On the impact of the euro on international tourism

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Abstract

This paper studies the effect of the inception of the euro on the international tourism of the Eurozone. To do this, a gravity model is estimated using two different samples, the OECD countries and the European OECD countries, over the period 1995-2008. The results suggest a noticeable impact of the euro on tourism, bigger than estimated in previous research. However, evidence of tourism diversion is found. The estimates also indicate a greater impact of the introduction of coins and notes in 2002 than the effect of the irrevocable fixing of conversion rates in 1999. Furthermore, the results show that the euro effect on tourism could have been anticipated during earlier stages of the EMU.

Keywords: currency unions**,** euro effect, panel data, international tourist arrivals
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1. Introduction

Since the inception of the euro, the bulk of the literature has focused its attention on the analysis of its economic effects. Indeed, empirical research in International Economics has adopted the euro effect as an area of main interest. In this sense, the effort has been put into estimating the impact of the euro on trade and its role in macroeconomic performance (Frankel, 2008).

Tourist arrivals to the Eurozone reach a share of about 30% of the world tourist arrivals, and a half of these arrivals are comes from the another country of the Eurozone. Nevertheless, the study of the effect of the euro on international tourism has received little attention. A common currency implies the elimination of exchange rate volatility and transaction costs. Furthermore, since 2002, the introduction of coins and notes in euros eliminated any currency conversion between countries belonging to the eurozone. As a consequence, no calculation by agents is needed and price transparency for international comparison is enhanced. These factors could facilitate and promote tourism among euro countries. Gil-Pareja et al (2007) and Santana-Gallego et al (2010a) estimate a moderate effect of this common currency on tourism that ranged between 6 and 12%. However in both studies, the euro effect on tourism was evaluated in the early stages of the Economic and Monetary Union (EMU) and updated evidence is necessary in order to know its true impact.

Another relevant concern is the timing of the euro effect as pointed out by Micco et al (2003). On the one hand, the influence of the euro on the magnitude of tourism flows takes time to be registered. On the other hand, its effect could have been anticipated and, as a consequence, it could have been measured even before the inception of the euro. Indeed the characterization of the dynamics of the impact of the euro on tourism would be of interest for future common currency experiences, but at the moment it remains unknown.

Finally, trade diversion is commonly tested when the effect of the euro on international trade is estimated (Frankel and Rose, 2002). The argument is direct if the change of relative bilateral resistances to trade is recognized, i.e., the increase of these relative costs for trade with third countries could lead to trade diversion. In the case of international tourism, the elimination of exchange rate volatility, transaction costs, and any calculus since 2002 may lead to more intense tourism flows within the eurozone but a reduction of international tourism between the eurozone and third countries. In spite of its interest, this issue has not been analyzed.

This research contributes to the previous literature in four ways: (i) the period of study is updated until 2008 and only the case of the euro is considered in order to obtain more reliable estimates of the euro effect, (ii) the dynamics of the impact of the euro is addressed to find out its time path and possible leads and lags, (iii) the relevance of 1999 and 2002 as dates of the inception of the euro for tourism flows is analyzed, and (iv) the potential tourism diversion from abroad to the eurozone is tested.

This paper is organized as follows. In Section 2, the main antecedents of this research are presented. Section 3 describes data and methods used in the empirical analysis. In

Section 4 the results of this research are discussed. Finally, Section 5 draws some conclusions.

2. Background

This research has two main groups of antecedents: the literature on the role of the euro in the magnitude of international trade and a reduced number of papers studying the relevance of sharing a currency in the determination of the volume of international tourism.

The literature on the effect of currency unions on trade has become a dynamic and controversial area of International Economics. In Frankel (2008)'s words, *"Andrew Rose's (2000) paper has been perhaps the most influential international economics paper of the last ten years"*. The seminal paper written by Rose (2000) estimates an effect of currency unions on trade of 200%. Later on, Glick and Rose (2002), with a much larger dataset, confirmed a major impact of common currencies on international trade, i.e., countries sharing a common currency seemed to trade over three times more than other country pairs in the OLS estimation, and currency union almost doubled bilateral trade in the fixed effects estimation. These results led to a notable effort on empirical and theoretical work in this area (Rose and Stanley, 2005)[2].

One of the main contributions to this area was the recognition of the relevance of not only the bilateral resistances but also the multilateral resistances that allow the control of idiosyncratic factors of specific countries in the determination of the volume of trade (Anderson and van Wincoop, 2003; Rose and van Wincoop, 2001). This is particularly important in the case of tourism, where country-specific heritage and natural resources are major factors that explain the intensity of international tourism flows.

In spite of the fact that a common currency can promote international tourism in a similar way to trade, the impact of sharing a currency on tourism has been less studied[3]. Gil-Pareja et al (2007) estimated an effect of the euro on intra-eurozone tourist flows of 6.5%. This moderate effect could be explained by the shortness of the euro period studied (1999-2002), as well as by the fact that the launch of the circulating euro was precisely on 1 January 2002. Since 2002 any calculus is eliminated and the decisions of tourists, as consumers, could have been more affected by the introduction of coins and notes expressed in euros than by the inception of the irrevocable conversion rates for the euro in 1999. From a psychological point of view, Jonas et al (2002) and Wakker et al (2007) argue in favour of the year 2002, since from that date, consumers were physically confronted with the euro. Ranyard et al (2005) find that attitudes of consumers with respect to the euro focus on the economic and practical aspects of currency change.

The consideration of both, other common currency cases apart from the euro and a slightly longer dataset (1995-2004) allow Santana-Gallego et al (2010a) to almost double the effect of a common currency on tourism found by Gil-Pareja et al (2007). However, the implication of this result on the euro case is hard to accept because of the

[2] For possible explanations of Rose's result see, for instance, Thom and Walsh (2002), Micco et al (2003) and Wolf and Ritschl (2011).

[3] Kimura and Lee (2006) estimate a gravity equation for trade in the set of tradable services but the effect of a common currency is not addressed.

very short euro period considered for the analysis and the mix of common currencies cases. This last argument is discussed by Frankel (2008) in the analysis of the differences between the estimations of the impact of currency unions on international trade in the case of the euro and other monetary unions among smaller countries. As a consequence, the mix of common currencies could lead to misleading estimations of the euro effect. Finally Thompson and Thompson (2010) in an error correction framework estimate a significant impact of the euro on tourism revenue of 18% for the case study of Greece.

In summary, the abundance of literature measuring the relevance of common currencies on trade contrasts with the scarcity of references analyzing the effect of sharing a currency on international tourism. It is more noticeable for the specific case of the euro, given the growing number of countries adopting or planning to adopt the euro.

3. Data and methods

As mentioned in Section 1, this paper contributes to the study of the impact of the euro on international tourism flows in four ways. First, the dataset used is enlarged with respect to previous work. Second, the timing of the effect of the euro on tourism is estimated by analyzing possible leads and lags. Third, the relevance of 1999 and 2002 as effective dates of the introduction of the euro is studied. Fourth, the possible tourism diversion in the eurozone is tested.

To do this, a gravity equation for tourism is estimated by including country-specific effects to control for multilateral resistances (Rose and van Wincoop, 2001)[4]. As mentioned above, these resistances are especially relevant in the case of tourism flows, where idiosyncratic factors such as, natural resources and cultural heritage are relevant in the determination of its magnitude. Furthermore, a bilateral trade variable is included as an additional regressor based on the assumption that trade and tourism may be both complementary and substitutive in several ways (Santana et al, 2010b). Moreover, bilateral trade could be interpreted as a proxy for the intensity of economic relations between countries (Eilat and Einav, 2004). This model allows us to introduce variables measuring the impact of the euro on tourism since sharing a currency may reduce bilateral resistances to tourism.

The following gravity equation is estimated by OLS-FE

$$\begin{aligned} LnTou_{ijt} = {} & \beta_0 + \beta_1 LnTrade_{ijt} + \beta_2 LnGDPpc_{it} + \beta_3 LnGDPpc_{jt} + \beta_4 LnPop_{it} \\ & + \beta_5 LnPop_{jt} + \beta_6 LnDist_{ij} + \beta_7 LnPPP_{ijt} + \beta_8 Colony_{ij} + \beta_9 Lang_{ij} \\ & + \beta_{10} Border_{ij} + \beta_{11} RTA_{ijt} + \beta_{12} EU_{ijt} + \beta_{13} \mathrm{Re}lig_{ij} + \alpha' E + \gamma_i + \delta_j + \lambda_t + u_{ijt} \end{aligned} \quad (1)$$

where *Ln* denotes natural logs, *i* and *j* indicate destination and origin countries respectively, *t* is time, and the variables introduced are defined as:

Tou_{ijt} is the number of tourist arrivals to country *i* from country *j* in year *t*,

[4] Gravity equations are extensively used in the analysis of international trade of goods. However, Kimura and Lee (2006) show that trade in service is better predicted by gravity equations than trade in goods.

$Trade_{ijt}$ denotes the real bilateral trade, as the sum of exports and imports, between country i and country j in year t,
$GDPpc_{it}$ is the real GDP per capita of the destination country *i* in year *t*,
$GDPpc_{jt}$ is the real GDP per capita of the origin country *j* in year *t*,
Pop_{it} denotes the population of the destination country *i* in year *t*,
Pop_{jt} denotes the population of origin country *j* in year *t*,
$Dist_{ij}$ is the great-circle distance between capital cities of countries *i* and *j*,
PPP_{ijt} denotes the purchasing power parity of the country i relative to *j* in year *t*,
$Colony_{ij}$ is a binary variable which is unity if one country ever colonized the other or vice versa and zero otherwise,
$Lang_{ij}$ is a binary variable which is unity if *i* and *j* have a common language and zero otherwise,
$Border_{ij}$ is a binary variable which is unity if *i* and *j* share a common land border and zero otherwise,
RTA_{ijt} is a binary variable which is unity if *i* and *j* are common members of a regional free-trade agreement, different from the European Union, in year *t*,
EU_{ijt} is a binary variable which is unity if *i* and *j* are common members of the European Union in year *t*,
$Relig_{ij}$ is a binary variable which is unity if *i* and *j* have a common first religion (with a share over 60%) and zero otherwise,

E is a set of variables of interest measuring the effect of the euro on tourism[5], γ_i, δ_j and λ_t are specific effects of destination country, origin country and year, respectively, β_0 is the constant, $\beta_1, \ldots, \beta_{11}$ are the set of coefficients and α' represents the set of the parameters of interest. Finally u_{ijt} is a well-behaved disturbance term.

Since dependent variable in tourism equation is unidirectional, GDP per capita and population are introduced separately for the origin and destination country. This allows for a different effect of these origin and destination variables on tourism arrivals. For instance, a greater effect of origin GDP per capita and population is expected than for the destination ones. For the same reason, PPP_{ijt} is introduced as a proxy of price competitiveness in order to avoid biased estimates.

The source of annual international arrivals by country of origin is the United Nations World Tourism Organisation (UNWTO). *GDPpc* and *Trade* are converted to real terms by using US GDP deflator. *GDPpc*, population and *US GDP deflator* were obtained from the World Development Indicators. *Trade* variable is expressed in millions of US$ and is collected from the Direction of Trade dataset of the International Monetary Fund and OECD Statistics. Distance and variables *Colony*, *Lang* and *Border* were obtained from the Centre d'Etudes Prospectives et d'Informations Internationales (CEPII) dataset. The *FTA* and *EU* dummy variables are defined by using the Regional Trade Agreement dataset from the World Trade Organization. Finally PPP_{ijt} is the purchasing power parity to market exchange rate ratio as calculated in the World Development Indicators of World Bank.

Following Cheng and Wall (2005), the gravity equation is estimated by Ordinary Least Squares (OLS), adding country specific-effects γ_i and δ_j and year effects λ_t (FE-OLS). This model is a special case of the panel fixed-effect (FE) model given that it has a

[5] Table A.1 in the appendix presents the different dummies used in the analysis to study the effect of the euro on tourism flows.

unique value for each trading pair's intercept, with the restrictions that a country's fixed effect as origin or destination is the same for all of its trading partners. As mentioned above, Rose and van Wincoop (2001) follow a similar approach recognizing the relevance of not only the bilateral resistances but also the multilateral resistances that allow control of idiosyncratic factors of specific countries in the determination of the volume of international flows (Anderson and van Wincoop, 2003).

The empirical analysis uses two datasets of OECD countries[6]. Table 1 presents the patterns of tourism of the OECD countries, putting the attention in the distinction between EMU and non-EMU countries[7]. It can be observed how since 1995 to 2008 all the EMU countries has increased the share of tourist arrivals to another EMU country and in 2008, this share range from 40% (Ireland) to 86% (Luxembourg) .

[Table 1, here]

The reasons for the selection of the OECD countries are: (i) availability and quality of data, (ii) to focus on the euro case avoiding the mix of common currencies cases, and (iii) in 2008, OECD countries accounted for 57% of global international tourist arrivals and for 67% of the corresponding travel receipts. The first dataset considers 30 OECD countries. The second dataset includes a smaller but more homogeneous sample, introducing only 22 European OECD countries. In both cases, the sample period covers annual data from 1995 to 2008. The number of observations is over 9000 for the first dataset and about 4800 for the second dataset.

4. Results

The estimation results for equation (1) are presented in Table 2[8]. We employ FE-OLS by considering individual fixed effects of origin and destination separately and year effects[9]. The results for the OECD countries are shown in columns (a) and (b), while the estimates for the European OECD countries are presented in columns (c) and (d). As can be observed, the estimates defining the euro variable as a dummy for the period 1999-2008 appear in the first column, while the results splitting the euro variable into two dummies, one for the period 1999-2001 and the other one for 2002-2008, are presented in the second column. As mentioned above, the latter allows us to test the relative relevance of the inception of the irrevocable exchange rates and the introduction of coins and notes expressed in euros.

[6] Table A.2 in the appendix presents the countries included in the analysis.
[7] Table A.3 in the appendix describes the pattern of tourism flows for the sample of European OECD.
[8] We estimate a gravity equation with fixed effects and year effects. Fidrmuc (2009) show that although some variables could be I(1), i.e. in our case *GDP*, *Trade* and *Tourism*, the possible bias of fixed effects models due to the non-stationarity of gravity models is rather small. In any case, the results of unit root tests are available to readers upon request.
[9] We also use FE-2SLS leading with the potential endogeneity problem of *Trade* and *GDP* (endogenous variables lagged one period were considered as instruments). Results are almost identical to FE-OLS and Hausman test is not conclusive since the difference between matrices is not positive definite. This results are available upon request

The sign and magnitude of the estimated coefficients of the gravity variables are plausible and a majority of these variables are statistically significant. The coefficient of *Trade* suggests that international trade promotes international tourism. GDP per capita, population, colonial relationship, a common language, a common border, a common religion and the participation in a regional trade agreement promote international tourism, while tourism is decreasing in the distance between countries and purchasing power parity of destination country. Specifically for the OECD sample, an increase in the relative price level of the destination country by 1% decreases the number of tourist arrivals by 0.32%. For the European OECD sample, relative purchasing power parity is not significant. Perhaps non-price competition is especially relevant in European countries, thus reducing the importance of relative prices.

As can be observed in columns (a) and (c), when the euro effect is tested for the period 1999-2008, the estimates suggest an impact of about 18% for the OECD sample and about 38% for the European OECD countries[10]. The impact of the euro seems to be more sizeable when it is tested with respect to other European countries not adopting the euro.

Also, the euro is split into two dummies regarding the date of inception, $Euro99\text{-}01_{ijt}$ or $Euro02\text{-}08_{ijt}$, and the results are presented in columns (b) and (d). Results suggest that the euro effect is not significant at 10% confidence level for the sample of OECD countries over the period 1999-2001, i.e., before the introduction of coins and notes expressed in euros. However, when the euro effect is evaluated for the same countries for the period 2002-2008, its coefficient is significant and its magnitude suggest an effect of about 21%. For the sample of the European OECD countries, the estimates of the impact of the euro are 28% and 43%, respectively. These results may suggest that the euro impact has been gaining more relevance for the period of physical circulation of the euro.

[Table 2, here]

Following Gil-Pareja et al (2007), we also analyse the effect of the euro by single country and so we test if the effect is different across countries. Results are presented in Table 3 where the euro effect by individual country is estimated by comparing the individual impact with the impact in rest of the eurozone. As can be observed, the results suggest the presence of some heterogeneity. Particularly Austria, Italy, Luxembourg, and Spain present a higher impact of the euro than the rest of the eurozone in the two samples.

[Table 3, here]

Table 4 focuses on the euro effect over time. In particular, the dynamics of this effect is estimated by creating dummy variables for each year. Before the inception of the euro, several arguments were proposed to limit the magnitude of the euro effect. One of the main arguments was that it had been anticipated by the earlier stages of the EMU. To deal with this idea, we have studied the effect of EMU membership since the beginning of the sample period. In this case, the model is estimated by adding euro dummy variables which are unity if the two countries of the pair belong to the euro each year,

[10] The percentage effect is equal to $[\exp(\gamma)-1]x100$, being γ the estimate of the effect of the common currency on tourism.

and zero otherwise. As can be observed, some of the lowest values of the coefficient are found for the years 1999-2000. This strengthens the finding that the introduction of coins and notes expressed in euros seems to have had a greater influence on tourism than the irrevocable fixing of conversion rates. Figure 1 presents the details of the dynamics of the euro effect for the two samples of countries. Results seem to suggest that the impact of the euro on tourism is greater from the physical introduction of the euro in 2002 and then decreases slightly until 2008.

[Table 4, here]

The estimates also provide sizeable effects of the EMU before the introduction of the irrevocable conversion rates in 1999. What is more, the estimates for the previous years of the irrevocable exchange rates reach similar levels than the estimates after the introduction of the coins and notes expressed in euro. These results suggest that part of the impact of the euro could have been anticipated during the earlier stages of the EMU.

[Figure 1, here]

As mentioned in Section 1, the potential tourism diversion from abroad to the eurozone is also addressed. Similar to the analysis carried out in the international trade literature, we explore the existence of tourism diversion. Note that for both reasons, the nature of the international flow is tourism but not trade, and the adoption of the euro does not change tariffs, any switch in the destination country of tourists involves a change from high-cost to low-cost suppliers and thus tends to be welfare improving (Micco et al, 2003). The objective of this analysis is to study whether the adoption of the euro makes countries more open in terms of tourism movements, i.e. tourism creation, or in contrast, it implies more intense intra-eurozone tourist movements at the expense of tourism flows with third nations. In the former case, the expected sign of the dummy variable would be positive, while in the latter, the coefficient should be negative. To test this, we estimate equation (1) by considering the dummy variable $Euro99\text{-}nonEuro99_{ijt}$ (and $Euro02\text{-}nonEuro02_{ijt}$) taking the value one when only one country in the pair uses the euro. Table 5 shows that although the euro stimulates tourism, it does seem to imply a diversion of tourism from abroad to the countries adopting the euro[11].

[Table 5, here]

5. Concluding remarks

This paper analyzes the effect of the introduction of the euro on the international tourism in the eurozone. This paper contributes to this literature in several ways: (i) we provide updated estimates of the euro effect, (ii) we study the euro effect over time to know its time path, (iii) we test the relevance of 1999 and 2002 as dates of the inception of the euro, and (iv) we try to shed light on the potential tourism diversion from abroad to the eurozone.

[11] In Table A4 of the appendix, the dummy for tourism diversion is built in a different way. In this case the value one is taken when the origin of tourist is the eurozone and the destination is a country which has not adopted the euro. The negative sign of the estimated parameter suggests that tourists from the eurozone are switching their tourist destination from third countries to the eurozone.

The estimates indicate a noticeable euro effect, larger than the estimates of previous research. Perhaps the updated sample period allows us to reach the euro effect in a more complete way. Precisely, the results suggest a greater euro effect after the introduction of coins and notes expressed in euro in 2002 than in the period of the irrevocable exchange rates between 1999 and 2001. This suggests that the impact of the euro on tourism comes not only from the elimination of exchange rate volatility and exchange costs but also from the elimination of any calculus and the use of the same physical currency. Furthermore, the analysis indicates that part of the euro effect was anticipated in earlier stages of the EMU.

Finally, the results show that the inception of the euro could have led to both a creation of tourism in the Eurozone and also a diversion of tourism from abroad. Indeed the reduction of bilateral resistances to tourism between countries sharing the euro could reduce tourism between the countries belonging to the eurozone and third countries.

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Table 1: Percentage of tourist departure per countries (OCDE sample)

	1995		2002		2008	
country of origin	% of tourist departures to Non EMU countries	% of tourist departures to EMU countries	% tourist departures to Non EMU countries	% tourist departures to EMU countries	% tourist departures to Non EMU countries	% tourist departures to EMU countries
Australia	95.7	4.3	83.6	16.4	76.6	23.4
Austria	54.9	45.1	16.4	83.6	31.0	69.0
Belgium	19.7	80.3	13.0	87.0	14.6	85.4
Canada	97.3	2.7	89.5	10.5	90.7	9.3
Czech Republic	97.2	2.8	92.4	7.6	87.4	12.6
Denmark	40.1	59.9	48.7	51.3	35.7	64.3
Finland	51.8	48.2	56.3	43.7	37.6	62.4
France	61.2	38.8	25.6	74.4	31.9	68.1
Germany	70.6	29.4	43.7	56.3	53.6	46.4
Greece	71.5	28.5	28.0	72.0	45.9	54.1
Hungary	53.2	46.8	36.6	63.4	35.4	64.6
Iceland	59.7	40.3	66.3	33.7	67.9	32.1
Ireland	85.6	14.4	60.5	39.5	60.9	39.1
Italy	22.7	77.3	16.4	83.6	23.9	76.1
Japan	79.1	20.9	71.3	28.7	76.2	23.8
Korea, Republic	95.9	4.1	92.1	7.9	93.1	6.9
Luxembourg	19.0	81.0	12.2	87.8	13.9	86.1
Mexico	99.5	0.5	95.3	4.7	94.7	5.3
Netherlands	21.6	78.4	15.3	84.7	23.7	76.3
New Zealand	99.6	0.4	94.6	5.4	91.0	9.0
Norway	59.4	40.6	48.1	51.9	45.8	54.2
Poland	53.4	46.6	36.4	63.6	54.5	45.5
Portugal	61.9	38.1	11.2	88.8	14.8	85.2
Slovak Republic	99.1	0.9	94.4	5.6	88.9	11.1
Spain	12.8	87.2	13.9	86.1	28.8	71.2
Sweden	46.9	53.1	38.6	61.4	43.9	56.1
Switzerland	19.7	80.3	11.9	88.1	13.6	86.4
Turkey	50.2	49.8	30.8	69.2	39.2	60.8
United Kingdom	21.0	79.0	16.0	84.0	20.6	79.4
United States	75.6	24.4	69.9	30.1	76.6	23.4

Table 2: The Euro Effect

	OECD		OECD(European)	
	a	**b**	**c**	**d**
Cons	-69.609***	-69.843***	-137.747***	-136.283***
	(-6.17)	(-6.19)	(-7.99)	(-7.96)
$LnTrade_{ijt}$	0.101***	0.101***	0.056***	0.056***
	(8.29)	(8.30)	(4.93)	(4.94)
$LnGDPpc_{it}$	0.390***	0.394***	-0.932***	-0.935***
	(3.15)	(3.18)	(-4.52)	(-4.53)
$LnGDPpc_{jt}$	0.290**	0.294**	-0.232	-0.232
	(2.18)	(2.21)	(-1.04)	(-1.04)
$LnPop_{it}$	1.722***	1.730***	4.451***	4.413***
	(3.78)	(3.79)	(6.31)	(6.29)
$LnPop_{jt}$	3.412***	3.413***	5.937***	5.880***
	(7.07)	(7.07)	(7.99)	(7.93)
$LnDist_{ij}$	-0.829***	-0.828***	-0.704***	-0.704***
	(-36.52)	(-36.46)	(-17.34)	(-17.34)
$LnPPP_{ijt}$	-0.318***	-0.317***	-0.162	-0.154
	(-4.39)	(-4.36)	(-1.09)	(-1.04)
$Colony_{ij}$	0.632***	0.633***	0.645***	0.645***
	(11.59)	(11.61)	(6.87)	(6.87)
$Lang_{ij}$	0.264***	0.263***	0.011	0.011
	(6.81)	(6.81)	(0.19)	(0.19)
$Border_{ij}$	0.634***	0.635***	0.949***	0.948***
	(12.15)	(12.16)	(15.90)	(15.90)
RTA_{ijt}	0.479***	0.482***	0.694***	0.707***
	(13.28)	(13.33)	(11.37)	(11.51)
EU_{ijt}	0.380***	0.385***	0.872***	0.892***
	(9.18)	(9.26)	(12.84)	(12.93)
$Relig_{ij}$	0.260***	0.260***	0.276***	0.277***
	(7.38)	(7.39)	(6.74)	(6.78)
$Euro_{ijt}$	0.164***		0.327***	
	(5.06)		(7.93)	
$Euro99\text{-}01_{ijt}$		0.104*		0.247***
		(1.89)		(3.94)
$Euro02\text{-}08_{ijt}$		0.188***		0.363***
		(5.58)		(8.53)
Obs	9035	9035	4836	4836
F	893.36	884.77	670.1	659.95
R2	0.88	0.88	0.8705	0.8707

Notes: Origin, destination and year fixed effect are not reported
t-statistics appear between parentheses
Significance at 1% (***), 5% (**) and at 10% (*)

Table 3: Euro effects by individual country-Euro2002

	OECD		OECD(European)	
	coefficient	Wald-test	coefficient	Wald-test
	0.242***	2.74	0.534***	20.60
Austria-Euro02	(4.35)	[0.098]	(8.00)	[0.000]
	0.146***		0.241***	
Rest of countries	(4.20)		(6.00)	
	-0.075	15.63	0.272***	0.19
Belgium-Euro02	(-1.07)	[0.000]	(4.18)	[0.664]
	0.209***		0.301***	
Rest of countries	(6.21)		(7.34)	
	0.230***	3.31	0.275***	0.30
Finland-Euro02	(5.66)	[0.069]	(5.80)	[0.582]
	0.148***		0.301***	
Rest of countries	(4.14)		(7.16)	
	0.123**	[0.61	0.264***	[0.40
France-Euro02	(2.15)	[0.434]	(4.48)	[0.529]
	0.170***		0.302***	
Rest of countries	(4.90)		(7.27)	
	-0.266***	43.57	0.028	17.79
Germany-Euro02	(-3.36)	[0.000]	(0.35)	[0.000]
	0.258***		0.359***	
Rest of countries	(8.09)		(9.17)	
	0.304***	5.83	0.197**	2.20
Greece-Euro02	(4.38)	[0.016]	(2.34)	[0.138]
	0.135***		0.316***	
Rest of countries	(4.05)		(8.19)	
	-0.033	13.26	0.371***	1.55
Ireland-Euro02	(-0.57)	[0.000]	(5.82)	[0.213]
	0.198***		0.285***	
Rest of countries	(5.66)		(6.82)	
	0.354***	26.73	0.403***	6.15
Italy-Euro02	(8.70)	[0.000]	(7.86)	[0.013]
	0.121***		0.273***	
Rest of countries	(3.39)		(6.52)	
	0.231***	1.08	0.423***	3.04
Luxembourg-Euro02	(3.10)	[0.298]	(5.04)	[0.081]
	0.151***		0.276***	
Rest of countries	(4.50)		(6.87)	
	0.066	3.78	0.322***	0.28
Netherlands-Euro02	(1.12)	[0.052]	(5.29)	[0.596]
	0.185***		0.290	
Rest of countries	(5.37)		(7.07)	
	0.263***	2.64	0.201**	1.85
Portugal-Euro02	(3.85)	[0.104]	(2.54)	[0.174]
	0.147***		0.311	
Rest of countries	(4.32)		(7.65)	
	0.527***	41.47	0.352***	0.63
Spain-Euro02	(7.65)	[0.000]	(4.07)	[0.429]
	0.086***		0.286***	
Rest of countries	(2.63)		(7.37)	

Notes: Origin, destination and year fixed effects are not reported
t-statistics appear between parentheses and p-values between brackets
Significance at 1% (***), 5% (**) and at 10% (*)

Table 4: Euro effect over time

	OECD	**OECD (European)**
Cons	-65.042***	-139.346***
	(-5.70)	(-8.12)
$LnTrade_{ijt}$	0.105***	0.060***
	(8.68)	(5.39)
$LnGDPpc_{it}$	0.436***	-0.805***
	(3.51)	(-3.91)
$LnGDPpc_{jt}$	0.328***	-0.162
	(2.46)	(-0.74)
$LnPop_{it}$	1.550***	4.476***
	(3.36)	(6.34)
$LnPop_{jt}$	3.231***	5.888***
	(6.64)	(7.97)
$LnDist_{ij}$	-0.827***	-0.704***
	(-36.51)	(-17.56)
$LnPPP_{ijt}$	-0.322***	-0.195
	(-4.44)	(-1.32)
$Colony_{ij}$	0.635***	0.659***
	(11.73)	(7.12)
$Lang_{ij}$	0.258***	0.018
	(6.68)	(0.30)
$Border_{ij}$	0.629***	0.933***
	(12.07)	(15.80)
RTA_{ijt}	0.480***	0.733***
	(13.25)	(11.56)
EU_{ijt}	0.324***	0.838***
	(7.52)	(11.44)
$Relig_{ij}$	0.270***	0.291***
	(7.69)	(7.16)
Euro-1995_{ij}	0.197**	0.398***
	(2.11)	(3.71)
Euro-1996_{ij}	0.144*	0.322***
	(1.65)	(3.12)
Euro-1997_{ij}	0.329***	0.462***
	(3.62)	(5.03)
Euro-1998_{ij}	0.358***	0.427***
	(3.41)	(4.00)
Euro-1999_{ij}	0.173*	0.344***
	(1.65)	(2.95)
Euro-2000_{ij}	0.097	0.306***
	(0.90)	(2.63)
Euro-2001_{ij}	0.248***	0.435***
	(3.50)	(5.55)
Euro-2002_{ij}	0.292***	0.454***
	(4.12)	(5.79)
Euro-2003_{ij}	0.316***	0.398***
	(4.45)	(5.04)
Euro-2004_{ij}	0.253***	0.644***
	(3.72)	(7.76)
Euro-2005_{ij}	0.230***	0.567***
	(3.48)	(7.24)
Euro-2006_{ij}	0.246***	0.549***
	(3.75)	(7.11)
Euro-2007_{ij}	0.197***	0.474***

	(2.98)	(6.09)
Euro-2008ij	0.199***	0.460***
	(2.95)	(5.94)
Obs	9035	4836
F	780.39	562.18
R2	0.8804	0.8718

Notes: Origin, destination and year fixed effects are not reported
t-statistics appear between parentheses
Significance at 1% (***), 5% (**) and at 10% (*)

Figure 1: Euro effect over time

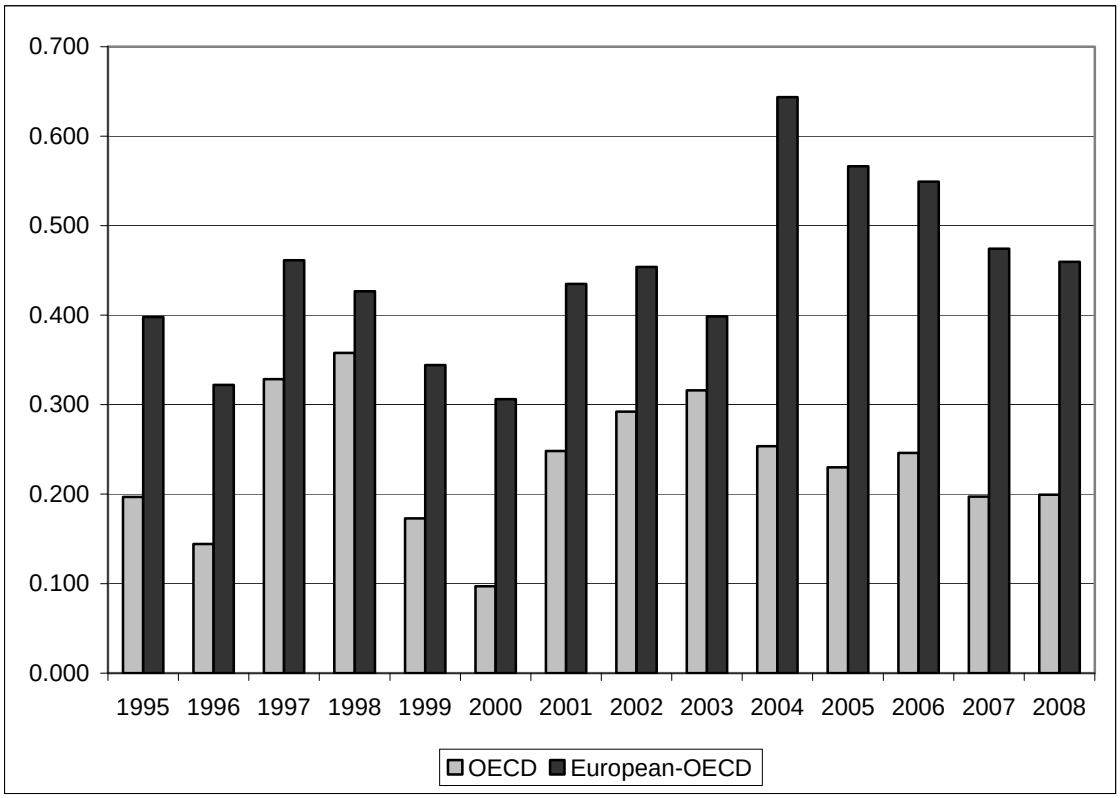

Table 5: Tourism diversion

	OECD		OECD(European)	
	a	**b**	**c**	**d**
Cons	-64.188***	-65.821***	-134.390***	-143.098***
	(-5.62)	(-5.78)	(-7.85)	(-8.24)
$LnTrade_{ijt}$	0.103***	0.103***	0.056***	0.058***
	(8.44)	(8.47)	(5.06)	(5.24)
$LnGDPpc_{it}$	0.420***	0.399***	-0.841***	-0.901***
	(3.39)	(3.21)	(-4.14)	(-4.37)
$LnGDPpc_{jt}$	0.324**	0.304**	-0.156	-0.210
	(2.44)	(2.28)	(-0.71)	(-0.95)
$LnPop_{it}$	1.526***	1.585***	4.323***	4.656***
	(3.33)	(3.46)	(6.13)	(6.53)
$LnPop_{jt}$	3.228***	3.301***	5.753***	6.069***
	(6.61)	(6.77)	(7.81)	(8.12)
$LnDist_{ij}$	-0.829***	-0.827***	-0.699***	-0.700***
	(-36.73)	(-36.64)	(-17.46)	(-17.36)
$LnPPP_{ijt}$	-0.317***	-0.317***	-0.169	-0.196
	(-4.37)	(-4.38)	(-1.15)	(-1.34)
$Colony_{ij}$	0.634***	0.634***	0.659***	0.650***
	(11.69)	(11.66)	(7.13)	(6.98)
$Lang_{ij}$	0.261***	0.263***	0.023	0.015
	(6.75)	(6.81)	(0.40)	(0.26)
$Border_{ij}$	0.630***	0.633***	0.939***	0.947***
	(12.09)	(12.13)	(15.92)	(15.88)
RTA_{ijt}	0.479***	0.476***	0.720***	0.680***
	(13.31)	(13.24)	(11.65)	(11.23)
EU_{ijt}	0.341***	0.372***	0.809***	0.866***
	(8.11)	(9.09)	(12.13)	(12.70)
$Relig_{ij}$	0.264***	0.261***	0.292***	0.277***
	(7.50)	(7.44)	(7.16)	(6.82)
$Euro99\text{-}nonEuro99_{ijt}$	-0.132***		-0.246***	
	(-7.06)		(-10.45)	
$Euro02\text{-}nonEuro02_{ijt}$		-0.142***		-0.276***
		(-6.86)		(-9.75)
Obs	9035	9035	4836	4836
F	897.76	894.08	677.3	666.08
R2	0.8803	0.8802	0.8717	0.871

Notes: Origin, destination and year fixed effects are not reported
t-statistics appear between parentheses
Significance at 1% (***), 5% (**) and at 10% (*)

APPENDIX

Table A.1: Dummy variable of interest regarding the effect of the euro on tourism

variable	Description	Table
Euro$_{ijt}$	Takes a value one if both countries in the pair belong to the EMU since it was created in 1999, zero otherwise	Table 3
Euro99-01$_{ijt}$	Takes a value one if both countries in the pair belong to the EMU during the period 1999-2001, zero otherwise	
Euro02-08$_{ijt}$	Takes a value one if both countries in the pair belong to the EMU during the period 2002-2008, zero otherwise	
Austria-Euro02 $_{jt}$	Takes the value of one for pairs formed by Austria and other EMU country since 2002, zero otherwise. As an example, Austria-Euro02 takes the value 1one for Austria-France in 2002	Table 4. Austria-Euro02 is taken as an example. It is the same for the rest of countries
Rest of countries $_{ijt}$	Takes the value of one for all other pairs of EMU countries since 2002, zero otherwise	
Euro-1995$_{ij}$	Takes a value one if both countries in the pair belong to the EMU in 1995, regardless the EMU was not created at thtt time, zero otherwise. As an example, Euro-1995 takes a value of one for Germany–France in 1995	Table 5. Euro-1995 is taken as an example. It is the same for the rest of the years
Euro99-nonEuro99$_{ijt}$	Takes a value one if just one country in the pair belong to the EMU since it was created in 1999, zero otherwise	Table 6
Euro02-nonEuro02$_{ijt}$	Takes a value one if just one country in the pair belong to the EMU since the euro was circulating in 2002, zero otherwise	
origEuro99-destnonEuro99 $_{ijt}$	Takes a value one if the origin country belong to the EMU since 1999 while the destination country does not belong, zero otherwise	Table A.4
origEuro02-destnonEuro02 $_{ijt}$	Takes a value one if the origin country belong to the EMU since 2002 while the destination country does not belong, zero otherwise	

Table A.2: List of OECD countries

Country		
Austria	European OCDE	EMU
Belgium	European OCDE	EMU
Canada		
Czech Republic	European OCDE	
Denmark	European OCDE	
Finland	European OCDE	EMU
France	European OCDE	EMU
Germany	European OCDE	EMU
Greece	European OCDE	EMU (since 2000)
Hungary	European OCDE	
Iceland	European OCDE	
Ireland	European OCDE	EMU
Italy	European OCDE	EMU
Japan		
Korea, Republic		
Luxembourg	European OCDE	EMU
Mexico		
Netherlands	European OCDE	EMU
New Zealand		
Norway	European OCDE	
Poland	European OCDE	
Portugal	European OCDE	EMU
Slovak Republic	European OCDE	
Spain	European OCDE	EMU
Sweden	European OCDE	
Switzerland	European OCDE	
Turkey		
United Kingdom	European OCDE	
United States		

Table A.3: Percentage of tourist departure per countries (European OCDE sample)

	1995		2002		2008	
country of origin	% of tourist departures to Non EMU countries	% of tourist departures to EMU countries	% tourist departures to Non EMU countries	% tourist departures to EMU countries	% tourist departures to Non EMU countries	% tourist departures to EMU countries
Austria	44.6	55.4	10.7	89.3	24.7	75.3
Belgium	16.8	83.2	9.7	90.3	9.4	90.6
Czech Republic	97.2	2.8	92.3	7.7	85.6	14.4
Denmark	31.0	69.0	45.7	54.3	28.2	71.8
Finland	35.2	64.8	53.1	46.9	29.8	70.2
France	52.5	47.5	19.8	80.2	23.0	77.0
Germany	69.0	31.0	40.0	60.0	50.0	50.0
Greece	56.2	43.8	15.0	85.0	24.0	76.0
Hungary	48.2	51.8	31.7	68.3	31.4	68.6
Iceland	45.2	54.8	57.9	42.1	55.7	44.3
Ireland	84.3	15.7	56.6	43.4	55.7	44.3
Italy	16.1	83.9	12.2	87.8	17.5	82.5
Luxembourg	15.5	84.5	10.3	89.7	11.1	88.9
Netherlands	16.6	83.4	10.4	89.6	16.0	84.0
Norway	51.8	48.2	44.1	55.9	38.0	62.0
Poland	44.7	55.3	29.0	71.0	49.8	50.2
Portugal	53.7	46.3	7.9	92.1	10.6	89.4
Slovak Republic	99.1	0.9	94.2	5.8	88.7	11.3
Spain	9.6	90.4	11.0	89.0	21.3	78.7
Sweden	36.9	63.1	33.8	66.2	37.1	62.9
Switzerland	10.8	89.2	7.2	92.8	8.3	91.7
United Kingdom	3.1	96.9	4.4	95.6	5.9	94.1

Table A.4: Tourism diversion (origin Euro/destination non-Euro member)

	OECD		OECD(European)	
	a	b	c	d
Cons	-68.430***	-70.574***	-145.239***	-151.339***
	(-6.05)	(-6.25)	(-8.34)	(-8.67)
$LnTrade_{ijt}$	0.104***	0.104***	0.060***	0.061***
	(8.53)	(8.54)	(5.43)	(5.39)
$LnGDPpc_{it}$	0.372***	0.386***	-1.011***	-0.940***
	(2.99)	(3.10)	(-4.86)	(-4.53)
$LnGDPpc_{jt}$	0.350***	0.297**	-0.064	-0.207
	(2.61)	(2.22)	(-0.29)	(-0.94)
$LnPop_{it}$	1.722***	1.780***	4.507***	4.524***
	(3.77)	(3.90)	(6.32)	(6.35)
$LnPop_{jt}$	3.296***	3.409***	6.267***	6.644***
	(6.78)	(7.03)	(8.40)	(8.84)
$LnDist_{ij}$	-0.828***	-0.827***	-0.698***	-0.703***
	(-36.67)	(-36.54)	(-17.34)	(-17.27)
$LnPPP_{ijt}$	-0.270***	-0.307***	0.076	-0.041
	(-3.69)	(-4.24)	(0.50)	(-0.27)
$Colony_{ij}$	0.633***	0.631***	0.657***	0.642***
	(11.62)	(11.54)	(7.08)	(6.83)
$Lang_{ij}$	0.264***	0.267***	0.017	0.008
	(6.84)	(6.92)	(0.29)	(0.15)
$Border_{ij}$	0.632***	0.635***	0.943***	0.951***
	(12.11)	(12.16)	(15.83)	(15.86)
RTA_{ijt}	0.474***	0.469***	0.682***	0.655***
	(13.18)	(13.08)	(11.24)	(10.96)
EU_{ijt}	0.372***	0.404***	0.838***	0.892***
	(8.98)	(9.97)	(12.35)	(12.98)
$Relig_{ij}$	0.260***	0.256***	0.278***	0.264***
	(7.39)	(7.29)	(6.80)	(6.47)
origEuro99/destnonEurot99	-0.179***		-0.405***	
	(-5.90)		(-9.26)	
origEuro02/destnonEurot02		-0.132***		-0.292***
		(-4.74)		(-7.49)
Obs	9035	9035	4836	4836
F	890.99	887.43	669.06	656.76
R2	0.8801	0.8799	0.8713	0.8699

Notes: Origin, destination and year fixed effects are not reported
t-statistics appear between parentheses
Significance at 1% (***), 5% (**) and at 10% (*)