MODELLING TOURIST CONSUMPTION TO ACHIEVE ECONOMIC GROWTH AND EXTERNAL BALANCE: CASE OF CROATIA

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Abstract
Purpose – The purpose of this study is to develop a model able to explain international tourist expenditures (inflows) in Croatia, and domestic tourist expenditures (outflows) abroad.
Design – The present study is based on the research of international tourism demand, aimed at describing the behavior of international expenditures concepts applied to the case of Croatia.
Methodology –The proposed model is a multiple linear regression model.
Findings – The modelling procedure with all tests showed that the multiple linear regression model is adequate for modelling international tourist spending or expenditures. The model of foreign tourism inflows as well as the model of domestic tourism outflows are designed with main macroeconomic variables.
Originality of the research – The study provides a model of tourism balance useful to analyze and forecast foreign exchange tourism inflows and outflows on the case of Croatia. The model is applicable and useful to govern tourism policy, international trade policy and economic policy as a whole.
Keywords international tourism demand, tourist expenditures, econometric modeling, multiple linear regression (MLR) model, external balance, economic growth

INTRODUCTION

Stable economic development and moderate growth are the basic elements for macroeconomic stability and long-term welfare of the population. The last decade has globally been a period of growing economic instability and uncertainty. That brings demanding tasks for national and regional policy makers. This is particularly the case in terms of regional integration processes in Europe, North America and Asia; rising influence of China and Russia economies; negative trend of terrorism and the rising number of armed conflicts on the globe. Policy makers should have the possibilities to use advantages of national economies to optimize regional and global potentials. This is a key prerequisite for sustainable economic growth, a better life quality and growing standard of living.

Positioning oneself on the global market today requires a competitive product offered in a demanding business environment. This is the basis for success in international trade that is valid for tourism market as well. Economies should use and develop their comparative and competitive advantages to achieve long-term growth of the population's standard of living. This is an obvious tendency of growing impact of the service sector in developed and developing countries. The service sector - and the tourism industry in particular - has a growing impact for less developed economies and economies facing economic problems and instability.

Tourism has experienced continuous expansion and diversification over the past six decades. It is one of the world's largest and fastest growing export sectors, contributing to 10% of the global GDP and it accounts for one in eleven jobs worldwide. International tourist arrivals have increased from 25 million globally in 1950, to 278 million in 1980, 527 million in 1995 and 1133 million in 2014. International tourism receipts generated US$ 2 billion in 1950 to US$ 104 billion in 1980, US$ 415 billion in 1995 to US$ 1245 billion in in export earnings (UNWTO, 2015). It is obvious that tourism has shown an almost uninterrupted growth despite difficult economic and political situations. Geopolitical, economic and health challenges in some parts of the world have determined a change in the tourist flows. Forecasting data for international tourist arrivals indicates that these are expected to increase to 1.8 billion by 2030, with evidence of higher growth rate in emerging destinations.

Growing interest has been seen on the economic impacts of tourism that are largely expressed through the numbers of supported jobs and tourism receipts earned through the activities of the industry and supportive industries at national and global levels (Stynes, 1999). Tourism is perceived as an activity that brings economic prosperity in macro and micro levels all over the world. Relationship between tourism spending and economic growth for both developing and developed countries has been researched (Telfler and Sharpley, 2015). Tourism's economic impacts are an important part in economic development. Researchers use a variety of methods, from conceptual frameworks to complex mathematical models, to estimate, explain and quantify tourism's economic impacts (Dwyer, Forsyth and Dwyer, 2010). Knowledge about relationship between tourism spending and economic growth is of particular importance to policy makers.

International tourism is becoming a major foreign exchange earner for many countries, and is especially important for low-income countries and deficit economies. Deficit countries have lower net tourism income than those of economies with balance or surplus due to their lesser dependence on import, and a higher capacity of resource generation (Chowdhury and Shahriar, 2012).

Many inbound tourism countries define their national tourism policies as having continuous growing surplus in the travel balance, aimed at minimizing goods balance deficit and minimizing the deficit in their current balance of payment. The foreign exchange inflow influences the GDP growth thought influencing all elements of GDP structure: rise of personal consumption and spending in tourism, growing investments in tourism, rise in governmental spending and rise in export consumption or rise in foreign tourists' spending.

Outbound tourism countries are primarily markets with a high number of domestic tourists that are travelling abroad. This creates foreign exchange outflow and creates deficit in travel balance that in many countries minimizes surplus in current accounts and other sectors of economy. This is the basis for balance on open markets. World saving must equal world investment and world spending must equal world output. Individual countries can run current account surpluses or deficits to invest or borrow abroad.

Deficit or surplus in balance of payments has extensive implications on the national income and employment, growth rate and prospectus for growth, exchange rate policy, inflation, interest rate, wage, income, foreign debt, financial and capital movements and other macroeconomic aggregates. There is a need to continuously monitor international trade data and balance of payments statistics to be capable to provide policy measures for sustainable economic growth and development.

The current account is important because it measures the size and direction of international borrowing. A country with the current account surplus is earning more from its exports than it spends on imports, and this country finances the current account deficit of its trading partners by lending to them. A country with a current account deficit is importing present consumption and exporting future consumption. A country with a current account surplus is exporting present consumption and importing future consumption (Krugman, Obstfeld and Melitz, 2015).

Tourism has a multiplier effect for economic activities, output and other macroeconomic aggregates. This has been investigated by many researchers: a systematic approach has been put forth by Archer and Fletcher (Archer and Fletcher, 1996). The multiplier effect of tourism was calculated and tested for many destinations including Croatia (Jurčić, 1998) during decades and still is used in research (Kasimati, 2011). In the last two decades the methodology of Tourism Satellite Account (TSA) has been developed; we are talking about a tool to research and forecast the importance of the tourism and travel industry on global, regional and national levels.

This paper investigates foreign exchange tourist receipts as one of the most used determinants of international tourism demand. Travel data form the balance of payment statistics are here the main determinant of international tourist spending which demonstrate tourism importance, and influence national output and economic growth. In the paper focus will be put on the main explanatory variables that can be used to explain and predict international tourist receipts. Export in terms of the international tourist spending is an important source of the foreign exchange for an inbound tourism country such as Croatia. National policy makers and tourism national bodies should be aware of these variables to govern continuous growth in international tourist receipts. It is obvious that this is a complex task, one that has been researched in many different mainstreams in the past.

LITERATURE REVIEW

Tourism growth is an important tool for many economies and there is constant need for researches in this field. Long-term monitoring and planning entails forecasting international tourism demand to avoid inadequate investments and mistakes in economic growth. Therefore, modelling and forecasting international tourist receipts and tourism demand is very important.

Researches in this field are mostly oriented towards modelling tourism demand focusing in two main groups: (a) modelling tourist arrivals and (b) modelling tourist consumption (expenditures).

Research on international tourist expenditures and tourism demand has grown rapidly from the last decade of 20th century in parallel with the tourism development. Tourism modelling research started with Artus paper (Artus, 1972). Witt and Witt reviewed 114 papers on tourism demand forecasting models developed before 1995 (Witt and Witt, 1995). Crouch (Crouch, 1994) and Lim (Lim, 1997) carried out profound additional research. Results of these studies vary according to the specific country's conditions and the methodology used. Crouch emphasized the importance of monitoring tourist arrivals as explanatory variables (Crouch, 1994a, 42), as well as binary variables for a specific political situation, events or a specific situation (Crouch, 1994, 43). There are studies that confirmed the importance of the GDP or income of the tourists' country of origin as the main explanatory variable to forecast tourism demand, as well as variables such as relative prices and the exchange rate (Lane and Milesi-Ferretti, 2002).

Li et al. (Li, Song and Witt, 2005) covered 420 studies for the period 1960-2002 and concluded that there were important developments in tourism demand analysis with different research approaches and interests with advances in research methodologies. The majority of these studies focus on the application of different techniques, both qualitative and quantitative to model and forecast the demand for tourism in various destinations.

Later on Song and Li review the published studies on tourism demand modeling and forecasting since 2000. They reviewed 121 papers on forecasting of tourist models; 72 papers adopted time-series models; 71 papers adopted econometric models and 30 papers adopted both time-series models and econometric models. The study shows that there is no single model that consistently outperforms other models in all situations (Song and Li, 2008). Same group of authors performed systematic approach for tourism demand modelling and forecasting (Song, Li, Witt and Fei, 2010) and complex meta-analysis of international tourism demand elasticities (Peng, Song, Crouch and Witt, 2015).

The tourism demand model for quantitative forecasting can be divided into time-series models and econometric models. The time-series model uses the number of tourists in the previous period to forecast the number of tourists in the current period. The econometric model is a causal model that forecasts the tourism demand through the GDP of the country of origin, tourist expenses, accommodation expenses, transport expenses, the destination's consumption and the exchange rate.

Martin and Witt (Martin and Witt, 1989) implemented in the literature the use of simple time-series models, such as naïve, simple autoregressive, smoothing exponential and trend cure analysis. They claimed that naïve and autoregressive (AR) models can generate better forecasts than econometric models. In the last 20 years research on tourism demand has moved to more advanced time-series, such as ARIMA and conditional volatility models (Kulendran and Wong, 2005). The less adopted models were artificial neural network (Lin, Chen and Lee, 2011), support vector regression (Chen and Wang, 2007) and multivariate adaptive regression spliner (Lin, Chen and Lee, 2011). The econometric model has been used to analyze the relation between tourism demand variables and affecting variables. The most frequently used analytical model was the regression analysis model (Li, Song and Witt, 2005; Song and Li, 2008), the less frequently used models were ADLM, ECM, VAR, TVP and AIDS (Song and Li, 2008).

An early phase of modelling tourism demand in Croatia has been done by Kolić (Kolić, 1996), Bahovec and Erjavec (Bahovec and Erjavec, 1999, 35). In this phase little attention has been given to quantitative analysis of the importance of the tourism for Croatian economy. Empirical research on international tourism demand has been based on traditional econometric techniques (Stučka, 2002; Mervar and Payne, 2002; Bahovec, Dumičić and Čeh Časni, 2008) or more advanced econometric techniques (Bellulo and Križman, 2000). All studies found that the income of origin countries exerted a strong influence on tourism demand while price/exchange rate effects were often less conclusive. Mervar and Payne (Mervar and Payne, 2007) extend the tourism demand literature with new variables, longer time horizon, new modelling methods and new political climate in the region. Baldigara and Mamula (Baldigara and Mamula, 2015) establish a seasonal autoregressive integrated moving average model (ARIMA) able to capture and explain the patterns and the determinants of German tourism demand in Croatia. Tica and Kožić (Tica and Kožić, 2015) performed a comprehensive study with 7.7 billion out-of-sample regressions found that the most important leading indications for inbound tourism demand are real GDP and imports in Poland and gross wages in the Czech Republic and Slovakia.

Panel data analysis has appeared and become more popular in tourism demand research because it allows a combination of cross-sectional and time-series data (Song and Witt, 2000). Panel data give more data, more variability, less collinearity among the variables, more degrees of freedom and more efficiency, but still the panel data approach is rarely used in tourism demand research (Baltagi, 2001). There is a number of recent research using panel data approach to modeling tourism consumption for many regions and countries. Comprehensive research using panel data analysis for Croatia is review by Škuflić and Štoković (Škuflić and Štoković, 2011), Škrinjarić (Škrinjarić, 2011) and Dumičić et al. (Dumičić, Mikulić and Časni, 2015).

Modelling tourist receipts and expenses is less present in researches comparing modelling tourism demand. The main difference is that modelling tourism demand requires data segmentation and a separate approach for each inbound tourist market. Modelling tourist receipts requires modelling aggregate data for inbound and outbound tourism countries.

This paper adopts the econometric multiple linear regression (MLR) model to investigate the impact of various macroeconomic aggregates of tourism country and country of tourist origin on the tourist receipts and tourist expenses. To achieve positive tourism balance, meaning higher foreign tourist receipts than domestic tourist expenses abroad, various national, regional and global factors should be followed and predicted. This paper will try to summarize and select the main factors influencing tourism balance, primarily tourism credit data creating a model that will be tested for Croatia. The model can be easily used in practice for all stakeholders involved in tourism industry. Research methodology is based on secondary data of balance of payments statistics and macroeconomic database available on EUROSTAT statistics.

METHODOLOGICAL APPROACH

For modelling tourist consumption the multiple linear regression (MLR) method will be used. Multiple regression analysis is primarily concerned with estimating and/or predicting the (population) mean value of the dependent variable Y on the basis of the known (or fixed) values of more explanatory variables. The multiple linear regression model involving the dependent variable Y and p independent variables numbered X_2, X_3, $...X_n$ can be written as

$$Y_i = \beta_i + \beta_2 X_{2i} + \beta_3 X_{3i} + \cdots + \beta_p X_{pi} + \varepsilon_{i,} \quad i = 1,2, \ldots, n \qquad (1)$$

Where β_1 denotes the intercept, $\beta_2, \ldots \beta_p$ are the partial regression slope coefficients, and ε_i the residual term associated with the *i*th observation. The regression model gives the expected value of *Y* conditional upon the fixed values of X_2, $X_3, \ldots X_n$ plus the error component.

The basic assumptions of regression analysis are the assumptions of no serial correlation and homoscedasticity. The assumption of no multicollinearity that mean regression function should include only those variables that are not linear functions of some of the variables in the model.

The multiple coefficient of determination R^2 and *adjusted* R^2 *coefficient* are used as general indexes of fit and they do not have to be evaluated from a statistical point of view. When the model represents a good fit to the data, R^2 should be near 1, whereas poor fits should result in R^2 values close to zero. R^2 can be artificially increased by simply adding explanatory variables to the regression model. According to Dillon (Dillon,1984, 222) it is better to use an *adjusted* R^2 *coefficient* as for final conclusion because: (a) as the number of predictors increases *adjusted* R^2 *coefficient* is becomes less than R^2; (b) *adjusted* R^2 *coefficient* can be less than zero (negative) and (3) *adjusted* R^2 *coefficient* will always increase so long as the t-value of the coefficient of a newly added variable is larger than 1 in absolute value, where the t-value is computed under the hypothesis that true value of the coefficient is zero.

The next step in testing the model is the t-test. Each regression coefficient was tested individually; that is, separate hypothesis tests were set up for each coefficient $ß_i$ to ß. The null hypothesis for testing is:

$$H_0: \beta_2 = \beta_3 = \cdots = \beta_p = 0 \qquad (2)$$

This is a joint or simultaneous hypothesis, since it postulates that $\beta_2, \ldots \beta_p$ are jointly equal to zero. The easiest way to test the overall significance is by the analysis-of-variance technique. If the F-value exceeds the critical tabulated F-value at the £-percent level of significance, we reject H_0, which states that *Y* is not linearly related to the *X*'s; otherwise we accept it. The larger R^2 measure, the greater the computed F-value.

Assessing the statistical significance of sets of the coefficients by way of the model comparison tests provides a useful and flexible vehicle for guiding the model selection process. The most frequently used approach is to rely on some sequential variable selection procedure. This paper will use the above mentioned procedure to model international tourist expenditure in a tourism country.

INTERNATIONAL TOURIST SPENDING OF INBOUND TOURISM COUNTY: MODEL SPECIFICATION FOR INTERNATIONAL TOURIST RECEIPTS (INFLOWS)

In this study, the following demand function is proposed to model the international tourist spending (expenditures) and it follows

$$POT_I = a * NOCTUR_i^{b1} * TE\check{C}_i^{b2} * BDPIND_i^{b3} * UVIND_i^{b4} * CIND_i^{b5} * WAGEIND_i^{b6} * D_2^{b7} * D_3^{b8} * D_4^{b9} * \varepsilon_i \quad (3)$$

Where:

POT_i is the proxy of international tourist expenditure (receipts) in tourism country.
$NOCTUR_i$ is the international overnight stay in tourism country.
$TE\check{C}_i$ is the foreign exchange rate of EUR and Croatian kuna.
$BDPIND_i$ is an aggregate data calculated from the gross national product (GNP) level in five most important tourism inbound markets. It is calculated on the basis of Croatian tourism data for 2015. In 2015 regarding international overnight stay five most important inbound tourism market for Croatia was: Germany 23.9%, Slovenia 10.1%, Austria 9%, Czech Republic and Italy 7.3%. Following this data the aggregate GDP has been calculated; it is used as a proxy for living standard in EU countries, i.e. the main tourism inbound countries for Croatian tourism. The main assumption is that a higher living standard in the country of origin will have a positive impact and a rising effect on tourist expenditures abroad that will be spill-over positive effects through the entire economy.
$UVIND_i$ is the aggregate value representing total import of the five main inbound tourism markets for a tourist country. It is calculated assuming same assumptions as $BDPIND_i$ as well as calculating following the same procedure. The assumption is that higher living standard could be indicated with raising total import and will have positive feedback on international tourist expenditures in a tourist country.
$CIND_i$ is aggregate value representing personal consumption of the five main inbound tourism market for a tourism country. It is calculated assuming same assumptions as $BDPIND_i$.

$WAGEIND_i$ is aggregate value representing disposable income, the basic macroeconomic aggregate for personal consumption in five most important tourism inbound markets for Croatia. It is calculated assuming same assumptions as $BDPIND_i$.
D_2 is dummy variable for seasonal effect in 2nd quarter; it is binary variable 1 mean yes and 0 is no.
D_3 is dummy variable for seasonal effect in 3nd quarter; it is binary variable 1 mean yes and 0 is no.
D_4 is dummy variable for seasonal effect in 4nd quarter; it is binary variable 1 mean yes and 0 is no.
$b_1, b_2, b_3, b_4, b_5, b_6, b_7, b_8, b_9$ are regression coefficients that indicate percentual change of the dependent variable, in our case international tourist expenditures, if there is 1% change of independent explanatory variable, holding all other variables constant.
ε_i are independent random variables that are normally distributed with mean 0 and constant variance.

According to Song and Witt (Song and Witt, 2000) one major feature of the power function, that define model of international tourist expenditures, is that it can be transformed into a log-linear model, which can be estimated using the ordinary least squares (OLS) model. One practical feature of the multiple log-linear model is that each partial slope coefficient measures the partial elasticity of the dependent variable with respect to the explanatory variable in question, holding all other variables constant.

To maintain the linear relation between variables power function is transformed into log-linear model and is given by

$$\begin{aligned} lnPOT_I = lna + b_1 lnNOCTUR_i + b_2 lnTEČ_i + b_3 lnBDPIND_i + b_4 lnUVIND_i \\ + b_5 lnCIND_i + b_6 lnWAGEIND_i + b_7 D_2 + b_8 D_3 + b_9 D_4 + \varepsilon_i \end{aligned} \tag{4}$$

In summary, international tourist expenditure can be expressed in functional form as *POT = f (NOCTUR, TEČ, BDPIND, UVIND, CIND, WAGEIND)* with further assumptions: an increase in the number of foreign tourist overnight stays increases foreign tourist expenditures, the appreciation of national currency (Croatian kuna) according to EUR decreases foreign tourist expenditures, economic growth and GDP increase in foreign tourist countries of origin increases foreign tourist expenditure, import increase in foreign tourist countries of origin increases foreign tourist expenditures, personal consumption increase in foreign tourist countries of origin increases foreign tourists expenditures, disposable income increase in foreign tourist countries of origin increases foreign tourist expenditures. This can be expressed in a mathematical form as follows

$$\begin{aligned} \frac{\partial POT}{\partial NOCTUR} > 0; \frac{\partial POT}{\partial TEČ} < 0; \frac{\partial POT}{\partial BDPIND} > 0; \frac{\partial POT}{\partial UVIND} > 0; \frac{\partial POT}{\partial CIND} \\ > 0; \frac{\partial POT}{\partial WAGEIND} > 0 \end{aligned} \tag{5}$$

The initial model is calculated and tested for Croatian economy. Empirical analysis is carried out using a set of quarterly data for 2003:01 to 2014:01. Research methodology is based on secondary data of balance of payments statistics and macroeconomic database available on EUROSTAT statistics.

The model is initially defined with four aggregate data that is expected to have collinearity: GDP level (*BDPIND*), import (*UVIND*), personal consumption (*CIND*) and disposable income (*WAGEIND*). The reason is to statistically confirm collinearity and to define optimal variables for standard of living on inbound tourism markets.

EMPIRICAL RESULTS

The starting point for the modelling procedure is descriptive statistics and correlation matrix for all independent variables. The correlation matrix shows the correlation between the dependent variable (*lnPOT*) and each independent variable, as well as the correlations between the independent variables. In the model there are large intercorrelations between: (a) variables *BDPIND*, *UVIND*, *CIND* and *WAGEIND*, that is initially expected and (b) variables *POT* and *NOCTUR*. It is expected that international tourist expenditures are correlated with the total number of foreign tourist overnight stays. These correlations can substantially affect the results of multiple linear regression analysis and should be minimized in the next step of the modelling procedure.

Table 1: **The correlation matrix – Pearson Correlation**

Correlation with international tourist expenditure variable (POT)	**Pearson Correlation**
lnNOCTUR	0,959
lnTEČ	-0,321
lnBDPIND	0,207
lnUVIND	0,171
lnCIND	0,201
lnWAGEIND	0,059
Correlation with aggregate GDP level (BDPIND)	
lnUVIND	0,968
lnCIND	0,976
lnWAGEIND	0,873

Source: Research results

The summary output including all independent variables is given in the following table.

Table 2: **Empirical results of modelling Croatia's international tourist expenditures using the MLR model – first step**

Variable	**Coefficients**	**Std.Error**	**t-value**
Constant	-22,321	12,528	-1,782
lnNOCTUR	1,370	0,158	0,865
lnTEČ	-5,370	1,468	-3,657
lnBDPIND	4,988	2,053	2,429
lnUVIND	-1,037	0,521	-1,990
lnCIND	-2,595	2,243	-1,157
lnWAGEIND	1,502	1,856	0,809
D2	1,635	0,146	11,224
D3	2,464	0,220	11,191
D4	0,431	0,175	2,471
Tests			
R^2=0,992	Adj.R^2=0,990	F=501,338	d=1,985

Source: Research results

In this model 99 percent of the total variation in the foreign tourist expenditures is explained by six predictor variables *NOCTUR, TEČ, BDPIND, UVIND, CIND, WATEIND* and binary variables *D2, D3* and *D4*. It appears that high value for R^2 and the adjusted R^2 value (0,990) suggests that the model fits the data reasonably well. The regression coefficients in log-linear form the indicated percentual change of the dependent variable, foreign tourist expenditures, if there is a 1% change of independent explanatory variable, holding all other conditions constant. This means that a 1% change of appreciation of Croatian kuna regarding EUR, holding all other conditions constant, will decrease foreign tourist consumption in Croatia by 1,37%. All variables except *WAGEIND* have the expected signs and regression coefficients indicating that each variable is strongly responsible for tourist expenditure. When changes in foreign exchange policy (*TEČ*) and economic growth on inbound tourism market (*BDPIND*) occur, this will strongly affect foreign tourist expenditures. Indeed, according to the economic literature, this is an initial expectation. The analysis of t-values reveals that all individual variables are statistically different from 0, and can be used in this model, except *NOCTUR* and *WAGEIN*, suggesting that these variables do not separately influence tourist expenditures. With regards to the robustness of the model, the F-statistics reject the null hypothesis that all coefficients are jointly zero at 1% significance level, indicating that all explanatory variables are important and independent in explaining foreign tourism receipts.

The next step in the modelling procedure is given with the second step model in potential and log-linear form given by

$$POT_I = a * NOCTUR_i^{b1} * TEČ_i^{b2} * BDPIND_i^{b3} * D_2^{b4} * D_3^{b5} * D_4^{b6} * \varepsilon_i$$

$$lnPOT_I = lna + b_1 lnNOCTUR_i + b_2 lnTEČ_i + b_3 lnBDPIND_i + b_4 D_2 + b_5 D_3 + b_6 D_4 + \varepsilon_i \qquad (6)$$

The results of the multiple linear regression modelling are shown in Table 3 below.

Table 3: **Empirical results of modelling Croatia's international tourist expenditures using the MLR model – second step**

Variables	Coefficients	Std.Error	t-value
Constant	-12,056	4,040	-2,984
lnNOCTUR	0,139	0,161	0,865
lnTEČ	-3,637	1,048	-3,471
lnBDPIND	1,818	0,224	8,133
D2	1,659	0,138	12,009
D3	2,512	0,221	11,374
D4	0,605	0,053	11,467
Tests			
R^2=0,991	Adj.R^2=0,989	F=669,121	d=1,814

Source: Research results

In this model the 99,1 percent of the total variation in the international tourist expenditures is explained by three predictor variables *NOCTUR, TEČ, BDPIND* and the binary variables *D2*, *D3* and *D4*. The model fits the data very well. All variables have the expected signs and regression coefficients indicating that each variable is strongly responsible for international tourist expenditures. When changes in foreign exchange policy (*TEČ*) and economic standard on inbound tourism market (*BDPIND*) occur, it will strongly affect foreign tourist expenditures, while overnight stays have a significantly lower effect. The analysis of t-values reveals that all individual variables are statistically different from 0 and can be used in this model, except *NOCTUR*, meaning that these variables do not separately influence tourist expenditures. With regards to the robustness of the model, the F-statistics reject the null hypothesis that all coefficients are jointly zero at 1% significance level, indicating that all explanatory variables are important and independent in explaining foreign tourism receipts.

The final step in the modelling procedure is given with the model in potential and log-linear form that is

$$POT_I = a * TE\check{C}_i^{b1} * BDPIND_i^{b2} * D_2^{b3} * D_3^{b4} * D_4^{b5} * \varepsilon_i$$

$$lnPOT_I = lna + b_1 lnTE\check{C}_i + b_2 lnBDPIND_i + b_3 D_2 + b_4 D_3 + b_5 D_4 + \varepsilon_i \tag{7}$$

This is the final stage in the modelling procedure, with defined macroeconomic variables that have the strongest and statistically approved influence on international tourist expenditures.

Table 4: **Empirical results of modeling Croatia's international tourist expenditures using MLR model – final step**

Variables	Coefficients	Std.Error	t-value
Constant	-10,268	3,459	-2,969
lnTEČ	-3,697	1,042	-3,549
lnBDPIND	1,832	0,222	8,239
D2	1,771	0,049	36,090
D3	2,698	0,050	53,865
D4	0,620	0,049	12,598
Tests			
R^2=0,990	Adj.R^2=0,989	F=808,026	d=1,747

Source: Research results

By way of final analysis, we observe that the total variation in the foreign tourist expenditures remained high, and 99 percent of the total variation in the foreign tourist expenditure can be explained by two predictor variables *TEČ* and *BDPIND,* and binary variables *D2, D3* and *D4*. The model fits the data well also with the high level of the adjuster R^2 coefficient. A one percent change of appreciation of Croatian kuna regarding EUR, holding all other conditions unchanged, will decrease foreign tourist consumption in Croatia by 3,697%. This suggests that foreign exchange rate is a very important instrument to govern tourist expenditures. Our foreign exchange policy is connected to the EU monetary policy, but still Croatia has possibilities to govern and manage its own foreign exchange policy and this represents an additional tool to reach external balance. A one percent growth of economic conditions and gross national level in main tourism markets will increase international tourist expenditures by 1,832% and vice versa. In this model the F-test reaches the highest value of 808,026. The test of collinearity (VIF test) has a satisfactory value from 1,008 to 1,538. The Durbin-Watson test for autocorrelation has a possible range of 0 to 4 and in our model it is 1.747. We can confirm that there is no autocorrelation present in error terms. The analysis of t-values reveals that all individual variables are statistically different from 0 and can be used in this model. The F-statistics rejects the null hypothesis that all coefficients are jointly zero at 1% significance level, indicating that all explanatory variables are important and independent in explaining international tourist expenditures.

INTERNATIONAL TOURIST EXPENDITURE FOR OUTBOUND TOURISM COUNTY: MODEL SPECIFICATION FOR DOMESTIC TOURIST SPENDING ABROAD (OUTFLOWS)

For modelling tourist expenditure abroad a demand function is proposed with the aim of modelling the international tourist expenditures. Log-linear model is given by

$$lnROT_I = lna + b_1 lnBDP_i + b_2 lnTE\check{C}_i + b_3 lnEXPORT_i + b_4 D_2 + b_5 D_3 + b_6 D_4 + \varepsilon_i \quad (8)$$

Where:

ROT_i is the proxy of international tourist expenditures abroad (outflows) from tourist country.
BDP is the level of economical growth in tourism country of origin. It is expected that higher level or gross national products will be followed by increase in tourism consumption of country's inhabitants abroad.
$TE\check{C}_i$ is the foreign exchange rate of EUR and Croatian kuna. Appreciation of domestic currency will influence on rising tourist expenditure abroad. This will negatively influence on travel and current account and is warning situation for countries with constant current account deficit.
EXPORT, it is total amount of tourism country export. Rising level of export demonstrate rising standard of living, specially for more developed economies, and could positively influence on the total tourism expenditures abroad.

By way of summary we note that international tourist expenditures abroad can be expressed in functional form as *ROT = f (BDP, TEČ, EXPORT)* with further assumptions explained above

$$\frac{\partial ROT}{\partial BDP} > 0;\ \frac{\partial ROT}{\partial TE\check{C}} > 0;\ \frac{\partial ROT}{\partial EXPORT} > 0 \tag{9}$$

The model is calculated and tested for Croatian economy using the set of quarterly data for 2003:01 to 2014:01. The research methodology is based on secondary data of balance of payments statistics and macroeconomic database available on the EUROSTAT statistics.

EMPIRICAL RESULTS

The correlation matrix shows the correlation between the dependent variable (*lnROT*) and each independent variable, as well as the correlations between the independent variables. In the model, there are large intercorrelations between: (a) variables *lnROT* with *lnEXPORT* and *lnBDP* and (b) variables *lnBDP* and *lnEXPORT*

Table 5: **The correlation matrix – Pearson Correlation**

Correlation with international tourist expenditure variable (ROT)	**Pearson Correlation**
lnBDP	0,494
lnEXPORT	0,704
Correlation with GDP level (BDP)	
lnEXPORT	0,746

Source: Research results

The summary output including all independent variables is given in the following table.

Table 6: **Empirical results of modelling Croatia's international tourist expenditures abroad using MLR model – first step**

Variable	**Coefficients**	**Std.Error**	**t-value**
Constant	4,722	3,477	1,358
lnBDP	-0,500	0,408	-1,228
lnTEČ	-0,516	1,333	-0,387
lnEXPORT	0,742	0,361	2,057
D2	-0,037	0,090	-0,409
D3	-0,247	0,246	-1,005
D4	0,007	0,069	0,105
Tests			
R^2=0,530	Adj.R^2=0,0,453	F=6,945	d=1,518

Source: Research results

In this model, 53 percent of the total variation in the foreign tourist expenditures abroad are explained by three variables *BDP, TEČ* and *EXPORT* and binary variables *D2*, *D3* and *D4*. In this model the gross national product *BDP* and the foreign exchange rate *TEČ* shows unexpected signs that cannot be acceptable in economic theory. It is obligatory to continue with the next step modelling based on the smaller number of predictor variables.

$$ROT_I = a * BDP_i^{b1} * TE\check{C}_i^{b2} * D_2^{b3} * D_3^{b4} * D_4^{b5} * \varepsilon_i$$
$$lnROT_I = lna + b_1 lnBDP_i + b_2 lnTE\check{C}_i + b_4 D_2 + b_5 D_3 + b_6 D_4 + \varepsilon_i \tag{10}$$

Table 7: **Empirical results of modelling Croatia's international tourist expenditures abroad using MLR model – second step**

Variable	**Coefficients**	**Std.Error**	**t-value**
Constant	1,499	3,233	0,464
lnBDP	0,301	0,125	2,404
lnTEČ	0.363	1,316	0,276
D2	0,110	0,057	1,919
D3	0,244	0,060	4,065
D4	0,095	0,057	1,666
Tests			
R^2=0,476	Adj.R^2=0,407	F=6,902	d=1,495

Source: Research results

In this model 47,6 percent of the total variation in the international tourist expenditures abroad are explained by two predictor variables *BDP* and *TEČ* and the binary variables *D2*, *D3* and *D4*. All variables have the expected signs and regression coefficients indicate that each variable are strongly responsible for international tourist expenditures abroad. When changes in foreign exchange policy (*TEČ*) and economic standard on domestic tourism market (*BDP*) occur it will strongly affect domestic tourist expenditures abroad. In regard to the robustness of the model, the F-statistics reject the null hypothesis that all coefficients are jointly zero at 1% significance level, indicating that all explanatory variables are important and independent in explaining foreign tourism receipts.

Final step in modelling is given with the model that is

$$ROT_I = a * BDP_i^{b1} * D_2^{b2} * D_3^{b3} * D_4^{b4} * \varepsilon_i$$
$$lnROT_I = lna + b_1 lnBDP_i + b_2 D_2 + b_3 D_3 + b_4 D_4 + \varepsilon_i \tag{11}$$

This is the final stage of modelling with defined macroeconomic variables that has the strongest and statistically approved influence on international tourist expenditures abroad.

Table 8: **Empirical results of modelling Croatia's international tourist expenditures abroad using MLR model – final step**

Variable	**Coefficients**	**Std.Error**	**t-value**
Constant	2,341	1,049	2,232
lnBDP	0,288	0,115	2,501
D2	0,109	0,056	1,923
D3	0,243	0,059	4,105
D4	0,095	0,056	1,690
Tests			
R^2=0,476	Adj.R^2=0,421	F=8,817	d=1,482

Source: Research results

In final percentage of total variation in the foreign tourist expenditures abroad we reach around 48 percent of the total variation in the foreign tourist expenditure that are explained by predictor variables *BDP* and binary variables *D2*, *D3* and *D4*. If gross national product will rise by one percent, tourism expenditures abroad will rise by 0,288 %. This reveals that tourism consumption abroad is not an elastic product. Further research is needed to segment tourism expenditure abroad in different amount levels that will indicate different rules and measures for national policy stakeholders. Values of t-test are satisfactory for all variables.

CONCLUSIVE REMARKS AND FURTHER RESEARCH

Modelling tourism demand is an important and useful tool for tourism oriented countries. Analyzing and predicting international tourism expenditures in a tourist country is a precondition for achieving successful tourism result at national level. This is important for tourism policy, national external balance, international trade and foreign exchange policy.

Foreign exchange inflow is predominant for many tourist countries, including Croatia, for their macroeconomic aggregates, output, employment, price level and other. Positive net travel balance is more evident for smaller tourist countries highly focused on tourism. Big markets with big inbound potential and with lot of tourist attractions focusing on travel balance as well. It is important that travel balance, tourist receipts as well as tourist outflows are regularly monitored and governed to reach main macroeconomic stability and that is economic stability and growth.

There are many methods for investigating this topic; in this study the multiple regression analysis has been used. Using the MLR method lead to developing a model for international tourist consumption or tourism export that confirm gross national product at inbound market as well as foreign exchange rate as two most significant variables. Having in mind EU monetary union and collective foreign exchange policy we can assume that this will be less important in the future.

The model of domestic tourist expenditures or spending abroad confirms that the main component in defining consumption habits and standard of living is peroxide by the gross national product as well.

Having both models, tourism policy makers can analyze, evaluate and forecast travel balance. They can give answers as to how to reach surplus or deficit in their travel balance and how this will influence the current account balance, external balance and economic growth.

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