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Exchange Rate Regimes and Tourism

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Exchange Rate Regimes and Tourism

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Abstract

The main objective of this paper is to analyse the effect of the exchange rate arrangements on international tourism. The ambiguity of literature about the effect of exchange rate volatility contrasts with the magnitude of the impact of a common currency on trade. In this paper we apply panel data techniques to analyse the relevance of a common currency on tourism finding that a common currency is a major factor in the determination of tourist arrivals. We also analyse the impact of several *de facto* exchange rate arrangements on tourism, finding that less flexible exchange rates promote tourism.

Keywords: Tourism, Exchange Rate Regime, Common Currency

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1. Introduction

Recent research on exchange rate regimes has been focused on the effect of currency unions on international trade flows. In that sense, the effect of a common currency on trade has been studied extensively, however the empirical link between a currency union and international tourism has been less explored. What is more important, the relevance of the exchange rate regime, further than the common currency regime, in the volume of trade and tourism has received a little attention and the main antecedents are founded on the empirical trade literature. Our paper makes a contribution to fill the lack of literature by analysing the effect of different exchange rate regimes on international tourist flows.

The beliefs about the performance in terms of inflation and growth are decisive in the choice of the exchange rate regime. Furthermore, the effect of the exchange rate regime on the international trade is another argument commonly considered to justify the exchange rate policy. In this way, less flexible exchange rates are expected to promote international trade and tourism *via* reduced uncertainty in the international transactions, eliminated transaction costs and enhanced transparency of the markets. However, the empirical literature is not conclusive to that respect. As surveyed by McKenzie (1999) and more recently by Ozturk (2006), the evidence about the effect of less exchange rate volatility on trade is mixed and the results are sensitive to the choice of sample period, model specification, proxies for exchange rate volatility and countries considered.

In contrast to this inconclusive link, an influence article by Rose (2000) estimates a very large effect of a currency union on trade and suggests that fixed exchange rate regimes could affect trade performance. According to his results, members of currency unions seemed to trade over three times as much as otherwise pair of countries. This results is surprisingly large and has received little acceptance among the researches. Related to the effect of common currency on tourism, to the best of our knowledge, Gil-Pareja et al. (2007a) is the unique published paper for the analysis of the effect of a common currency on international tourism. These authors find a moderate effect of the currency union on tourism for the members of the Economic and Monetary Union (EMU). The impact of other exchange rate regimes on tourism has not been analysed in the literature.

For the case of analysis of other exchange rate regimes on trade and tourism, Adam and Cobham (2007) estimates for the first time the influence of exchange rate regimes on international trade finding that exchange rate regimes which reduce exchange rate risk and transactions costs have positive effects on trade. Related to international tourism as far as we are concerned, there is not paper about the impact of exchange rate regimes on this flow. So, our research is the first attempt to analyse the influence of the exchange rate regimes, further than currency unions, on international tourism. To that end, we estimate a large panel data set based on a gravity equation model. Firstly, we analyse the effect of common currency on international tourism considering additionally other experiences of common currency than the EMU. Secondly, the model is augmented by controlling for a set of different exchange rate arrangements between countries.

The main contribution of the present research is threefold: First the influence of exchange rate regimes, not only a common currency, on tourism is studied, second the analysis highlights the distinction between official and *de facto* exchange rate regimes and third a larger data set than previous works is used. Moreover, an empirical econometric panel data methodology is proposed. This method takes into account the endogeneity of some regressors in the gravity equation and also a treatment of the individual heterogeneity in the panel data model.

To that end, the paper is organised as follows. In section 2 the relevant literature about the link between exchange rate regimes and tourism and trade is presented. In section 3 the data and methodology followed are described. In section 4 the results for the estimation effect of a currency union on tourism are discussed and in section 5 a more general question to analyse the influence of exchange rate policy on international tourism is addressed. The final section summarises the main results and conclusions.

2. Background

Interestingly, regardless the importance of currency unions on tourism, there is just one paper written by Gil-Pareja et al (2007a) that analyses the effect of common currency on tourism and it is focused for the case of the EMU. Even more notable is the fact that there is not any research that investigates the effect of exchange rate regimes on tourism. As mentioned before, the antecedents are founded in the trade theory and in this sense, there is a body of previous papers in the literature that can be organised in three groups. The first group is focused on the effect of exchange rate volatility on trade and tourism, the second group analyses the influence of a common currency on both flows and the third group refers to the few articles that study the effects of the exchange rate regimes beyond the currency union on trade.

On the effect of exchange rate volatility on trade, McKenzie (1999), Clark et al. (2004) and Ozturk (2006) are exhaustive reviews of the theoretical and empirical effects of exchange rate volatility on international trade. On this topic, the underlying trade theory holds that international trade responds adversely to exchange rate uncertainty. However, this theoretical relationship is sensitive depending on the risk attitude of agents and the presence of developed forward exchange markets, among other things[1]. At the same time, as surveyed by the previously mentioned guides, the empirical work reproduces this ambiguity, which may reflect the lack of clear theoretical foundations as well as the difficulty to measure the exchange rate risk. The results of the reviewed papers suggest that although less exchange rate volatility seems to imply less risk, the empirical effect on trade remains ambiguous.

Related to the effect of exchange rate volatility on tourism, Webber (2001) investigates the impact of exchange rate volatility on tourism demand. The author applies cointegration and Granger causality techniques to study the long run relationship between tourism demand and exchange rate volatility. The variance of the exchange rate was found to be a significant determinant of long-run tourism demand in the half of estimates.

With respect to the second group of papers, the study of the effect of common currency arrangement on trade and tourism is a distinct issue from the impact of exchange rate volatility. Common currency implies more than just an elimination of exchange rate volatility among members because it also reduces transaction costs relevant to trade and tourism dealings and provides a commitment device for macroeconomics policies. Using Rose (2000) own words: *"entering a currency union delivers an effect that is over an order of magnitude larger than the impact of reducing exchange rate volatility from one standard deviation to zero"*. This is easier to understand in the case of tourism where hedging strategies are less common than in international trade.

To that respect, the seminal paper written by Rose (2000) constitutes an unsolved puzzle in International Economics. The author addresses the question of the relevance of a common currency in the volume of trade and estimates an empirical model of bilateral trade based on a gravity equation. He uses data on trade for around 200 countries in five consecutive five-year periods from 1970. The results suggest a positive and significant coefficient of the currency union dummy with an estimation of 1.2 which implies an effect of currency union on trade of a 200%. As a matter of facts, although economists widely believe that monetary union lower inflation and promote trade, still many are surprised that the magnitude of the observed trade effect is so large. Rose himself has offered further empirical work in the area (notably Rose, 2001; Rose and van Wincoop, 2001; Glick and Rose, 2002),

Rose's finding that membership of a currency union appears to have a very large positive effect on trade between countries has provided a major stimulus to empirical and theoretical work on gravity models of trade. The effect of common currency on trade estimated by Rose (2000) has received little acceptance and, as a consequence some researches have been devoted to justify why it is not correct. For instance, Thom and Walsh (2002) emphasized the need for a longer dataset. A short term analysis addresses the question of whether countries with the same currency trade more but not analyses the interesting issue of what happens to trade when a currency union is created or dissolved. For this reason, Glick and Rose (2002) estimated the effect of currency unions on trade covering 217 countries for 50 post-war years. This data set allowed them to exploit time and cross-sectional variation. Using conventional OLS they obtain that countries with a common currency traded again over three times as much as otherwise pairs of countries. In the fixed effects estimation, a currency union almost doubles bilateral trade.

Another important critique to Rose's work lies on the econometric technique used. Persson (2001) indicated the presence of non-random selection and non-linearities. However, Rose (2001) calculated a low correlation between the common currency and the gravity regressors, suggesting the absence of bias selection problems. He also uses the matching techniques proposed by Persson and addresses the problem of non-linearity. He provides an alternative estimates and the results although suggest a more modest expansion of trade, around 40%, it still remains considerable. The key results remain robust. Rose and Stanley (2005) implement a meta-analysis to explain and to summarize thirty-four recent studies that investigate the effect of currency union on trade. Combining these estimates, the authors found that a currency union increases bilateral trade by between 30 and 90%, i.e., there is evidence of a positive trade effect.

The mixed results about the effect of exchange rate volatility on trade but the important impact of a single currency on international trade draw attention to the apparent contradictory empirical findings. Exchange rate volatility does not make a clear influence in international trade but a volatility of zero, i.e. a common currency, is a major factor in the determination of the volume of international trade. This result suggests that the measures of exchange rate volatility may not be a good proxy for exchange rate risk and other variables such as the exchange rate regime may be better to analyse the effect of the exchange rates on trade.

As can be observed, the effect of the currency unions on international trade has been studied intensively. Nevertheless, international tourism has failed to attract the attention of economist to analyse the effect of common currency on this flow. According to Gil-Pareja et al. (2007a) there is no paper on the impact of a single currency on tourist flows. These authors estimate the effect of the euro on intra-EMU tourist flows by using a panel dataset of 20 OECD countries over the period 1995-2002. The results reveal that the euro has increased tourism with an effect of around 6.3%. Despite being much more moderate than Rose's (2000) findings for the effect of common currency on trade, this is a noticeable impact given the early stage of the EMU at the period considered. Moreover, the robustness checks show that the evidence of a positive impact is quite widespread across the EMU destination countries. However, it is important to clarify that this research does not consider other currency unions different from the particular case of the EMU, and as a consequence general statements on the relevance of a common currency on tourism can be hardly set.

Finally, related to the third group of papers, the antecedents are less abundant in contributions. Aristotelous (2001) analyses the effect of exchange rate systems using a long span of data for the British exports to the US, finding that there is not evidence that any official exchange rate regime had any impact on the exports. However, López-Cordova and Meissner (2003) found strong evidence that monetary regime choice had large impact on trade in the Gold Standard Era before 1913. Gil-Pareja et al (2007b) by using a dataset of 24 OECD countries over the period 1960-2004, investigates the effect of a particular arrangement as the exchange-rate mechanism of the European Union on international trade. The findings confirm the importance of this regime for the peripheral countries.

Among the few empirical studies on this group, there is an interesting paper by Adam and Cobham (2007) which provides the first estimates of the effects on trade of a full 'menu' of exchange rate regimes. These authors estimate the relevance of exchange rate regimes on trade using the Reinhart and Rogoff's (2004) classification of *de facto* exchange rate regimes. The main result is that other regimes are significantly more pro-trade than flexible exchange rates and that the more an exchange rate regime reduces uncertainty and transactions costs, the more it boosts trade.

As can be observed, the analysis of the relevance of a currency union and other exchange rate arrangements on tourism has received little attention with the exception of Gil-Pareja et al. (2007a, b). Moreover, there is not paper in the analysis of the effect of different exchange rate regimes on tourism. Nevertheless, the exchange rate is commonly considered a determinant in the estimation of tourism demand and it is introduced either as an independent variable or into a relative price variable.

According to the discussions of Martin and Witt (1987), Crouch (1994), and Witt and Witt (1995), the cost of living in the tourist destination depends on the destination country prices and the exchange rate. In this sense, tourism is likely to be affected by the exchange rate volatility since a substantial component of the expense of a foreign holiday is expenditure at the holiday location.

Webber (2001) suggests that exchange rate volatility affects tourist decision of the destination country for their holidays and changes in the exchange rate are likely to have the same impact on the tourist's destination choice as relative price changes. In a similar way, Sinclair and Stabler (1997) argue that the exchange rate mimics the effects of the relative prices, of which tourists have a limited knowledge, due to the fact that they buy the holidays before leaving using their own national currency[2]. According to these results, exchange rate is a major determinant of tourist demand and exchange rate regimes with low uncertainty could promote tourism.

3. Data and methodology

In this section, some particular features of the gravity equation are presented, the dataset is described and the estimation methods are discussed.

After being introduced by Tinbergen (1962), the gravity models are known for their strong fit to the data. Subsequently, connections to key elements of trade theory have been made. The gravity model can be supported by Heckscher-Ohlin models,

models based in differences in technology across countries, and the new models that introduce increasing returns and product differentiation[3]

Anderson (1979) employed the product differentiation by country of origin assumption. By specifying demand in these terms, Anderson helped to explain the presence of income variables in the gravity model. This approach was also adopted by Bergstrand (1985). The author considers that prices in the form of GDP deflators might be an important additional variable to include in the gravity equations.

The monopolistic competition model of new trade theory has been another approach to providing theoretical foundations to the gravity model (Helpman, 1987 and Bergstrand, 1985). Here, the product differentiation by country of origin approach is replaced by product differentiation among producing firms.

Alternatively, there are other approaches to gravity-based explanations of bilateral trade that do not depend on complete specialization. According to Haveman and Hummels (2004), it should be taken into consideration trade frictions in the form of distance-based shipping costs or other trade costs, as well as policy-based trade barriers. Distance costs can also be augmented to account for infrastructure, oil price, and trade composition as in Brun et al. (2005).

The standard empirical specification of the gravity equation takes the following form:

$$F_{ij} = \alpha \frac{(Y_i)^{\alpha_1}(Y_j)^{\alpha_2}}{(D_{ij})^{\alpha_3}} \qquad [1]$$

where *i* and *j* represents the destination and origin country respectively, F_{ij} is the flow between countries, Y_i and Y_j are their economic sizes commonly measured by *GDP* or *GDP per capita* and D_{ij} is distance between the two countries. Gravity models used in international trade literature additionally include other relevant variables such population, common language, colony, number of islands or a common border. According to Anderson and Van Wincoop (2003) the gravity model has been widely used to infer trade flow effects such as languages, common border, common currency and ethnic ties. In our context, tourism can be considered as a special type of trade and therefore a gravity equation accordingly adapted is used. Specifically, this study consider the number of tourist arrivals at destination *i* from country *j* as the dependent variable. Reformulating equation [1] and applying logarithm, the gravity model recognizes that international tourism is increasing in *GDP per capita* and decreasing in the distance between countries. The product of the population is included to measure the size of the countries and total trade is added as a proxy for the intensity of the economic relations between the countries[4]. Furthermore, the model is also augmented with a number of additional controls:

$$\begin{aligned} \ln T_{ijt} = {} & \beta_0 + \gamma_t + \beta_1 \ln GDPpc_{it} + \beta_2 \ln GDPpc_{jt} + \beta_3 \ln Pop_{it} + \beta_4 \ln Pop_{jt} \\ & + \beta_5 \ln D_{ij} + \beta_6 \ln Trade_{ijt} + \beta_7 Lang_{ij} + \beta_8 Border_{ij} + \beta_9 Colony_{ij} \\ & + \beta_{10} Landl_{ij} + \beta_{11} Island_{ij} + \beta_{12} \ln Comp_{ijt} + \eta' Z_{ijt} + u_{ijt} \end{aligned} \qquad [2]$$

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

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

$GDPpc_{it}$ is the real GDP per capita of the destination country in year *t*,

$GDPpc_{jt}$ is the real GDP per capita of the origin country in year *t*,

Pop_{it} denotes the population per capita of the destination country in year *t*,

Pop_{jt} denotes the population per capita of origin country in year *t*,

D_{ij} is he great circle distance between capital cities of countries *i* and *j*,

$Trade_{ijt}$ denotes the real bilateral trade between countries *i* and *j* in year *t*,

$Lang_{ij}$ is a binary variable which is unity if *i* and *j* have a common language and zero otherwise,

$Border_{ij}$ is a binary which is unity if *i* and *j* share a common land border and zero otherwise,

$Colony_{ij}$ is a binary variable which is unity if one country ever colonized the other or vice versa and zero otherwise,

$Landl_{ij}$ is the number of landlocked countries in the country-pair (0, 1, or 2),

$Island_{ij}$ is the number of island nations in the pair (0, 1, or 2),

$Comp_{ijt}$ denotes a competiveness variable calculated as a real exchange rate between countries i and *j*,

Z_{ijt} is a vector of binary variables related to exchange rate regimes,

β_0 is a constant, γ_t are year fixed effects, $\beta_1,...,\beta_{12}$ are a set of coefficients and η' is a row vector of the parameters of interest, and u_{ijt} is a well-behaved disturbance term.

Dataset includes the OECD countries (excluding Slovakia because of data availability problems) as origins and 113 countries, including the OECD countries as tourist destinations. Then database includes 3393 pairs of countries over the period 1995-2004[5].

The source of tourism data is the *United Nations World Tourism Organisation (UNWTO)* and includes annual international arrivals by country of origin. Trade variable is defined in million of US$ and is obtained from *Direction of Trade* dataset of the *International Monetary Fund*. This variable requires to be converted to real terms by using US GDP deflator. Despite being a gravity equation, *$Comp_{ijt}$* is introduced since the dependent variable is arrivals and therefore controlling by competitiveness is needed to avoid biased estimates. This variable is calculated using CPIs obtained from the

International Labour Organisation and nominal exchange rates obtained from the *International Monetary Fund Financial Statistics*. US GDP deflator, GDP *per capita* and population were obtained from the *World Development Indicators* (2006) and the *UNCTAD Handbook of Statistics* (2008)[6]. The distance variable and dummy variables *Lang*, *Colony* and *Landl* were obtained from the *Centre d'Etudes Prospectives et d'Informations Internationales (CEPII)* dataset while *Island* was obtained from Andrew K. Rose's website and the *CIA Factbook*.

As mentioned before, this paper involves two different analyses and as a consequence model [2] is estimated including different variables of interest. First, the effect of common currency on tourism is estimated, so a dummy variable is incorporated to the model (Section 4). The common currency cases considered are presented in Table 1.

[**Table 1, here**]

The second analysis involves the study of the impact of different exchange rate regimes on tourism. For that reason, a set of exchange rate regime dummies are considered in the model (Section 5). To build the exchange rate regime variables we use the dataset of *de facto* exchange rate regimes estimated by Reinhart and Rogoff (2004). This is one of a number of classifications produced in recent years in attempts to discriminate between regimes on the basis of what countries actually do rather than what they say they do; it makes particular use of parallel market data as well as official exchange rate data. This dataset presents a classification of *the facto* exchange rate regimes by country for the period 1946-2001.

Empirical research on gravity equation commonly estimates by pooled OLS. However, if we assume that an unobserved heterogeneity exists, this technique can provide inconsistent and inefficient estimates. In this case, panel data offers more suitable estimation technique to control by individual heterogeneity. Estimation of classical panel data models can be addressed by fixed-effect (FE) or random effect estimators (RE), depending on individual invariant effects, which are unobserved, may be correlated with exogenous regressors (RE) or not (FE). The Hausman test, based on the difference between RE and FE, allows us to determine which estimator is statistically better.

However, our model presents two different features with respect to most of the gravity equation estimations. Firstly, if we consider that some regressors are not strictly exogenous, the estimation of the parameters is inconsistent. This is the case of *GDPpc* of the destination country and *Trade* which are endogenous in equation [2]. On the one hand, *Trade* is considered as an endogenous variable since recent evidence of a bilateral relationship between trade and tourism is found. The influence of travel on trade can take several paths, for instance, facilitating commercial relations under information failures (Aradhyula and Tronstad, 2003; Sinclair, 1998). The other causality direction between tourism and trade can appear since trade not only needs but also influences business trips. Furthermore, an increase of imports directed to satisfy tourists could have a positive influence on their visits. On the other hand, the consideration of *GDPpc* of destination country as an endogenous variable is clear since both tourism and trade increase the market size of tourist destination promoting growth. The influence of international trade in economic growth has been extensively studied over decades as Marin (1992) surveyed. For its part, recent research finds that tourism has enforced the economic growth in many countries[7].

Henceforth, instrumental variable methods, such as two-stage least squares fixed effects (FE-2SLS) or two-stage least squares random effects (RE-2SLS), are appropriate to deal with this problem. In this context, we can also test if the set of instruments are strictly exogenous. Although this is not a test of endogeneity per se, it is a test of whether endogeneity has a significant effect on the consistency of the estimates. Specifically, we use a simple way to test the exogeneity of regressors by regressing the FE-2SLS and RE-2SLS residuals against the instrumental variables and all the exogenous ones. The acceptance of the null hypothesis of absent of relation between instruments and residuals would suggest that the instruments are strictly exogenous and hence they would be suitable for the estimation.

Secondly, it is important to note that in our research the classical estimation by using country-pair fixed effects cannot be addressed since observations of interest disappear. Indeed, variables of exchange rate regimes are dropped from the estimation by fixed-effect due to the collinearity, given that they are time-invariant in many country pairs. In a recent econometric literature, a way to overcome this problem is the introduction of individual country fixed-effects for the importers and the exporters in the gravity model. Several papers have estimated trade models including individual country effects as Mathias (1997) and Mathias et al. (2004), or more recently Cheng and Wall (2005) and Kandogan (2008).

In this modified fixed-effect model, the intercept has three parts: one common to all country pairs β_0 , one specific to years γ_t and one specific to the country pairs μ_{ij} . This last one is defined as the sum of two components: $\mu_{ij} = \alpha_i + \lambda_j$, being α_i and λ_j the separate fixed-effect dummy variables for the destination and origin country respectively. Again, an error term v_{ijt} is assumed to be normally distributed with zero mean and constant variance for all observations. It is also assumed that the disturbances are pairwise uncorrelated. This model is a special case of the FE model given that it has a unique value for each trading pair's intercept, with the restrictions that a country's fixed effect as an exporter or importer is the same for all of its trading partners. A way to prevent perfect collinearity in estimating equation [2] with the separate fixed-effect dummy variables is to impose the restrictions that one of the $\alpha's$ and one of the $\lambda's$ are zero. Because each α_i and λ_j comprise part of many $\mu_{ij}'s$, this is the same as imposing a series of cross-pair restrictions on the $\mu_{ij}'s$ (Cheng and Wall, 2005).

4. The common currency effect

In this section the effect of a common currency on tourism flows is estimated. The descriptive statistics are presented in Table A.2 in Appendix. The empirical analysis is based on the standard gravity framework, presented in the previous section. The endogenous variables considered are *Trade* and *GDPpc* of the destination country and the same variables lagged one period are the instruments.

Table 2 reports the results after estimating by OLS, FE-2SLS and RE-2SLS, the number of observations, the R^2, the F-statistic for the global significance of each model, the F-statistic for the null of non-significant fixed-effects (F-FE), and the test whether the set of instruments are strictly exogenous and the Hausman test for fixed and random effects. Additionally the estimated equation is presented in this table. Standard errors robust to heteroscedasticity are computed by using Huber-White estimator, also known as sandwich estimator. This estimator is robust to some types of misspecification so long as the observations are independent.

[**Table 2, here**]

From the R^2, it can be observed how gravity equation works well explaining approximately 66% of the variation in international tourism for the case of OLS, 65% for the case of RE-2SLS and 84% for the case of FE-2SLS. The instruments seem to be strictly exogenous and the Hausman test shows that FE-2SLS is more appropriate to estimate this model since the null hypothesis is rejected. The coefficient of *Trade* is significant and has positive sign, indicating a complementary relationship between trade and tourism as suggested by Khan et al. (2005) and Santana et al. (2007), among others.

As expected, GDP *per capita* of destination and origin countries are significant, so economic mass has a positive influence in tourism implying that as richer countries are, higher the international tourism between them. Population of origin country is significant while the Population of the destination appears to be not relevant. In particular, the population and the real GDP *per capita* variables of the origin countries have a large impact on tourism flows. The distance has the expected negative sign, showing that *ceteris paribus*, international tourists prefer near destinations. The competitiveness variable is not significant, suggesting the relevance of non-price competition in tourism markets[8]. *Lang* has a positive effect on international tourism flows, indicating that a different language behaves as a barrier for the visits, *Border* variable is significant and with positive sign which implies that tourists choose to travel to contiguous countries and the coefficient of *Colony* is positive suggesting that international tourist arrivals increase whether one country ever colonized the other or vice versa. The effect of the number of *Landl* is positive while the coefficient of *Island* is negative, suggesting that these conditions make difficult to access to this destination country.

Focusing our attention on the *CommonCurrency* variable, its coefficient 0.1118 is statistically significant and this result suggests that a common currency promotes tourist arrivals. Specifically, the effect of currency union on tourism amounts to 12% ($\exp(0.1118) \approx 1.12$). This result is economically significant and higher than the estimated by Gil-Pareja et al. (2007a), although we need to consider that in our analysis we are taking into account more currency union cases apart from the EMU, the time period is longer, and the estimation is controlled by endogeneity.

5. Analysing the effect of exchange rate regimes on tourism flows

To date, the impact of exchange rate on tourism demand has not been investigated in the tourism literature to these authors' knowledge. For that reason, in this section the effect of exchange rate regimes, not only common currency, on tourism is analysed. Now a more general question is addressed: Do exchange rate regimes affect tourism flows? As mentioned in section 2, Adam and Cobham (2007) is one of the few works that analyses the effect of exchange rate regimes on bilateral trade showing that there is a graduated effect by which greater exchange rate fixity and lower transactions costs encourage trade. According to these authors, the effect of currency unions on trade turns out to be the strongest, but other regimes which imply more uncertainty and larger transactions costs relative to currency union also promote trade.

In this section, the effect of the exchange rate regimes is estimated by using the gravity equation [2] augmented with set of dummy variables which control by the exchange rate regimes between countries. The descriptive statistics are presented in Table A.3 in Appendix.

Reinhart and Rogoff classify most of the countries in our sample in terms of 15 different regimes. As can be observed in Table 3, following this classification, we define five binary exchange rate regimes dummy variables, that is, *CommonCurrency* which is unity if the countries share the same physical currency, *CurrencyBoard* which is unity if this regime is present in the pair of countries, *Peg* which is unity if a country in the pair pegged this currency to the one of the other country of the pair, *CrawlingPeg* which is unity if a currency in the pair is pegged to the other currency with a clear trend to depreciation and *ManagedFloating* which is unity if both countries present a managed floating regimes. The first regime is associated with a completely fix exchange rate, although the common currency not only implies the reduction of uncertainty by eliminating exchange rate volatility but also avoids some transaction costs. The second and third regimes can be considered nearly fixed, although there is some uncertainty. Related to the crawling peg regime, it could promote tourism in two ways: the exchange rate presents low uncertainty and there is a continuous trend to depreciation that visitors interpret as a signal of cheap destination. Finally the managed floating regime is the most flexible regime of the previously mentioned.

[**Table 3, here**]

Table 4 presents the results after estimating the equation [2] augmented with exchange regimes dummies by OLS, and by FE-2SLS and RE-2SLS. In this case the time period is reduced, from 1995 to 2001, due to the availability of *de facto* exchange rate regime data. Consequently, due to the euro started to circulate in 2002, the case of the EMU is not taken into account in the *CommonCurrency* dummy.

[Table 4, here]

Again, the exogeneity tests show that the instruments are exogenous and the Hausman test suggests that it is better to estimate the model by FE-2SLS. Also our regression fits well the data since the R^2 is around 84%. The coefficients of the explanatory variables are significant at 10% in almost all the cases and the signs are as expected. Moreover, the results are very similar to the one presented in Table 2, although in the FE-2SLS estimate population of destination country is significant while its *GDPpc* is not.

As can be observed, the coefficients of the variable of interest, the effect of the common currency variable has a significant and noticeable effect on tourism, being the coefficient 1.457. However as mentioned above, this results must be interpreted with caution as the number of common currency cases has been reduced due to the shorter sample period. The coefficients for the *currencyboard* and the *peg* are 0.424 and 0.017 although peg variable is not significant. If we observe the coefficient of the *crawling peg*, it is 0.189 which supposes an increase of 21% of tourism. This last result is not surprising since this regime not only implies low volatility and consequently low uncertainty but also is associated with a continuous depreciation of the exchange rate which makes tourist destination cheaper. Finally, the coefficient of the *managedfloating* is 0.173 which is significant but with an effect on tourism flows lower than the other cases. Summarising, the results suggest that the more flexible the exchange rate arrangements are, the more intense tourism trips.

6. Conclusions

In this paper we analyse the effect of the exchange rate regimes on international tourism flows. The literature is not conclusive about the effect of exchange rate volatility on trade. On the contrary, the empirical research suggests a big positive impact of a common currency on trade while its effect on tourism need to be more investigated. On the basis of a gravity equation we estimate a sizeable effect of a currency union on international tourism of almost 12%. This may add an additional argument to the debate on the benefits and drawbacks of a currency union.

Also, we analyse the impact of several *de facto* exchange rate arrangements on international. We have found that other intermediate exchange rate regimes, between completely fixed and completely flexible, promote tourism. The results show that less flexibility in the exchange rate arrangements generates a positive effect on tourism and that less flexible the exchange regime is, the greater the impact on tourism. These results may contribute to the controversial choice of the exchange rate regime. Since less flexible *de facto* exchange rate regime seems to expand tourism and trade, they could encourage growth *via* an increase of the market size. Given the increasing importance of tourism in the balance of payments future research could address the relevance of exchange rate arrangement on tourist revenues beyond the country-pair basis analysis leaded in this work.

References

Adam, C and Cobham, D. (2007), 'Exchange Rate Regimes and Trade',*Manchester School, University of Manchester*, Vol 75(s1), pp 44-63.

Anderson, J. E. (1979), 'A theoretical foundation for the gravity equation',*American Economic Review*, Vol 69(1), pp 106-116.

Anderson, J.E and van Wincoop, E. (2003), 'Gravity with Gravitas: A solution to the border puzzle', *American Economic Review*, Vol 93(1), pp 170-192.

Aradhyula, S. and Tronstad, R. (2003), 'Does Tourism Promote Cross-Border Trade?', *American Journal of Agricultural Economics*, Vol 85(3), pp 569-579.

Aristotelous, K. (2001), 'Exchange-rate volatility, exchange-rate regime, and trade volume: evidence from the UK-US export function (1889-1999)', *Economics Letters*, Vol 72, pp 87-94.

Balaguer J., and Cantavella-Jordá, M. (2002), 'Tourism as a long-run economic growth factor: the Spanish case', *Applied Economics*, Vol 34, pp 877-884.

Bergstrand J.H. (1985), “The gravity equation in international trade: Some microeconomic foundations and empirical evidence,” *The Review of Economics and Statistic*s, Vol 67, pp 474-481.

Brun, J.F, Carrère, C., Guillaumont, P. and de Melo, J. (2005), 'Has distance died? Evidence from a panel gravity model', *World Bank Economic Review*, Vo l19(1), pp 99-120.

Cheng, I-H and Wall, H.J. (2005), 'Controlling for heterogeneity in gravity models of trade and integration', *Review, Federal Reserve Bank of St. Louis*, issue Jan, pp 49-63.

Clark, P.B., Tamiris N. and Wei, S-J (2004), 'A New Look at Exchange Rate Volatility and Trade Flows', *IMF Ocassional Paper* 235.

Crouch, G.I. (1994), 'The study of international tourism demand: A review of findings', *Journal of Travel Research*, Vol 33(1), pp 12-23.

De Grauwe, P. (1988), 'Exchange rate variability and the slowdown in the growth of international trade', *IMF Staff Papers*, Vol 35, pp 63-84.

Deardoff, A. V. (1995), 'Determinants of bilateral trade: Does gravity work in a Neoclassical World? ', *NBER Working Papers*, 5377, National Bureau of Economic Research, Inc.

Dritsakis, N. (2004), 'Cointegration analysis of German and British tourism demand for Greece', *Tourism Management*, Vol 25(1), pp 111-119.

Easton, S. T. (1998), 'Is Tourism Just Another Commodity? Links between commodity trade and tourism', *Journal of Economic Integration*, Vol 13, pp 522-543.

Eilat, Y. and Einav, L. (2004), 'Determinants of international tourism: a three-dimensional panel data analysis', *Applied Economics*, Vol 36, pp 1315-1327.

Gil-Pareja, S., Llorca-Vivero R., and Martínez-Serrano, J.A. (2007a), 'The effect of EMU on tourism', *Review of International Economics*, Vol 15(2), pp302-312

Gil-Pareja, S., Llorca-Vivero R., and Martínez-Serrano, J.A. (2007b), 'Did the european exchange-rate mechanism contribute to the integration of peripheral countries? ', *Economics Letters*, Vol 95, pp 303-308.

Glick, R. and Rose, A.K. (2002), 'Does a currency union affect trade? The time-series evidence', *European Economic Review*, Vol l46, pp1125-1151.

Haveman, J. and Hummels, D. (2004), 'Alternative hypotheses and the volume of trade: The gravity equation and the extent of specialization', *Canadian Journal of Economics*, Vol 37(1), pp 199-218.

Helpman, E. (1987), 'Imperfect competition and international trade: Evidence from fourteen industrial countries', *Journal of the Japanese and International Economies*, Vol 1(1), pp 62-81.

Kandogan, Y. (2008), 'Consistent Estimates of Regional Blocs', *Trade Effects Review of International Economics*, Vol 16(2), pp 301-314,

Khan, H., Toh R.S., and Chua, L. (2005), 'Tourism and trade: Cointegration and Granger causality tests', *Journal of Travel Research*, Vol 44, pp 171-176.

Kim, H.J., Chen, M.H. and Jang, S. (2006), 'Tourism expansion and economic development: the case of Taiwan', *Tourism Management*, Vol 27(5) pp925-933

López-Cordova, J.E. and Meissner, C.M. (2003), 'Exchange-rate regimes and international trade: Evidence from the Classical Gold Standard Era', *American Economic Review*, Vol 93 (1), pp 344-353.

Marin, D. (1992), 'Is the export-led growth hypothesis valid for industrialized countries? ', *Review of Economics and Statistics*, Vol 74, pp 678-688.

Martin, C.A. and Witt, S.F. (1987), 'Tourism Demand Forecasting Models: Choice of Appropriate Variable to Represent Tourists' Cost of Living', *Tourism Management*, Vol 8 (3) pp 233-246

Mathias, L. (1997), 'Proper econometric specification of the gravity model', *The World Economy*, Vol 20, pp363-368.

Matyas, L., Konya, L. and Harris, M.N. (2004), 'Modelling Export Activity of Eleven APEC Countries, 1978-1997', *Applied Econometrics and International Development*, *Euro-American Association of Economic Development*, Vol 4 (4).

McKenzie, M.D. (1999), 'The impact of exchange rate volatility on international trade flows', *Journal of Economic Surveys*, Vol 13 (1), pp 71-106.

Oh, C. (2005), 'The contribution of tourism development to economic growth in the Korean economy', *Tourism Management*, Vol 26, pp 39-44.

Ozturk I. (2006), 'Exchange Rate Volatility and Trade: A Literature Survey', *International Journal of Applied Econometrics and Quantitative Studies, Euro-American Association of Economic Development*, Vol 3(1), pp 85-102.

Patsouratis V, Frangouli, Z. and Anastasopoulos, G. (2005), 'Competition in tourism among the Mediterranean countries', *Applied Economics*, Vol 37 (16), pp1865-1870.

Persson, T. (2001), 'Currency unions and trade: how large is the treatment effect? ', *Economic Policy*, Vol 33, pp 435-448.

Reinhart, C.M. and Rogoff, K.S. (2004), 'The modern history of exchange rate arrangements: A reinterpretation', *Quarterly Journal of Economics*, Vol 119, pp 1-48.

Rose, A.K. (2000), 'One money, one market: Estimating the effect of common currencies on trade', *Economic Policy*, Vol 20, pp 9-45.

Rose, A.K. (2001), 'Currency unions and trade: the effect is large', *Economic Policy*, Vol 33, pp 449-461.

Rose, A.K. and Stanley, T.D. (2005), 'A meta-analysis of the effect of common currencies on international trade', *Journal of Economic Surveys*, Vol19 (3), pp 347-365.

Rose A.K. and Van Wincoop, E. (2001), 'National money as a barrier to trade', *American Economic Review*, Vol 91(2), pp 386-390.

Roselló-Villalonga, J., Aguiló-Pérez, E, and Riera, A. (2005), 'Modeling tourism demand dynamics', *Journal of Travel Research*, Vol 44 (1), pp 111-116.

Santana-Gallego, M., Ledesma-Rodríguez, F.J. and Pérez-Rodríguez, J.V. (2007), 'On the relationship between tourism and trade', Mimeo. Presented in *First Conference of The International Association for Tourism Economics*. Palma de Mallorca, October 2007.

Sinclair M.T. (1998), 'Tourism and economic development: a survey', *Journal of Development Studies*, Vol 34, pp1-51

Sinclair, M.T. and Stabler, M. (1997), 'The Economics of Tourism', Routledge, London.

Thom, R. and Walsh, B. (2002), 'The effect of a common currency on trade: Ireland before and after the sterling link', *European Economic Review*, Vol 46, pp 1111-1123.

Tinbergen J. (1962), 'Shaping the world economy: Suggestions for an international economic policy', *New York: The Twentieth Century Fund*.

Webber , A.G. (2001), 'Exchange Rate Volatility and Cointegration in Tourism Demand', *Journal of Travel Research*, Vol 39(4), pp 398-405.

Witt, S.F. and Witt , C.A. (1995), 'Forecasting Tourism Demand: A Review of Empirical Research', *International Journal of Forecasting* , Vol 11(3), pp447-475.

Table 1. Currency Union cases.

Currency	Countries
U.S Dollar	United States, Bahamas, Bermuda, Panama, Turks and Caicos Islands
French Franc	France, Guadeloupe, Martinique
New Zealand Dollar	New Zealand, Cook Islands
Euro (from January 2002)	Austria, Belgium, Finland, France, Germany, Greece, Guadeloupe, Ireland, Italy, Luxembourg, Netherlands, Portugal, Martinique, Spain

Table 2. Currency Union Effect.

	OLS		FE-2SLS		RE-2SLS	
Variables	**Coef.**	**t**	**Coef.**	**t**	**Coef.**	**t**
Constant	-17.012	-31.91	-47.752	-3.47		
Ln Trade	0.39792	37.54	0.29639	19.69	0.167447	8.87
Ln $GDPpc_i$	0.37008	20.61	0.42937	2.13	0.733099	19.75
Ln $GDPpc_j$	1.08229	32.56	1.04967	4.14	1.284769	20.79
Ln Pop_i	0.18382	15.72	0.27373	0.76	0.458583	18.07
Ln Pop_j	0.38406	29.1	2.29455	3.22	0.624332	21.64
Ln $Comp_{ij}$	0.01397	3.81	-0.0001	-0.02	0.006176	2.9
Ln D_{ij}	-0.576	-35.27	-0.7632	-26.55	-0.79578	-19.1
$Lang_{ij}$	0.39546	11.93	0.50834	15.66	0.583061	5.82
$Border_{ij}$	0.68141	8.52	0.25702	3.7	0.697982	3.44
$Colony_{ij}$	0.78808	13.83	0.72395	11.55	0.987485	6.31
$Landl_{ij}$	0.15703	5.85	5.23597	1.92	-0.00017	0.00

$Islands_{ij}$	0.23828	10.72	-0.2413	-4.22	0.401762	5.87
$CommonCurrency_{ij}$	0.28567		0.1118	2.07	0.039353	1.65
Year effects	Yes		Yes		Yes	
Origin effects	No		Yes		No	
Destination effects	No		Yes		No	
R^2	0.6634		0.8416		0.6485	
F	1469.41	0.00	903.22	0.00	98189.70	0.00
F-FE			230.85	0.00		
Obs	20321		18441		18441	
Exogeneity test			0.00	1.00	0.01	1.00
Hausman test FE vs RE					1849.09	0.00

Note: The estimated equation is:

$$\ln T_{ijt} = \beta_0 + \gamma_t + \alpha_i + \lambda_j + \beta_1 \ln GDPpc_{it} + \beta_2 \ln GDPpc_{jt} + \beta_3 \ln Pop_{it} + \beta_4 \ln Pop_{jt}$$
$$+ \beta_5 \ln D_{ij} + \beta_6 \ln Trade_{ijt} + \beta_7 Lang_{ij} + \beta_8 Border_{ij} + \beta_7 Colony_{ij}$$
$$+ \beta_{11} Landl_{ij} + \beta_{12} Island_{ij} + \beta_{13} \ln Comp_{ijt} + \eta_1 CommonCurrency_{ij} + v_{ijt}$$

where CU_{ijt} is a binary variable which is unity if countries belong to the same currency union at time t.

Between brackets appear p-values.

Table 3. Classification of Exchange Rate Regimes.

Fine classification codes	Reinhart and Rogoff's description	New clasiffication	Dummy
1	No separate legal tender	Common currency	Common Currency
2	Pre-announced peg or currency board arrangement	Currency Board	Currency Board with same reference currency
3	Pre-announced horizontal band (+/-2%)	Currency Peg	Peg with same reference currency
4	De facto peg		
5	Pre-announced crawling peg	Crawling peg	Crawling peg with same reference currency
6	Pre-announced crawling band (+/-2%)		
7	De facto crawling peg		
8	De facto crawling band (+/-2%)		
9	Pre announced crawling band (+/-2%)		
10	De facto crawling band (+/-5%)	Managed Floating	Managed Floating
11	Moving band that is narrower (+/-2%)		
12	Managed floating		
13	Freely floating	Flexible Exchange Rate	
14	Freely falling		
15	Dual market in which parallel market data is missing		

Table 4. Exchange Rate regimes.

	OLS		FE-2SLS		RE-2SLS	
Variables	**Coef.**	**t**	**Coef.**	**t**	**Coef.**	**t**
Constant	-14.838	-24.12	-47.559	-2.10		
Ln Trade	0.468	41.81	0.375	20.52	0.352	11.18
Ln $GDPpc_i$	0.289	14.96	-0.028	-0.92	0.438	8.80
Ln $GDPpc_j$	0.990	24.75	0.951	2.45	1.061	13.30
Ln Pop_i	0.103	8.22	0.038	1.94	0.254	7.17
Ln Pop_j	0.324	21.39	2.578	1.91	0.438	11.23
Ln $Comp_{ij}$	0.002	0.43	-0.017	-2.60	0.004	1.82
Ln D_{ij}	-0.526	-27.64	-0.545	-16.96	-0.606	-12.58
$Lang_{ij}$	0.376	9.34	0.452	11.22	0.473	4.42
$Border_{ij}$	0.667	6.52	0.442	4.92	0.684	3.19
$Colony_{ij}$	0.507	7.31	0.511	6.71	0.692	4.15
$Landl_{ij}$	0.263	8.12	0.063	0.61	0.145	1.85
$Islands_{ij}$	0.211	7.56	-0.138	-2.62	0.341	4.66
$CommonCurrency_{ij}$	1.503	6.26	1.457	8.96	0.247	1.17
$CurrencyBoard_{ij}$	-0.163	-1.84	0.424	4.65	0.127	2.39
Peg_{ij}	0.278	2.50	0.017	0.22	-0.011	-0.27
$CrawlingPeg_{ij}$	-0.232	-2.70	0.189	3.14	0.044	1.24
$ManagedFloating_{ij}$	0.321	5.79	0.173	3.57	0.046	1.81
Year effects	Yes		Yes		Yes	
Origin effects	No		Yes		No	
Destination effects	No		Yes		No	

R^2	0.6596		0.8442		0.6505	
F	901.54	[0.00]	592.9	[0.00]	5072.61	[0.00]
F-FE			140.11	[0.00]		
Obs	13921		12054		12054	
Exogeneity test			0.01	[1.00]	0.01	[1.00]
Hausman test FE vs RE					3747.91	[0.00]

Note: The estimated equation is:

$$\begin{aligned}\ln T_{ijt} &= \beta_0 + \gamma_t + \alpha_i + \lambda_j + \beta_1 \ln GDPpc_{it} + \beta_2 \ln GDPpc_{jt} + \beta_3 \ln Pop_{it} + \beta_4 \ln Pop_{jt} \\ &+ \beta_5 \ln D_{ij} + \beta_6 \ln Trade_{ijt} + \beta_7 Lang_{ij} + \beta_8 Border_{ij} + \beta_7 Colony_{ij} + \beta_{11} Landl_{ij} \\ &+ \beta_{12} Island_{ij} + \beta_{13} \ln Comp_{ijt} + \eta_1 CommonCurrency_{ij} + \eta_2 CurrencyBoard_{ij} \\ &+ \eta_3 Peg_{ij} + \eta_4 CrawlingPeg_{ij} + \eta_5 ManagedFloating_{ij} + v_{ijt}\end{aligned}$$

where the five binary exchange rate regimes dummy variables, are defined as follows: *CommonCurrency* which is unity if the countries share the same physical currency, *CurrencyBoard* which is unity if this regime is present in the pair of countries, *Peg* which is unity if a country in the pair pegged this currency to the one of the other country of the pair, *CrawlingPeg* which is unity if a currency in the pair is pegged to the other currency with a clear trend to depreciation and *ManagedFloating* which is unity if both countries present a managed floating regimes. Between brackets appear p-values.

Appendix

Table A1. Countries considered as tourist destinations.

ALBANIA	FRANCE	NORWAY
ALGERIA	GERMANY	OMAN
ANGOLA	GHANA	PAKISTAN
ANTIGUA AND BARBUDA	GREECE	PANAMA
AUSTRALIA	GRENADA	PAPUA N.GUINEA
AUSTRIA	GUADELOUPE	PARAGUAY
BAHAMAS	GUATEMALA	PERU
BAHRAIN	GUINEA	PHILIPPINES
BANGLADESH	HAITI	POLAND
BARBADOS	HONDURAS	PORTUGAL
BELGIUM	HONG KONG	ROMANIA
BELIZE	HUNGARY	SAUDI ARABIA
BENIN	ICELAND	SENEGAL
BERMUDA	INDIA	SEYCHELLES
BOLIVIA	INDONESIA	SINGAPORE
BRAZIL	IRAN	SOUTH AFRICA
BRIT. VIRGIN ISLANDS	IRELAND	SPAIN
BRUNEI	ISRAEL	SRI LANKA
BULGARIA	ITALY	ST. VINCENT & THE GRENADINES
BURKINA_FASO	JAMAICA	ST. KITTS NEVIS
CAMBODIA	JAPAN	ST.LUCIA
CANADA	JORDAN	SWEDEN
CAYMAN ISLANDS	KENYA	SWITZERLAND
CHAD	KOREA REP	THAILAND
CHILE	KUWAIT	TOGO
CHINA	LUXEMBOURG	TRINIDAD&TOBAGO
COLOMBIA	MALAYSIA	TUNISIA
COOK ISLANDS	MALDIVES	TURKEY
COSTA_RICA	MALTA	TURKS AND CAICOS ISLANDS
CYPRUS	MARTINIQUE	U.K.
CZECH REPUBLIC	MAURITIUS	U.S.A.
DENMARK	MEXICO	RUSIA
DOMINICA	MOROCCO	URUGUAY
DOMINICAN_REP.	NEPAL	VENEZUELA
ECUADOR	NETHERLANDS	VIETNAM
EGYPT	NEW CALEDONIA	
EL SALVADOR	NEW ZEALAND	
FIJI	NICARAGUA	
FINLAND	NIGERIA	

Table A.2. Descriptive statistics. Panel 1995-2004.

Variable	Obs	Mean	Std. Dev.
Ln Tourism	21896	9.14162	2.626567
Ln Trade	30092	18.0808	3.450033
Ln GDPpc	32770	8.89918	1.148245
Ln GDPpc	32770	9.98713	0.4506926
Ln Pop	32770	15.5808	2.403758
Ln Pop	32770	16.5573	1.539117
Ln Comp	31378	-0.8106	3.45365
Ln D	32770	8.6017	0.9352549
Lang	32770	0.11321	0.3168582
Border	32770	0.02136	0.1445868
Colonial	32770	0.03601	0.1863142
Landl	32770	0.26091	0.4726079
Islands	32770	0.36314	0.5814498
CommonCurrency	32770	0.0173	0.1303977

Table A.3. Descriptive statistics. Panel 1995-2001.

Variable	Obs	Mean	Std. Dev.
Ln Tourism	14938	9.10285	2.64548
Ln Trade	20805	18.0368	3.41879
Ln GDPpc	22939	8.86733	1.14779

Ln GDPpc	22939	9.95254	0.45026
Ln Pop	22939	15.5662	2.39865
Ln Pop	22939	16.5483	1.5397
Ln Comp	22098	-0.5986	3.46807
Ln D	22939	8.60406	0.93597
Lang	22939	0.11321	0.31686
Border	22939	0.02136	0.14459
Colonial	22939	0.03601	0.18632
Landl	22939	0.26091	0.47261
Islands	22939	0.36314	0.58145
CommonCurrency	22939	0.00196	0.04425
CurrencyBoard	22939	0.01521	0.12241
Peg	22939	0.00911	0.09502
CrawlingPeg	22933	0.01936	0.13779
ManagedFloating	22939	0.04734	0.21238

Footnotes:

[1] See for instance De Grauwe (1988).

[2] For instance, Patsouratis et al (2005) find that the exchange rate is a main determinant of Greece's tourism demand. This is also the result obtained by Eilat and Einav (2004) using a panel data approach, and by Roselló-Villalonga et al. (2005) for the case study of Balearic Islands.

[3] Deardoff (1995) demonstrates that a standard gravity equation could be derived from a large class of trade models.

[4] Trade and tourism may be both complementary and substitutive. See Easton (1998), Khan et al (2005), and Santana et al (2007) for studies of this relationship.

[5] See Table A.1 in the Appendix.

[6] GDPpc and Population of Guadaloupe and Martinique were obtained from the *Institute National de la Estatistique et des Études Économiques.*

[7] See, for instance, Balaguer and Cantavella-Jordà (2002) for Spain, Dritsakis (2004) for Greece, Oh (2005) for Korea and Kim *et al.* (2006) for Taiwan.

[8] Perhaps note that competiveness could be better measured by using the PPP conversion factor variable from the WDI but it would dramatically reduce the number of common currency cases to be studied due to the lack of data.