Does common currency promote countries' growth via trade and tourism?[*]

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Abstract

The main aim of this research is threefold. First, the effect of common currency on inbound tourism and trade flows is obtained by estimating a gravity equation for a large panel dataset which includes 179 countries as destination and the 30 OECD countries as origin for the period 1995-2006. Second, the effect of both international tourism and openness to trade on the economic growth of the destination countries is estimated considering a standard convergence growth model. Third, using the results from the two previous stages the potential effects of the common currencies on tourism, trade and income are calculated. Results suggest that currency unions have a positive effect on economic growth not only via international trade but also via promoting tourist arrivals.

JEL codes: F15, F33, L80

Keywords: International trade, tourism, growth, gravity models, currency unions

[*] We thank Tourism and Travel Research Institute (TTRI) at Nottingham University and participants of the seminar jointly organised by TTRI and the Industrial Economics Division of the Nottingham University Business School. We thank Spanish Ministry of Education and Science for financial support (SEJ09094/ECON) and (ECO2008-05565). María Santana-Gallego thanks specially the support of CajaCanarias and the University of La Laguna. Finally, we want to thank United Nations World Tourism Organisation for kindly providing tourism data.

1. Introduction

Although it is a wide belief that currency unions increase trade, the magnitude of this influence remains as a controversial task. The economic benefits of currency unions have been largely investigated in the literature on trade. Rose and Stanley (2005) review thirty-four papers and find that a currency union increases trade by 30% to 90% worldwide. Interestingly, the potential empirical link between a currency union and international tourism has been scarcely explored. To that respect, Gil-Pareja et al. (2007) and Santana-Gallego et al (2009) pay attention to the potential effect of common currency on tourism. Both studies estimate a moderate effect of common currency on tourist arrivals. The former finds an impact of 6.5% for the case of the Economic and Monetary Union (EMU) while the latter estimates a sizeable effect of almost 12% considering a larger panel dataset.

Growth theory holds that market size facilitates economic growth. The relevance of this relation is direct since both trade and tourism increase the market size. The influence of international trade in economic growth has been extensively studied. As surveyed by Berg and Krueger (2003), openness to trade contributes greatly to growth. On the contrary, there is a reduced but increasing number of papers that investigates the relationship between tourism and economic growth. Such analysis is especially relevant for developing countries with a high weight of tourism sector. Given such unbalanced scenario, this paper addresses the following question "Could common currencies increase the income of a country via international trade and tourism?"

Frankel and Rose (2002) deal with the hypothesis that a monetary union increases the income of a country via trade. The authors analyse the consequences of currency unions on international trade and income arguing that currency union reduces the costs of international transactions and promotes trade and openness. Even more, such trade induced by currency union may in turn have a beneficial effect on income. In this context, despite being proven that common currency promotes tourism, the potential role of tourism as a way of enlarging the market size has been less explored Hence it seems reasonable to investigate whether trade and tourism can promote growth through joining to a common currency area.

This research pretends to bring new insights into the literature on benefits and costs of currency unions by considering their effects on international tourism in addition to trade. Further added value is derived from the importance of the potential effects on trade, tourism and growth of adopting a common currency for policy purposes.

The main aim of this investigation is threefold. First, the effects of a common currency on inbound tourism and trade flows are obtained by estimating a gravity equation. Second, the effect of both openness to trade and tourism on the economic growth of the destination countries are estimated considering a standard convergence growth model. Third, using the results from the two previous stages the potential effects of common currencies on tourism, trade and income are calculated.

The empirical analysis is based on a large panel data set which includes 179 countries as destinations and the 30 OECD as origins for the period 1995-2006. We employ a slightly lower number of countries than Frankel and Rose (2002) but we provide up-to-date results including the case of the euro.

Another important point to pay attention to is the heterogeneity within the countries considered in this study. Frankel and Rose's (2002) estimates relied on small and poor countries because these were the only ones that belonged to currency unions in their sample period. The authors doubt if the results can be extended to large and rich countries. On the grounds of such argument, our sample is divided into three subsamples according to levels of income. Hence, another contribution of this work is the choice of samples according to low, medium and high income economies which provides more accurate results and permits identifying similarities and differences across countries worldwide.

The paper is organised as follows. In section 2 the relevant literature is reviewed. In section 3 the effects of currency unions on international trade and tourism flows are obtained by estimating a gravity equation. In section 4 the effect of tourism and openness to trade is estimated using a standard convergence growth model. Section 5 combines the results of the two previous analyses to calculate the potential effect on income of adopting a common currency for a specific country. Finally, in section 6 some conclusions are drawn.

2. Background

The economic effects of currency unions have attracted much attention of international economists. In particular, the effect of currency unions on international trade has become a central area of research. A common currency implies more than an elimination of exchange rate volatility among its members. It also reduces transaction costs relevant to trade and tourism dealings and provides a commitment device for macroeconomic policies. To this respect, Rose (2000) estimates an empirical model of bilateral trade, finding a significant coefficient for a currency union variable of 1.2, suggesting an effect of currency unions on trade of over a 200%. Such article did not only opened a path, but also generated a debate within the empirical trade literature. Rose (2000)'s finding did not receive full acceptance and further research was consequently devoted to find reasons of such high effect. Rose himself has offered further empirical work in this area[2]. In all, a great number of papers have provided estimates of the effect of currency union on international trade with large differences in the reported estimates. Furthermore, Rose and Stanley (2005) implement a meta-analysis to combine, explain and summarize thirty-four recent studies that investigate the effect of currency union on trade. Combining these estimates, the authors find that a currency union increases bilateral trade by between 30 and 90%.

While the effect of currency unions on international trade has been extensively studied, international tourism has failed to attract the attention of international economists. Up to date, only two studies have explicitly taken into account the influence of common currency on tourism. On the one hand, Gil-Pareja et al. (2007) estimate for the first time the effect of a common currency on tourism. The authors focus on the effect of the euro on intra-EMU tourism flows 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 the 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. However, it is important to note that Gil-Pareja et al (2007) do 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

[2] Notably Rose (2001), Rose and van Wincoop (2001) and Glick and Rose, (2002).

currency on tourism can be hardly set. Santana-Gallego et al. (2009) estimate a large panel data set where several experiences of currency unions, –not only the euro, are considered to analyse the effect of common currencies on international tourist arrivals. Their results unveil that the effect of common currency on tourism is around 12% implying that sharing a currency could be a major factor in the determination of the volume of tourist arrivals.

The influence of a common currency on income via trade and tourism has received much less attention. According to the neoclassical Solow model, the level of the GDP per capita in the steady state will depend on any factor that affect the level of productivity such as allocation of resources and saving rates. In that sense, openness implies a more efficient allocation of resources and hence raises steady state level of income. Openness may promote long-run growth, for instance facilitating the exploitation of economies of scale (Helpman and Krugman, 1985), relieving the foreign exchange constraint (McKinnon, 1964), enhancing efficiency through increased competition (Krueger, 1980), and promoting the diffusion of technical knowledge (Grossman and Helpman, 1991). Berg and Krueger (2003) present an exhaustive survey of recent research on the effect of trade openness to growth, suggesting that the evidence supports that openness to trade is a major determinant of economic growth.

Inbound tourism could be considered as a kind of export for the destination country where the consumer is the one who moves instead of the product. In contrast to the extensive literature on the export-led growth hypothesis, there are fewer studies investigating empirical relationship between tourism and economic development, i.e. the tourism-led growth hypothesis[3]. Cortés-Jiménez and Pulina (2009) provide a comprehensive review of studies on the potential role of tourism to long-run growth. Complementarily, research has also been carried out on the relationship between tourism and economic development from an endogenous growth perspective (Lanza and Pigliaru, 1994; Lanza et al., 2003; Algieri, 2006 and Brau et al., 2007).

[3] See for instance, Balaguer and Cantavella-Jordá (2002).

Summarising, some research shows that there is a positive effect of single currency on international trade and tourism. Moreover, growth theory and empirical research suggest that openness to trade and tourism promote growth. In the following sections, these two effects are quantified and finally they are put together to obtain an estimate effect of a single currency on income via tourism and trade.

3. The common currency effect

In this section two objectives are followed. First, the effect of common currencies on tourism flows is estimated. Second, in a similar way the effect of common currencies on trade is obtained.

3.1 Data and Methodology

The empirical investigation of the common currency effect on international flows is based on the standard gravity framework which is appreciated for its strong fit to the data. Gravity model specification finds its foundations in the international trade theory. The gravity model is supported by Heckscher-Ohlin models, models based in differences in technology across countries, and the new models that introduce increasing returns and product differentiation in the explanation of international trade[4].

The simplest gravity specification recognises that international flow between two countries is increasing in their economic size (GDP and population) and decreasing in the distance between them. This model is augmented by incorporating other geographical and socioeconomic controls in the list of exogenous variables such as area, common border or common language. Armstrong (2007) and Fratianni (2007) provide two recent surveys of the literature on the wide use of gravity models on trade. Moreover, under the assumption of tourism as a particular class of trade, a gravity equation can be used to study the main determinants of its volume. As a

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

matter of fact, Durbarry (2000) and Gil-Pareja et al (2007a, b) have applied gravity equations to explain international tourism flows. In addition, this type of specification has been commonly used to investigate a number of empirical regularities such as the border effects (McCallum, 1995 and Fitzsimons et al., 1999), regional trading blocs (Frankel, 1997, Mathyas 1997, Cheng and Wall, 2005) and currency unions (Rose, 2000).

Therefore, it seems suitable the use of a gravity equation to estimate the effect of currency union on international trade and international tourism. Indeed, for the purposes of this empirical analysis two similar equations are estimated to analyse the effect that sharing a single currency has on trade and tourism flows.

$$\begin{aligned}\ln Tou_{ijt} = {} & \phi_0 + \phi_1 \ln GDPpc_{it} + \phi_2 \ln GDPpc_{jt} + \phi_3 \ln Pop_{it} + \phi_4 \ln Pop_{jt} \\ & + \phi_5 \ln Comp_{ijt} + \phi_6 \ln D_{ij} + \phi_7 \ln Trade_{ijt} + \phi_8 Lang_{ij} + \phi_9 Border_{ij} \\ & + \phi_{10} Colony_{ij} + \phi_{11} Landl_{ij} + \phi_{12} Island_{ij} + \eta CU_{ijt} + \alpha_i + \lambda_j + \mu_t + u_{ijt}\end{aligned} \quad [1]$$

$$\begin{aligned}\ln Trade_{ijt} = {} & \phi^*_0 + \phi^*_1 \ln(GDPpc_{it} GDPpc_{jt}) + \phi^*_2 \ln(Pop_{it} Pop_{jt}) + \phi^*_3 \ln D_{ij} \\ & + \phi^*_4 \ln Tou_{ijt} + \phi^*_5 Lang_{ij} + \phi^*_6 Border_{ij} + \phi^*_7 Colony_{ij} + \phi^*_8 Landl_{ij} \\ & + \phi^*_9 Island_{ij} + \eta^* CU_{ijt} + \alpha^*_i + \lambda^*_j + \mu^*_t + v_{ijt}\end{aligned} \quad [2]$$

where ln denotes natural logarithms, *i* indicates destination country, j origin country and *t* is time. Tou_{ijt} is the number of tourist arrivals to country *i* from country *j* in year *t*; $Trade_{ijt}$ denotes the real bilateral trade in goods, as the sum of exports and imports, between countries *i* and *j* in year *t*; *GDPpc* is the real GDP in per capita terms, *Pop* denotes the population; *Comp* is a competiveness variable calculated as a real exchange rate between countries *i* and *j,* D_{ij} is the great circle distance between capital cities of countries *i* and *j*, *Lang* is a binary variable which is unity if the country of origin and the country of destination have a common language and zero otherwise; *Border* is a binary which is unity if the country of origin and the country of destination 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, $Land_j$ is the number of landlocked countries in the country-pair (0, 1, or 2),

Island is the number of island nations in the pair (0, 1, or 2) and *CU* is a binary variable related to currency union which takes value 1 if both countries in the pair share a common currency, 0 otherwise. Finally, ϕ_0 is the constant α_i refers to destination fixed effects, λ_j are origin fixed effects, μ_t are year fixed effects, $\phi_{1, \ldots, \phi_{12}}$ are the set of coefficients and η is the parameter of interest. Asterisk in parameters refers to the same definition of parameters and variables but in equation [2]. Finally, u_{ijt} and v_{ijt} are well-behaved disturbance terms.

The dataset includes the 30 OECD countries as origins and 179[5] countries, including the OECD countries as tourist destinations. Then, dataset covers 5,370 pairs of countries over the period 1995-2006. In terms of revenues, OECD countries generate about 70% of world tourism activity and about 75% of world international trade, so it makes sense to consider these countries as origin. Destination countries are divided into three samples according to their level of income. Following the official classification of the World Bank which divides countries into four groups: low income, lower-middle income, upper-middle income and high income, we create three groups, namely *low income* countries which includes both low and lower-middle income countries from the World Bank classification; *middle income countries* which refers to upper-middle income and *high income countries* which refers to the high income countries from the World Bank classification.

The source of annual international arrivals by country of origin is the *United Nations World Tourism Organisation (UNWTO).* Trade variable is measured in millions of US$ and is obtained from *Direction of Trade* dataset of the *International Monetary Fund* and the *OECD Statistics*. GDP per capita and Trade require to be converted to real terms by using US GDP deflator. GDP per capita, population and US GDP deflator were obtained from the *World Development Indicators* (2006) and the *UNCTAD Handbook of Statistics* (2008)[6].

Since in tourism equation [1] the dependent variable is unidirectional, i.e. tourist arrivals to country *i* from country *j,* GDP per capita and population are presented

[5] Table A.1 in the Appendix presents the list of countries considered in this analysis.
[6] The source of GDP per capita and Population of Guadaloupe and Martinique was the *Institute National de la Estatistique et des Études Économiques.*

independently for origin and destination country. This recognises a different impact of origin variables from destination variables on tourist arrivals. For instance, it is expected a greater effect of origin GDP per capita and population than the destination ones. Moreover, to avoid biased estimates a variable of competitivess -$Comp_{ijt}$, is also included. This variable is calculated using CPIs from the *International Labour Organisation* and Nominal Exchange Rates from the *IMF Financial Statistics*. Distance and dummy variables *Lang*, *Colony, Border* and *Landl* were collected from the *Centre d'Etudes Prospectives et d'Informations Internationales (CEPII)* dataset while *Island* and *CU* were obtained from Andrew K. Rose's website and the *CIA Factbook*[7].

Finally, in the tourism specification [1] *Trade* variable is included on the grounds of the assumption that bilateral trade is a proxy for the intensity of the economic relations between the countries (Eilat and Einav, 2004). Likewise, in the trade specification [2] tourism arrivals variable is included as a regressor too. Indeed, trade and tourism may be both complementary and substitutive as showed by Kulendran and Wilson (2000), Shan and Wilson (2001), Khan et al (2005) and Santana-Gallego et al (2007). In that sense, *Trade* and *Tou* are not strictly exogenous in equations [1] and [2] respectively. Moreover, *GDPpc* of the destination country in equation [1] and the product of GDP per capita in equation [2] are also considered as potential endogenous variables. In this case, endogeneity is understood since both tourism and trade might increase the market size of tourist destination promoting growth. Henceforth, instrumental variable methods are required to deal with this problem and lagged values of the endogenous variables are considered as instruments.

Gravity equations can be estimated by different econometric methods. The most common one is Ordinary Least Squares (OLS). Despite its popularity, it also presents certain shortcomings. As an alternative, gravity equations can be estimated by fixed-effect (FE) because it avoids the inconsistent and inefficient estimates provided by OLS if unobserved heterogeneity exists.

[7] The common currency cases considered are presented in Table A.2 in the Appendix.

Moreover, this technique allows to consider unobserved and misspecified factors that explain flows between two countries. However, the fixed effect approach does not allow for estimating coefficients on time-invariant variables such as distance or common language dummies. Estimation by using country-pair fixed effects cannot be addressed since observations of interest disappear. Indeed, some currency union observations are dropped from the estimation by FE given that they are time-invariant in many country pairs. 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 gravity models including individual fixed-effects for each country as Mathias (1997) and Mathias et al. (2004), or more recently Cheng and Wall (2005) and Kandogan (2008).

In that sense an auxiliary equation in the FE model can be estimated in which the time-invariant explanatory variables are regressed on the estimated country pair intercepts by using OLS. For this reason, α_i, λ_j and μ_t are introduced in equations [1] and [2] as destination, origin and year fixed effects respectively. 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.

3.2 Results

In this section, equations [1] and [2] are estimated to find out the effects of a common currency on tourism and trade respectively. Starting with the results of equation [1], Table 1 presents the estimates by fixed-effect with two-stage least squares (FE-2SLS) for each sample: low-income, medium-income and high-income. Standard errors robust to heteroskedasticity are computed by using Huber-White estimator.

[Table 1. Here]

Checking the goodness of fit, R^2, the gravity equation works well explaining approximately 83% of the variation in international tourism for the case of low income countries, 87% for the case of medium income and 90% for the case of high income economies. Moreover, it is used a simple way to test the exogeneity of regressors by regressing the FE-2SLS residuals against the instrumental variables, i.e. lagged endogenous variables and all the exogenous ones. The acceptance of the null hypothesis of absent of relation between instruments and residuals suggests that the instruments are strictly exogenous and hence they are suitable for the estimation.

The coefficient of the trade variable is significant and has a positive sign in the three samples suggesting a complementary relationship between trade and tourism. As expected, *GDP per capita* of destination and origin countries are significant, meaning that national economic mass has a positive influence on tourism. In other words, the richer the countries, the higher the international tourism between them are. Population of origin country is significant in all the cases while the population of the destination appears to be not relevant for the case of medium income economies and negative for the case of low and high income countries. The population and the real GDP *per capita* variables of the origin countries have a higher impact on tourism flows than the variables of destination countries. These results are reasonable because these origin variables represent the size of the tourism demand. The competitiveness variable turns out to be not significant suggesting the relevance of non-price competition in worldwide tourism markets. As expected for the three samples, distance has a negative sign and common language, contiguity and colony variables have a positive effect on international tourism flows. The effect of landlocked countries is positive in the case of low and medium income while it is negative for the case of high income. Finally, the number of islands in the pair is not significant for the case of rich countries while it is negative for the case of low and medium income economies, suggesting that these conditions make the access to this destination country more difficult.

Focusing our attention on the currency union variable (*CU*), its coefficient is positive and significant on the three samples. For the case of low income economies, the estimated coefficient is 0.66 which implies that the effect of currency unions on

tourism amounts to 93% (exp(0.66)= 1.93). For the case of medium income countries, the coefficient is 1.22 which implies an effect of 240% on tourism and for the case of high income economies the coefficient is 0.087 with an effect of 9% on tourism flows. As can be observed, sharing a single currency seems to have a much higher effect on low and medium income economies than in the high income ones.

Table 2 presents the estimate of equation [2] by FE-2SLS where the effect of common currencies on trade flows is studied. Again, the standard errors robust to heteroskedasticity are computed.

[Table 2. Here]

The specification seems to explain trade flows properly as confirmed by the R^2. The model explains 85%, 88% and 92% of the trade flows of low, medium and high income countries, respectively. As expected, the estimates for the GDP *per capita* and population are significant and positive except for the case of population on medium income countries where it seems to be not relevant. Tourism variable is significant and positive for the three cases suggesting again a positive relationship between trade and tourism flows. Distance has the expected negative sign while common language, contiguity, number of landlocked and number of island are significant and positive in almost all the cases with the exception of language for the high income countries where it is not significant and the influence of the border variable remains inconclusive.

Related to the effect of common currency variable on trade, its parameter is positive and significant in the three estimates suggesting that currency unions also promote trade flows. The coefficients of the *CU* variables are 0.53, 0.82 and 0.12 for the low, medium and high income economies respectively. These results imply an effect of a common currency on trade of 70% for the low income countries, 127% for the medium income economies and 12% for the high income ones.

Up to this point, it has been found that a common currency has a positive effect on trade and tourism and this effect is higher for the medium and low income countries. These results might shed light on the currency union debate and the potential inception of developing economies to currency unions. Moreover, sharing a common currency seems to have a impact on tourism flows than in international trade for low and medium income but lower for the case of high income economies.

4. Effect of openness to trade and tourism on economic growth

In this paper, we also address the question: May a common currency promote growth via trade and tourism? To that end, the effect of openness to trade and tourism on income is estimated.

4.1.Data and Methodology

The neoclassical Solow framework has been the workhorse for the empirical analysis of the determinants of growth holding that steady-state growth depends on technological progress and population growth. An important feature of the neoclassical model is the convergence property which means that countries with similar level of technology converge to a similar level of output in the steady state.

Throughout the economic growth literature, researchers have been interested in the rate at which regions and countries close the gap between their current positions and their respective steady states. They have also tried to analyse which economic variables are relevant to this process. In our context, convergence economic growth literature becomes relevant (Barro, 1991; Barro and Sala-i-Martin, 1992; 2004). Convergence applies if a poor economy tends to grow faster than a rich one, so that the poor country tends to catch up with the rich one in terms of the level of per capita income or product; that is the β-convergence concept.

Mankiw, Romer and Weil (1992) work provides a simple theoretical framework for growth regressions. These regressions are often known as “Barro regressions”, after Barro (1991). Some of the sources of growth generally accepted are investment in

physical capital and human capital. Moreover, there are other recognised factors making influence on growth, such as population growth, trade and finance (cf. Barro, 1991; Barro and Lee, 1994 and Temple, 1999).

The concept of unconditional β-convergence is used which means that there exists an inverse relationship between growth rate and the level of income.

The standard model to study β-convergence is the following:

$$\ln GDPpc_{it} - \ln GDPpc_{it-1} = \beta \ln GDPpc_{it-1} + \gamma x_{it} + \delta z_{it} + w_i + \varepsilon_{it} \qquad [3]$$

where *ln* represents natural logarithm, $GDPpc_{it}$ is per-capita real income in country *i* at time *t*, x_{it} is a column vector of exogenous variables, z_{it} is a column vector of endogenous variables, , where γ and δ are row vectors of parameter. Parameter β is the speed of convergence (beta-convergence) and $0<\beta<1$ implies that there exists convergence between countries. The term w_i represents country-specific effects which are independent and identically distributed over the countries, and ε_{it} are errors independent and identically distributed.

The particular equation estimated for the analysis of the influence of openness on income is as follows:

$$\begin{aligned} \ln GDPpc_{it} &= (1-\beta)\ln GDPpc_{it-1} + \gamma_1 PopG_{it} + \gamma_2 SCHprim_{it} + \gamma_3 SCH\sec_{it} \\ &+ \delta_1 Ln(Inv/GDP)_{it} + \delta_2 Ln(Trade/GDP)_{it} + \delta_3 Ln(Tou/Pop)_{it} + v_i + \varepsilon_{it} \end{aligned} \qquad [4]$$

The variables considered as exogenous are the following: *PopG* which captures the annual growth rate of population. As predicted by Solow growth model, the expected sign of this variable is negative implying that the higher the rate of population growth, the poorer the country is. *SCHprim* and *SCHsec* refer to percentage of primary and secondary school gross enrolment respectively used as measures of human capital. These two variables are expected to have a positive coefficient meaning that more education will result in faster growth.

Several variables may be both cause and effect of economic growth. This is the case of the investment rate, openness to trade and tourist arrivals, and hence, these variables required to be considered as endogenous. *Inv/GDP* is the ratio of gross fixed capital formation to GDP used as a proxy of the ratio of investment of the economy. The expected effect of this variable is positive suggesting that higher rate of investment generates higher growth rate. *Trade/GDP* represents the openness to trade in the economy while *Tou/Pop* represents the ratio of total tourist arrivals to population. Related to this last variable, the ideal indicator to analyse the effect of tourism on economic growth would be tourist receipts to GDP. However, due to in Section 3 tourist arrivals were used as the dependant variable in this section the same variable need to be used[8].

The parameters of interest are the coefficients of *Trade/GDP* and *Tou/Pop* which estimate the effect of tourism and trade on income. These two flows are expected to promote economic growth.

The source for population annual growth rate data is *World Health Organisation* while primary and secondary gross school enrolments (%) are obtained from the *World Bank EdStat*. Gross Fixed capital Formation (%GDP), tourist arrivals, GDP and population are obtained from the *World Development Indicators* while total trade in goods is collected from the *World Trade Organisation*. The time period considered is 1995-2006 and the number of countries included is 179. These are the same countries than in the previous section and the sample is divided again into three groups: low-income, medium-income and high income economies.

Traditionally, the convergence growth equation has been estimated following Mankiw, Romer and Weil (1992) specification as a single cross-section regression. Islam (1995) introduces the panel data approach for analysing growth convergence. According to the author, the main advantage of panel data approach is that it allows for differences in the aggregate production function across economies. Moreover, this technique corrects for omitted variables bias involved with the single cross-section

[8] In any way, many authors such as Gunduz and Hatemi-J (2005), Kim et al (2006) and Cortés-Jiménez (2008) have used tourist arrivals per capita as an indicator of tourism flows for the empirical analysis of the contribution of tourism to growth.

regression. As mentioned by Arellano (2004), this approach has been already used in the convergence growth context by several authors (Islam, 1995; Caselli *et al*., 1996; Benhabib and Spiegel, 2000; Forbes, 2000; Levine *et al*., 2000 as examples).

4.2. Results

Equation [4] is estimated by using two-step Arellano-Bond Generalized Method of Moments (GMM). This technique applies first difference to the growth model removing the individual fixed effect and estimates the equation by instrumental variables where lagged variables are used as instruments. This procedure provides consistent estimates of the endogenous regressors in a dynamic panel context. Tests for autocorrelation and the Sargan test for the validity of instruments are presented along with the coefficient estimates in Table 3.

[Table 3. Here]

Sargan test for over-identifying restrictions supports the assumption that model is correctly specified and autocorrelation test suggests that there is not second-order autocorrelation. Broadly, the results reveal the expected relationship between the GDP *per capita* income and their explanatory variables. The parameter β associated with growth of GDP *per capita* is positive and less than one which implies that in all three groups of countries there exist evidence of convergence, as expected in this type of models.

Population growth has a negative sign for medium and high income economies while for the case of low-income countries it is not significant. Related to the investment ratio, its coefficient is positive for the case of medium income countries while it is not significant for low and high income economies. The human capital coefficients reveal an interesting finding: for low income economies, both primary and secondary education coefficients are significant and positive being the effect of secondary school enrolment more sizeable for the economic growth. In medium economies, the relevant

factor for the economic growth is secondary education while for the case of high income economies none of them are significant[9].

Observing the trade and tourism variables, the results suggest a positive effect of both flows on the three samples. For low income countries, coefficients of openness to trade and tourism per capita are 0.021 and 0.0071 respectively. In that sense, 1% increases in openness to trade implies an increase of 0.021% on GDP per capita and the same increase of tourist per capita generates an increase of 0.0071% of GDP per capita. For medium income countries, the coefficients correspond to increases of 0.1% and 0.0485% of average per capita income for trade and tourism respectively. Similarly, for the high income economies the elasticities are 0.032 for the openness to trade and 0.066 for per capita tourist arrivals.

It can be observed, how openness to trade and tourist arrivals have a larger effect on medium and high income economies than in low income ones. Nevertheless, the more important implication for this research is that an increase in the openness rate of the economies, via trade and/or tourism, has a positive effect on the level of income of the countries.

5. Common currency effect on income

Following the methodology proposed by Frankel and Rose (2002), the estimates of the two previous sections are now bended to evaluate the common currency effect on income.

From the results previously obtained, the benefits of belonging to a currency union differ among the three groups of countries. A single currency has a larger impact on trade and tourism in low and medium income economies than in high income. This result is related to which countries are in the currency union. It is expected to obtain a greater effect on trade and tourism if the currency union partner are one with whom the country has intense economic relationships. For instance, Canada is expected to

[9] The estimates from including primary, secondary and tertiary education are available upon request. In that case, tertiary education is the one relevant for the economic growth of high income economies.

increase more its total trade and output by adopting the US dollar than by adopting the euro.

In this stage, bilateral data for trade and tourist arrivals are required. Dollar zone refers to trade and tourist arrivals from EEUU and euro zone refers to trade and tourist arrivals with members of the Euro Zone at that date[10].

Tables 4 to 6 show the potential effect of adopting the euro and dollar on tourism, trade and income for a subsample of 84 countries. Results for low-income, medium-income and high-income group are presented in table 4, 5 and 6, respectively.

[Table 4, 5 and 6. Here]

The seven first columns of the tables present the effect of currency unions on tourism and income while the last seven reveal the effect on trade and income. The first two columns of tables 4, 5 and 6 present the share of tourism arrivals from the euro zone and dollar zone respectively while the third columns represents the ratio of total tourist arrivals to population. With respect to the trade effects, column 8 and 9 show the share of trade conducted with the euro zone and the dollar zone respectively. Column 10 reports the total trade of the country as a percentage of GDP.

In order to illustrate the effect of common currency on tourism, trade and income, Albania is taken as an example from Table 4. The percentage of arrivals to Albania from the euro zone is 20.68% while from the dollar zone is 3.85%. Moreover, the ratio of total tourist arrivals to total population of Albania is 24.67%. The potential effect of adopting euro and dollar on tourism and GDP for Albania are reported in columns 4 to 7. Bearing in mind that Albania is a low-income economy, in section 3 we calculate that currency unions increase tourist arrivals in a 93%. So, the potential effect of adopting the euro on Albanian tourism is 5.68%

[10] That is, Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal and Spain.

$(0.2068 \times 0.2467 \times 0.93 = 0.0568)$. Then, considering from section 4 that the effect of tourist per capita on growth for the low-income economies is 0.70%, the potential effect of adopting euro on income via tourism is 0.04% $(0.0568 \times 0.007 = 0.000398)$. Similarly, the potential effect of adopting dollar on tourism would be 1.06% $(0.0385 \times 0.2467 \times 0.93 = 0.001057)$ while on GDP per capita is 0.01% $(0.001057 \times 0.007 = 0.000074)$. In the same way, the potential effect of adopting euro and dollar on trade and GDP per capita can be obtained. These results are presented in columns 11 to 14. Despite being a moderate effect in the case of Albania, a look to table 4 to 6 permits identify cases with a greater impact, such as Costa Rica with an effect of adopting dollar on income of 1.93% via tourism and 4.78% via trade. Another example is the case of Tunisia which would have an increase of GDP per capita of 0.17% via tourism and an increase of 1.04% via trade by adopting the Euro.

5.1 Three different cases

First, a case of a low-income economy, Maldives, is considered to illustrate the effect of adopting the Euro and the Dollar on income. Maldives is a highly open economy both in terms of openness to tourism, around 200%, and in terms of openness to trade, around 144%, with an important tourism sector. Related to tourism, tourists to Maldives come mainly from the EuroZone while trade is more important with the DollarZone. The potential effect of adopting the Euro on tourism would be an increase of 85.75% and its effect on GDP per capita through this channel would be a 0.6%. The effect of adopting euro on trade is an increase of 9.12% while on GDP per capita is 0.19%. Similarly, the potential effect of adopting the Dollar on tourism would be an increase of tourist arrivals of 2.21% and the effect on GDP per capita would be a 0.02%, while the effect of adopting the Dollar on trade would suppose an increase of 16.25% and on GDP per capita of 0.34%. Maldives represents a singular case because according to tourism it is more beneficial adopting the Euro while according to trade would be more beneficial for its economy adopting the Dollar. Nevertheless, considering the total effect on income via trade and tourism of adopting the Euro, this effect amounts to 0.79% while the total effect of adopting the Dollar

amounts to 0.36%. Consequently, adopting the Euro seems to promote a greater boost on Maldives' income than adopting the Dollar.

Second, the effect of adopting a common currency for the case of a medium-income economy such as Poland is analysed. The effect of joining to a currency union on trade, tourism and income has important implications for the case of Poland because its near entry to the Eurozone. Focusing our attention on the case of the Euro, if Poland joins the EuroZone the effect on tourism would be an increase of 58.52% and an increase on income via tourism of 2.84%. The effect on trade would be 56.61% and on income via trade of 5.66%. Consequently, the total effect on GDP per capita of adopting the Euro could be a sizeable 8.50%. The effect for the polish economy of adopting the Dollar would be an increase on tourism of 2.2%, an increase of trade of 1.73% and a total effect on GDP per capita through these two channels of 0.28%. It looks clear that Poland would obtain greater advantages by joining the EuroZone than by adopting the Dollar.

Finally, the effect of adopting a single currency on tourism, trade and GDP for a high income economy, i.e. United Kingdom is studied. By joining to the Eurozone, United Kingdom would increase its tourist arrivals on 2.56% with an effect on income of 0.17%. Similarly, the effect on trade would be an increase of 3.17% and an increase on GDP per capita of 0.10%. Consequently, the total effect of adopting the Euro on GDP per capita would be a 0.27%. The effect of adopting the Dollar on the British economy would be an increase of tourism of 0.58%, an increase of trade of 0.74% and a total increase of GDP per capita of 0.06%

6. Conclusions

In a seminal paper, Frankel and Rose (2002) estimate the effect of currency unions on GDP via trade. That analysis was carried out under the assumption that the unique effect that currency unions have on growth is via promoting international trade flows. However, the effect of sharing a common currency on tourism has been neglected. After dividing the sample into three groups according to the level of income, in the first stage of our study a considerable effect of common currency on tourism is obtained. For that reason, a single currency not only promote trade but also tourism.

In fact, for the high income economies, the effect of common currency on tourism is greater than on trade.

In the second stage of the paper, a convergence growth equation is estimated where openness to trade and tourism are considered as determinants of income growth. Results highlight that both, openness to trade and tourism, have a relevant effect on the level of income of the countries.

As an illustrative exercise, the potential effects of adopting a common currency on trade, tourism and income are calculated. The effects for three different groups of countries according to their level of income are estimated. In that sense, the concerns that Frankel and Rose (2002) have about extended their results to large and/or rich countries are in some way overcome. Results obtained in the last stage of our analysis reveal how important who else is in the currency union and how open is the economy not only in terms of trade but also in terms of tourism. The effect on trade, tourism and GDP per capita will be greater if a country share a single currency with a trading partner or a traditional origin of tourists.

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Table 1. Currency Union Effect on Tourism

	Low-Income		Middle-Income		High-Income	
Variables	**Coef.**	**t**	**Coef.**	**t**	**Coef.**	**t**
Constant	10.927	1.69	-97.266	-5.59	10.481	1.87
Ln $Trade_{ij}$	0.204	15.33	0.264	17.36	0.386	24.76
Ln $GDPpc_i$	0.800	5.99	0.317	1.39	0.150	0.75
Ln $GDPpc_i$	0.674	2.51	1.120	3.68	0.692	2.99
Ln Pop_i	-1.130	-3.09	0.402	0.82	-0.825	-2.31
Ln Pop_i	0.313	9.92	4.601	5.49	0.160	5.23
Ln $Comp_{ij}$	-0.003	-0.35	-0.021	-1.96	0.003	0.48
Ln D_{ij}	-1.021	-34.75	-0.870	-26.85	-0.701	-26.87
$Lang_{ij}$	0.596	17.36	0.893	16.56	0.273	7.36
$Border_{ij}$	2.618	14.31	1.802	15.76	0.098	1.88
$Colony_{ij}$	0.984	21.86	0.996	12.62	0.768	14.71
$Landl_{ij}$	1.968	4.19	13.684	4.93	-3.205	-12.32
$Islands_{ij}$	-0.263	-3.68	-0.650	-8.14	-0.020	-0.36
Common $Currency_{ij}$	0.660	6.16	1.223	10.44	0.087	2.23
R^2	0.8346		0.873		0.9006	
F	690.41	0.00	634.01	0.00	1057.12	0.00
F-FE	265.42	0.00	119.56	0.00	201.2	0.00
Obs	13010		6702		10707	
Exogeneity test	0.00	1.00	0.00	1.00	0.00	1.00

Table 2. Currency Union Effect on Trade

	Low-Income		Middle-Income		High-Income	
Variables	**Coef.**	**t**	**Coef.**	**t**	**Coef.**	**t**
Constant	-25.957	-11.39	0.652	0.05	-15.702	-4.66
Ln Tou_{ij}	0.221	15.40	0.282	18.03	0.363	27.29
Ln $GDPpc_{ij}$	1.213	9.50	0.879	4.46	0.853	4.77
Ln Pop_{ij}	0.874	28.77	0.075	0.18	0.512	17.37
Ln D_{ij}	-1.225	-40.99	-1.174	-39.78	-0.672	-31.71
$Lang_{ij}$	0.061	1.63	0.179	2.62	0.039	1.06
$Border_{ij}$	0.883	4.92	-0.187	-2.62	0.101	2.57
$Colony_{ij}$	0.718	13.86	0.373	4.89	0.238	4.70
$Landl_{ij}$	2.405	9.19	8.483	2.68	0.495	1.89
$Islands_{ij}$	0.833	10.49	0.894	10.68	0.318	5.35
Common Currency	0.534	2.65	0.821	1.91	0.125	3.41
R^2	0.8565		0.8808		0.9286	
F	651.22	0.00	692.17	0.00	1316.88	0.00
F-FE	82.99	0.00	95.53	0.00	134.27	0.00
Obs	13370		7191		11302	
Exogeneity test	0.00	1.00	0.00	1.00	0.00	1.00

Table 3. Growth effect of openess to trade and tourist per capita

Variable	Low-Income		Medium-Income		High-Income	
	Coef.	**t**	**Coef.**	**t**	**Coef.**	**t**
LnGDPpc	0.9863	176.39	0.8223	34.17	0.9110	61.36
PopG	-0.0010	-0.60	-0.0057	-3.90	-0.0171	-6.35
SCHprim	0.0004	4.69	-0.0003	-2.06	-0.0010	-5.27
SCHsec	0.0006	9.73	0.0011	5.35	0.0000	-0.36
LnINV/GDP	0.0012	0.34	0.0572	4.02	-0.0065	-0.75
LnTrade/GDP	0.0210	8.12	0.1036	10.23	0.0319	3.94
LnToupc	0.0071	4.26	0.0485	6.50	0.0657	6.41
Obs	402		200		250	
Wald chi2	4E+05	0.000	18158.63	0.000	31143.76	0.000
Sargan Test	61.93588	1.000	25.16766	1.000	34.16634	1.000
ρ1	-2.8045	0.005	-2.5919	0.0095	-2.7114	0.0067
ρ2	-0.26019	0.7947	-0.96685	0.3336	-1.5723	0.1159

Table 4. Predicted Effects on trade, tourism and income. Low income economies

	Tourism							Trade						
	Ratios			Potential effect euro (%Pop)		Potential effect Dollar(%Pop)		Ratios			Potential effect euro (%Pop)		Potential effect Dollar(%Pop)	
Country	% 2006 Tourism EuroZone	% 2006 Tourism DollarZone	2006 tourist (%Pop)	On tourism	On GDP	On tourism	On GDP	% 2006 Trade EuroZone	% 2006 Trade DolarZone	2006 Trade (%GDP)	On trade	On GDP	On trade	On GDP
Albania	20.68	3.85	29.54	5.68	0.04	1.06	0.01	64.58	1.48	49.31	22.29	0.47	0.51	0.01
Algeria	13.52	0.25	4.91	0.62	0.00	0.01	0.00	48.77	20.09	77.15	26.34	0.55	10.85	0.23
Armenia	15.22	11.95	12.66	1.79	0.01	1.41	0.01	34.00	4.90	58.26	13.87	0.29	2.00	0.04
Bosnia and Herzegovina	23.95	3.40	6.52	1.45	0.01	0.21	0.00	37.98	0.93	101.11	26.88	0.56	0.66	0.01
Burkina Faso	39.88	2.98	1.84	0.68	0.00	0.05	0.00	27.58	1.21	39.32	7.59	0.16	0.33	0.01
Cambodia	10.86	7.29	11.97	1.21	0.01	0.81	0.01	8.83	29.44	137.01	8.47	0.18	28.24	0.59
Cape Verde	82.82	2.46	46.67	35.94	0.25	1.07	0.01	71.20	2.32	57.25	28.53	0.60	0.93	0.02
Comoros	30.38	0.00	3.54	1.00	0.01	0.00	0.00	43.17	0.83	36.07	10.90	0.23	0.21	0.00
Dominican Republic	27.30	27.55	41.24	10.47	0.07	10.56	0.07	8.70	55.66	64.34	3.92	0.08	25.07	0.53
Egypt, Arab Rep.	33.38	2.64	11.66	3.62	0.03	0.29	0.00	28.20	11.36	37.13	7.33	0.15	2.95	0.06
Gambia, The	20.80	1.46	7.52	1.45	0.01	0.10	0.00	15.32	2.81	61.67	6.61	0.14	1.21	0.03
Georgia	5.26	1.69	22.17	1.08	0.01	0.35	0.00	19.11	3.15	70.13	9.38	0.20	1.55	0.03
Guatemala	6.62	22.53	11.53	0.71	0.00	2.42	0.02	6.09	22.94	58.97	2.52	0.05	9.47	0.20
Honduras	5.93	30.85	10.60	0.58	0.00	3.04	0.02	6.15	54.54	92.54	3.99	0.08	35.33	0.74
Jordan	3.76	4.11	56.29	1.97	0.01	2.15	0.02	13.66	18.39	137.37	13.13	0.28	17.68	0.37
Lao PDR	9.24	5.56	14.62	1.26	0.01	0.76	0.01	5.09	4.30	65.81	2.34	0.05	1.98	0.04
Madagascar	64.96	0.00	1.63	0.98	0.01	0.00	0.00	32.31	2.48	58.45	13.22	0.28	1.01	0.02
Maldives	45.99	1.19	200.47	85.75	0.60	2.21	0.02	9.02	16.06	144.48	9.12	0.19	16.25	0.34
Mali	43.57	9.30	1.28	0.52	0.00	0.11	0.00	25.30	1.96	67.23	11.91	0.25	0.92	0.02
Morocco	39.31	1.43	20.94	7.66	0.05	0.28	0.00	53.36	1.55	65.27	24.38	0.51	0.71	0.01
Nepal	16.73	5.17	2.34	0.36	0.00	0.11	0.00	4.58	1.35	43.36	1.39	0.03	0.41	0.01
Nicaragua	4.53	21.85	13.97	0.59	0.00	2.84	0.02	3.77	42.02	87.98	2.32	0.05	25.88	0.54
Paraguay	6.12	3.42	6.45	0.37	0.00	0.21	0.00	4.73	5.81	97.68	3.23	0.07	3.97	0.08
Peru	14.15	18.18	5.93	0.78	0.01	1.00	0.01	12.69	25.73	49.26	4.37	0.09	8.87	0.19
Samoa	0.94	7.48	62.58	0.55	0.00	4.36	0.03	0.63	5.44	63.02	0.28	0.01	2.40	0.05
Senegal	31.10	2.99	7.17	2.07	0.01	0.20	0.00	36.71	2.41	63.16	16.23	0.34	1.07	0.02
Sri Lanka	20.80	3.72	2.92	0.56	0.00	0.10	0.00	12.09	12.26	73.90	6.25	0.13	6.34	0.13
Syrian Arab Republic	2.41	0.80	22.78	0.51	0.00	0.17	0.00	22.73	1.49	78.08	12.42	0.26	0.82	0.02
TFYR of Macedonia	27.44	4.00	9.92	2.53	0.02	0.37	0.00	39.40	1.15	115.43	31.84	0.67	0.93	0.02
Togo	28.39	2.87	1.47	0.39	0.00	0.04	0.00	25.88	3.88	102.21	18.52	0.39	2.78	0.06
Tonga	1.77	15.23	40.08	0.66	0.00	5.67	0.04	6.72	12.51	65.60	3.08	0.06	5.74	0.12

Tunisia	40.21	0.00	64.11	23.97	0.17	0.00	0.00	69.48	3.10	101.45	49.34	1.04	2.20	0.05
Ukraine	28.56	0.31	40.60	10.78	0.08	0.12	0.00	21.09	2.58	91.16	13.46	0.28	1.65	0.03
Vietnam	8.41	10.76	4.16	0.33	0.00	0.42	0.00	10.02	11.41	161.67	11.34	0.24	12.91	0.27

Notes:

1. Currency union increases tourism in 93% and Trade in 70%
2. Each percentage point increases in Tourist/Pop and Trade/GDP increase GDPpc by 0.7% and 2.1% respectively

Table 5. Predicted Effects on trade, tourism and income. Medium income economies

	Tourism							Trade						
	Ratios			Potential effect of euro		Potential effect of Dollar		Ratios			Potential effect of euro		Potential effect of Dollar	
Country	% 2006 Tourism EuroZone	% 2006 Tourism DollarZone	2006 tourist (%Pop)	On tourism	On GDP	On tourism	On GDP	% 2006 Trade EuroZone	% 2006 Trade DollarZone	2006 Trade (%GDP)	On trade	On GDP	On trade	On GDP
Belarus	21.01	4.5	0.91	0.46	0.02	0.1	0	18.84	1.79	132.34	31.663	3.166	3.007	0.301
Belize	6.6	61.34	87.7	13.83	0.67	128.57	6.24	7.53	36.33	89.88	8.592	0.859	41.471	4.147
Brazil	30.89	14.38	2.65	1.96	0.09	0.91	0.04	18.56	17.73	25.45	5.998	0.6	5.731	0.573
Bulgaria	38.72	1.35	67.05	62.05	3.01	2.16	0.1	45.47	2.63	141.45	81.69	8.169	4.733	0.473
Chile	11.62	8.86	13.68	3.8	0.18	2.9	0.14	19.13	17.01	77.22	18.765	1.876	16.68	1.668
Costa Rica	9.75	42.39	39.22	9.14	0.44	39.73	1.93	15.68	36.43	103.39	20.589	2.059	47.831	4.783
Croatia	23.5	1.42	190.06	106.72	5.18	6.43	0.31	44.89	2.4	86.35	49.235	4.923	2.627	0.263
Dominica	4.21	23.93	136.05	13.68	0.66	77.8	3.77	4.87	20.02	76.05	4.702	0.47	19.335	1.934
Jamaica	4.01	71.01	62.22	5.96	0.29	105.6	5.12	7.07	5.27	88.56	7.956	0.796	5.927	0.593
Kazakhstan	2.65	0.55	30.73	1.95	0.09	0.41	0.02	31	11.1	94	37.012	3.701	13.249	1.325
Latvia	42.95	0.92	67.06	68.84	3.34	1.48	0.07	30.99	0.57	102.29	40.254	4.025	0.742	0.074
Lebanon	14.32	6.03	26.21	8.97	0.44	3.78	0.18	27.63	1.27	63.9	22.424	2.242	1.028	0.103
Lithuania	35.63	2.98	19.65	16.73	0.81	1.4	0.07	29.75	5.8	130.92	49.46	4.946	9.636	0.964
Malaysia	1.6	0.99	67.19	2.57	0.12	1.6	0.08	9.56	10.29	224.48	27.25	2.725	29.346	2.935
Mexico	4.04	82	20.27	1.96	0.09	39.73	1.93	6.56	4.44	71.93	5.991	0.599	4.055	0.405
Poland	59.6	2.26	41.09	58.52	2.84	2.22	0.11	54.56	1.67	81.71	56.611	5.661	1.733	0.173
Romania	18.44	2.16	28.04	12.36	0.6	1.45	0.07	49.94	2.56	79.64	50.507	5.051	2.587	0.259
Russian Federation	10.32	1.56	15.7	3.87	0.19	0.59	0.03	37.77	3.8	55.26	26.51	2.651	2.667	0.267
Saint Kitts and Nevis	0	59.7	265.2	0	0	378.37	18.35	10.88	51.83	70.55	9.75	0.975	46.435	4.643
Saint Lucia	2.09	38.76	185.81	9.28	0.45	172.14	8.35	40.37	18.85	85.64	43.903	4.39	20.497	2.05
Saint Vincent	5.02	29.48	80.99	9.72	0.47	57.07	2.77	40.96	8.56	85.24	44.34	4.434	9.264	0.926
Serbia	27.58	2.86	6.31	4.16	0.2	0.43	0.02	0	9.94	71.27	0	0	8.999	0.9
Seychelles	57.63	1.78	163.72	225.5	10.94	6.97	0.34	32.01	1.66	170.78	69.433	6.943	3.605	0.36
South Africa	8.76	3.09	17.39	3.64	0.18	1.29	0.06	25.9	9.37	61.85	20.346	2.035	7.358	0.736
Turkey	38.1	1.73	25.59	23.3	1.13	1.06	0.05	33.85	5.13	65.06	27.966	2.797	4.241	0.424
Uruguay	5.16	3.59	52.5	6.47	0.31	4.51	0.22	15.48	10.38	52.47	10.319	1.032	6.92	0.692
Venezuela, RB	30.87	11.88	2.75	2.03	0.1	0.78	0.04	8.18	43.89	63.35	6.578	0.658	35.308	3.531

Notes:

1. Currency union increases tourism in 239% and Trade in 127%
2. Each percentage point increases in Tourist/Pop and Trade/GDP increase GDPpc by 4.85% and 10% respectively

Table 6. Predicted Effects on trade, tourism and income. High income economies

	Tourism							Trade						
	Ratios			Potential effect of euro		Potential effect of Dollar		Ratios			Potential effect of euro		Potential effect of Dollar	
Country	% 2006 Tourism EuroZone	% 2006 Tourism DollarZone	2006 tourist (%Pop)	On tourism	On GDP	On tourism	On GDP	% 2006 Trade EuroZone	% 2006 Trade DollarZone	2006 Trade (%GDP)	On trade	On GDP	On trade	On GDP
Australia	8.87	9.01	24.67	0.20	0.01	0.20	0.01	11.17	10.55	39.15	0.57	0.02	0.54	0.02
Barbados	4.01	23.23	192.20	0.69	0.05	4.02	0.26	5.63	36.40	70.17	0.51	0.02	3.32	0.11
Bermuda	1.13	76.16	464.44	0.47	0.03	31.84	2.09	19.32	44.37	25.09	0.63	0.02	1.45	0.05
Canada	6.07	75.86	56.07	0.31	0.02	3.83	0.25	5.93	68.39	68.42	0.53	0.02	6.08	0.19
Cyprus	20.64	0.83	313.28	5.82	0.38	0.24	0.02	51.18	1.40	52.29	3.48	0.11	0.09	0.00
Czech Republic	43.60	4.76	63.16	2.48	0.16	0.27	0.02	58.78	1.86	152.94	11.69	0.37	0.37	0.01
Denmark	22.96	6.23	40.82	0.84	0.06	0.23	0.02	44.56	4.70	75.13	4.35	0.14	0.46	0.01
Grenada	4.88	22.86	112.36	0.49	0.03	2.31	0.15	7.55	2.56	69.84	0.69	0.02	0.23	0.01
Hong Kong, China	3.48	5.55	221.82	0.70	0.05	1.11	0.07	7.54	64.42	403.94	3.96	0.13	33.83	1.08
Hungary	27.66	0.95	92.05	2.29	0.15	0.08	0.01	53.48	9.92	158.10	10.99	0.35	2.04	0.07
Iceland	42.17	9.41	239.35	9.08	0.60	2.03	0.13	38.60	2.05	68.64	3.44	0.11	0.18	0.01
Israel	29.99	27.07	26.80	0.72	0.05	0.65	0.04	25.33	15.84	80.27	2.64	0.08	1.65	0.05
Japan	5.56	11.14	5.73	0.03	0.00	0.06	0.00	9.51	37.65	32.71	0.40	0.01	1.60	0.05
Korea, Rep.	3.29	9.03	12.81	0.04	0.00	0.10	0.01	9.22	7.45	83.20	1.00	0.03	0.81	0.03
Malta	35.78	1.51	277.70	8.94	0.59	0.38	0.02	47.71	2.00	121.18	7.52	0.24	0.31	0.01
New Caledonia	43.25	0.82	42.03	1.64	0.11	0.03	0.00	45.90	6.11	84.97	5.07	0.16	0.67	0.02
New Zealand	6.51	9.37	58.19	0.34	0.02	0.49	0.03	10.85	12.53	54.41	0.77	0.02	0.89	0.03
Norway	33.13	4.13	84.50	2.52	0.17	0.31	0.02	40.39	5.62	64.72	3.40	0.11	0.47	0.02
Saudi Arabia	1.25	0.45	35.66	0.04	0.00	0.01	0.00	16.72	14.92	93.70	2.04	0.07	1.82	0.06
Singapore	7.24	5.55	173.17	1.13	0.07	0.86	0.06	8.08	11.88	447.82	4.70	0.15	6.92	0.22
Slovak Republic	26.56	1.83	29.92	0.72	0.05	0.05	0.00	46.65	1.87	183.24	11.11	0.36	0.44	0.01
Slovenia	59.19	2.92	80.82	4.30	0.28	0.21	0.01	58.81	1.62	147.57	11.28	0.36	0.31	0.01
Switzerland	54.35	9.23	105.48	5.16	0.34	0.88	0.06	60.90	8.82	88.38	7.00	0.22	1.01	0.03
United Kingdom	56.23	12.71	50.66	2.56	0.17	0.58	0.04	47.40	11.10	51.46	3.17	0.10	0.74	0.02

Notes:

1. Currency union increases tourism in 9% and Trade in 12%
2. Each percentage point increases in Tourist/Pop and Trade/GDP increase GDPpc by 6.57% and 3.2% respectively

Appendix

Table A.1. Countries considered in the analysis

Albania	Gambia, The	Nicaragua
Algeria	Georgia	Níger
Andorra	Germany	Nigeria
Angola	Ghana	Norway
Anguilla	Greece	Oman
Antigua and Barbuda	Grenada	Pakistan
Armenia	Guadeloupe	Palau
Aruba	Guatemala	Panama
Australia	Guinea	Papua New Guinea
Austria	Guinea-Bissau	Paraguay
Azerbaijan	Guyana	Peru
Bahamas, The	Haiti	Philippines
Bahrain	Honduras	Poland
Bangladesh	Hong Kong, China	Portugal
Barbados	Hungary	Puerto Rico
Belarus	Iceland	Reunion
Belgium	India	Romania
Belize	Indonesia	Russian Federation
Benin	Iran, Islamic Rep.	Saint Kitts and Nevis
Bermuda	Iraq	Saint Lucia
Bhutan	Ireland	Saint Vincent and the Grenadines
Bolivia	Israel	Samoa
Bosnia and Herzegovina	Italy	San Marino
Botswana	Jamaica	Sao Tome and Principe
Brazil	Japan	Saudi Arabia
British Virgin Islands	Jordan	Senegal
Brunei Darussalam	Kazakhstan	Serbia
Bulgaria	Kenya	Seychelles
Burkina Faso	Kiribati	Singapore
Cambodia	Korea, Rep.	Slovak Republic
Cameroon	Kuwait	Slovenia
Canada	Kyrgyz Republic	South Africa
Cape Verde	Lao PDR	Spain
Cayman Islands	Latvia	Sri Lanka
Central African Republic	Lebanon	Suriname
Chad	Lesotho	Swaziland
Chile	Libya	Sweden
China	Liechtenstein	Switzerland
Colombia	Lithuania	Syrian Arab Republic
Comoros	Luxembourg	Tanzania
Congo, Democratic Republic	Madagascar	TFYR of Macedonia
Congo, Republic.	Malaysia	Thailand
Cook Islands	Maldives	Togo
Costa Rica	Mali	Tonga
Croatia	Malta	Trinidad and Tobago
Cyprus	Marshall Islands	Tunisia
Czech Republic	Martinique	Turkey
Denmark	Mauritius	Turkmenistán
Dominica	Mexico	Turks and Caicos Islands
Dominican Republic	Micronesia, Fed. Sts.	Uganda

Ecuador	Moldova	Ukraine
Egypt, Arab Rep.	Monaco	United Arab Emirates
El Salvador	Montserrat	United Kingdom
Eritrea	Morocco	United Status
Estonia	Mozambique	Uruguay
Ethiopia	Namibia	Venezuela, RB
Fiji	Nepal	Vietnam
Finland	Netherlands	Zambia
France	New Caledonia	Zimbabwe
French Polynesia	New Zealand	

Table A.2. Currency Unions cases

US Dollar	**Euro since 2002**
Ecuador since 2000 (Low)	Martinique (Medium)
El Salvador since 2001 (Low)	Reunion (Medium)
Marshal Island (Low)	Andorra (High)
Fed. Sts. Micronesia (Low)	Austria (High)
Palau (Medium)	Belgium (High)
Panama (Medium)	Finland (High)
British Virgin Islands (High)	France (High)
Turks and Caicos Islands (High)	Germany (High)
United States (High)	Greece (High)
Puerto Rico (High)	Guadeloupe (High)
French Franc until 2002	Ireland (High)
Martinique (Medium)	Italy (High)
Reunion (Medium)	Luxembourg (High)
Andorra (High)	Monaco (High)
Guadeloupe (High)	Netherlands (High)
Monaco (High)	Portugal (High)
France (High)	San Marino (High)
Spanish Peseta until 2002	Portugal (High)
Andorra (High)	Spain (High)
Spain (High)	
Italian Lira until 2002	
Italy (High)	
San Marino (High)	
Swiss Franc	
Liechstentein (High)	
Switzerland (High)	
Australian Dollar	
Kiribati (Low)	
Autralia (High)	