travel related 2022



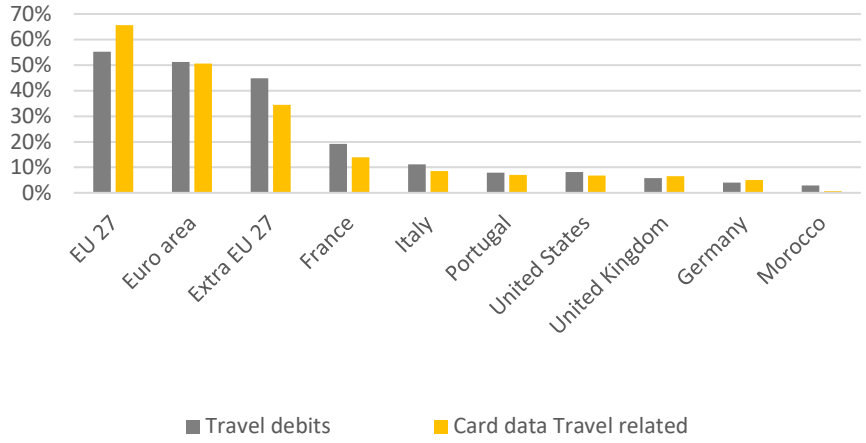
Category MCC	Total
Lodging - hotels, motels and resorts	20%
Bars, restaurants and eating places	14%
Travel agencies and tour operators	11%
Food shops and supermarkets	10%
Family clothing shops	4%
Service stations	4%
Automobile Rental Agency	3%
Theatrical producers	2%
Electronic, video and photograph shops	1%
Department stores	1%

CARD PAYMENTS DATA (V): RESULTS (II)

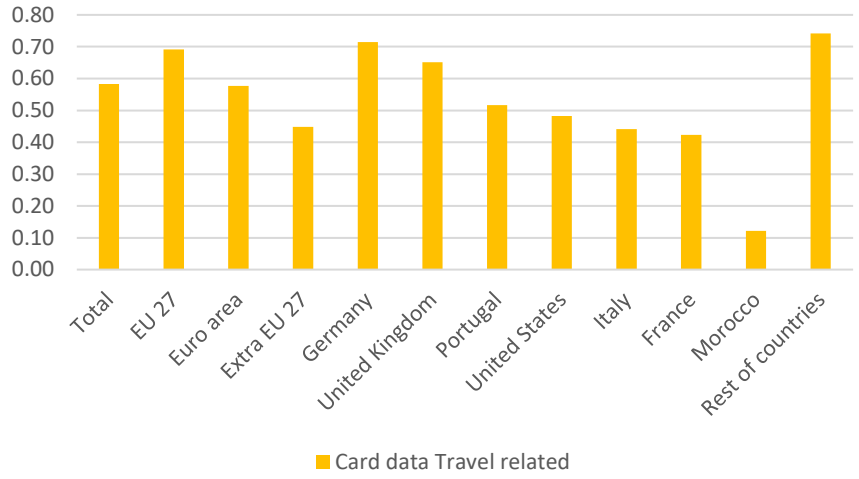
WORK IN PROGRESS – TRAVEL RELATED CARD PAYMENTS

- Differences in geographical breakdown:
  - Extra EU card payments < Travel debits: greater importance of other means of payments (cash payments in the case of LATAM migrants visiting their families in their countries of origin)
  - Ratio card data / Travel debits higher for UK and Germany (residents abroad?) and lower for Morocco (again other means of payments when MO migrants visit their families)

Graph 2. Geographical breakdown of Travel debits and Card data 2022



Graph 3. Ratio card data on Travel debits



CONCLUSIONS

1. Despite their limitations, card payments data provide a powerful basis for measuring households imports of goods and services (in general) and of travel expenditures (in particular)

   - ***Great advantages in terms of timeliness and granularity***
   - ***The new information on MCCs represents an important progress***

2. Challenges to solve:

   - ***Geographical issues (both related to residency and to counterpart countries)***
   - ***Combination with other sources (capture of the weight of card data in total payments)***

3. Important to keep contacts with declarants to clarify the content of the information and necessary to continue sharing experiences across countries and to intensify the cooperation (especially with NSIs)

   - ***The access to mirror data (payments declared by counterpart countries in order to check our credits estimates) is foreseen***

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THANK YOU FOR YOUR ATTENTION