Tourism and Economic Growth

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Problem and Purpose

Being intersectoral, tourism has significant impacts on economic activities and contributes to macroeconomic indicators

Economic impact of tourism:

- ***Direct contribution* – incomes generated by industries that deal directly with tourists**
- ***Indirect contribution* – additional incomes generated by industries providing tourism sector with intermediate goods and services**
- ***Induced contribution* – the broader contribution of spending by those who are directly or indirectly employed by the tourism sector**

$\Rightarrow$ ***Total contribution***

Problem and Purpose

According to the WTTC*, the total contribution of Travel & Tourism sector to the world economy (including indirect effects) in 2018:

- **10.4% of GDP**
- **10% of total employment**

The aim of the research:

evaluating the role of tourism specialization as determinant of economic growth

Main Hypothesis:

Tourism-Led Growth Hypothesis, TLG (Balaguer et al., 2002)

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*) World Travel and Tourism Council

Data and Methodology

Data source: **The World Bank**

Time period: **1995 – 2016**

Initial sample: **191 countries**

Methodology: **panel data analysis (STATA)**

Some relevant research:

Sequeira&Nunes (2008), Figini&Vici (2010), Chang at al. (2010), Fayissa et al. (2011), Fawaz&Rahnama (2014)

Variables and Model

Dependent variable:

GDPGR	**Economic growth**	**GDP per capita PPP (constant 2011 USD) growth rate, annual, %**

Independent variable – tourism specialization:

TOUR	**Tourism**	**International tourism receipts*, share in GDP, %**

***) *International tourism receipts* – expenditures by international inbound visitors, including payments to national carriers for international transport, any other prepayment made for goods or services received in destination country, also may include receipts from same-day visitors**

Variables and Model

Other independent variables:

GDP_0	Initial GDP level	Initial level of GDP per capita PPP, 1995, constant 2011 USD, thou
OPEN	Openness to trade	Sum of import and export, share in GDP, %
INV	Investment	Gross capital formation, share in GDP, %
LEX	Life expectancy	Life expectancy at birth, years
GES	Government expenditure on secondary education	Government expenditure per student (secondary education), share in GDP per capita, %

Variables and Model

Descriptive statistics:

Variable	Observations	Mean	St. deviation	Min	Max
GDPGR	1172	2.258	3.509	–23.181	17.996
GDP_0	1172	15.569	14.710	0.373	86.116
ln(GDP_0)	1172	2.226	1.141	−0.985	4.456
TOUR	1172	5.193	7.155	0.026	84.870
OPEN	1172	90.151	57.998	18.349	442.620
INV	1172	23.952	7.105	3.949	69.568
LEX	1172	72.517	8.053	45.905	84.278
GES	1172	21.214	9.659	0.000	88.941

Variables and Model

Model:

$$GDPGR_{it} = C + \beta_1 ln(GDP\_0_{it}) + \beta_2 TOUR_{it} + \beta_3 OPEN_{it} +$$

$$+ \beta_4 INV_{it} + \beta_5 LEX_{it} + \beta_6 GES_{it} + \alpha_i + \mu_t + \varepsilon_{it}$$

where $i = 1, \dots, n$ **– country identifier**

$t = 1995, \dots, 2016$ **– year**

ε_{it} **– random component**

Presumed dependence:

$$GDPGR_{it} = f(GDP\_0_{it}, TOUR_{it}, OPEN_{it}, INV_{it}, LEX_{it}, GES_{it})$$

- + + + + +/-

Results

OLS – pooled regression model

RE – random effects model

FE_c – country-fixed effects model

FE_c_t – country-and-time fixed effects model

Formal test results:

- **panel data approach is preferable than OLS (Wald, and Breusch&Pagan tests)**
- **RE model parameters estimates are inconsistent and FE specification is to be preferred (Hausman test)**

Results

Fixed and Random Effects models:

Variable	OLS	RE	FE_c	FE_c_t
ln(GDP_0)	−0,302*	0,028		
	(0,164)	(0,240)		
TOUR	−0,022+	−0,001	0,113**	0,104**
	(0,014)	(0,021)	(0,052)	(0,047)
OPEN	0,007***	0,007**	0,018**	0,010
	(0,002)	(0,003)	(0,007)	(0,007)
INV	0,116***	0,145***	0,170***	0,149***
	(0,014)	(0,018)	(0,024)	(0,022)
LEX	−0,021	−0,081***	−0,253***	0,033
	(0,023)	(0,032)	(0,059)	(0,096)
GES	−0,052***	−0,069***	−0,102***	−0,076***
	(0,010)	(0,014)	(0,024)	(0,022)
Time fixed effects				Yes
C	2,251	5.366***	16.541***	3.721
	(1,396)	(1.949)	(4.189)	(7.375)
Observations	1172	1172	1172	1172
Groups		138	138	138
R^2_{adj}	0,105			
R^2 within		0,090	0,102	0,330
R^2 between		0,159	0,084	0,014
R^2 overall		0,105	0,068	0,195
χ^2		113,3***		
F	23,8***		23,3***	19,9***
F (α = 0)			2,14***	2,69***

Standard errors are in parentheses. + p < .15, * *p* < .1, ** *p* < .05, *** *p* < .01

Results

OLS models:

- ***TOUR* coefficient *is not* statistically significant**
- **most of the other explanatory variables have significant impact with expected signs**

FE-models:

- ***TOUR* coefficient *is* statistically significant and positive: a higher international tourism receipts share in GDP associates with a higher GDP growth rate**
  - **the increase of 1 p.p. in international tourism receipts share in GDP raises GDP per capita growth rate by 0.1 p.p.**

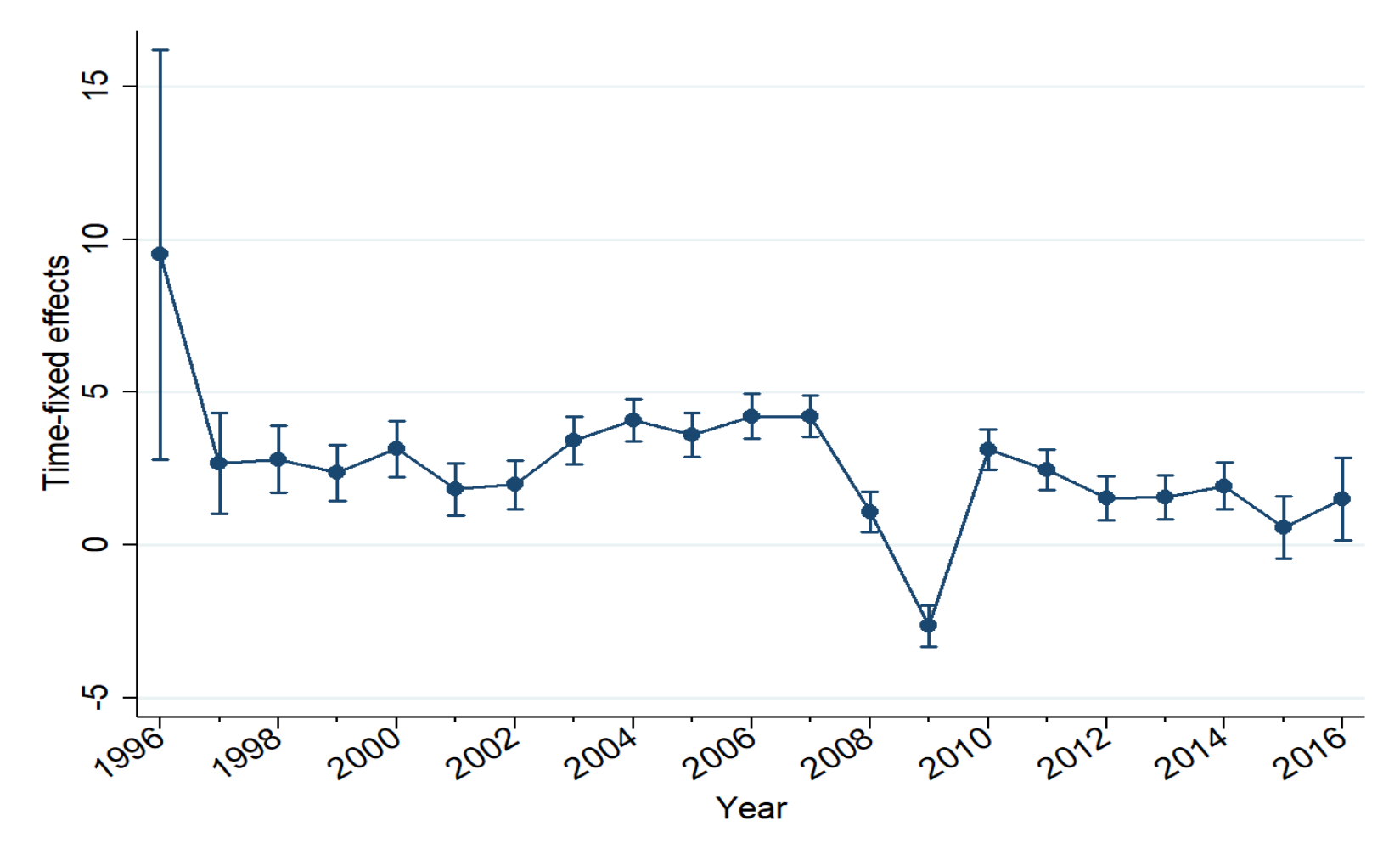
Results

FE-models:

- **controlling for time-fixed effects (FE_c_t model)**
  - **leaves results for *INV* and *GES* variables approximately the same**
  - **leads to losing significance of *OPEN* and *LEX* parameters**
  - **gives some additional information corresponding to time specific effects**

Results

Predictive margins* for dependent variable *GDPGR* (FE_c_t model):



* with 95% confidence interval

Results

CRE – correlated random effects, or hybrid, model (Allison, 2009)

Main idea – to split within- and between-cluster* effects for level-one variables

Two kinds of coefficients:

W_* – for *within*-cluster effects*

(how on average a *within-cluster* change in explanatory variable is associated with a *within-cluster* change in dependent variable)

***B_* – for *between*-cluster effects**

(how a change in explanatory variable *group mean* is associated with a change in dependent variable *group mean*)

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*) Clustering at the country level

**) In linear case *W_* is identical to FE-estimates

Results

Fixed and Correlated Random Effects models:

	FE_c_t	CRE (Allison) W_	CRE (Allison) B_
TOUR	0.104**	0.104**	-0.033*
	(0.047)	(0.047)	(0.018)
OPEN	0.010+	0.010+	0.006**
	(0.007)	(0.007)	(0.002)
INV	0.149***	0.149***	0.069***
	(0.022)	(0.022)	(0.021)
LEX	0.033	0.033	0.017
	(0.096)	(0.095)	(0.029)
GES	-0.076***	-0.076***	-0.037***
	(0.022)	(0.022)	(0.014)
Time dummy variables	Yes	Yes	
ln(GDP_0)		-0.550**	
		(0.223)	
C	-4.267	-2.083	
	(7.383)	(3.026)	
Observations	1172	1172	
Groups	138		
R^2_{adj}	0.223		
R^2 within	0.330		
R^2 between	0.014		
R^2 overall	0.195		
χ^2		607.4***	
F	19.9***		
F (α = 0)	2.69***		

Standard errors are in parentheses. + p < .15, * *p* < .1, ** *p* < .05, *** *p* < .01

Results

CRE-model:

- ***W_TOUR* coefficient is statistically significant and *positive*: within-cluster increase in *TOUR* is associated with a within-cluster increase in *GDPGR***
  - **corresponds to TLG-hypothesis**
- ***B_TOUR* coefficient is statistically significant and *negative*: between-cluster increase in *TOUR* is associated with a between-cluster decrease in *GDPGR***
  - **corresponds to convergence hypothesis**
- **signs and significance of coefficients for other explanatory variables remain approximately the same**

Results

Granger non-causality test* results:

Null hypothesis	Lag order	Statistic**	p-value
TOUR **does not Granger-cause** ***GDPGR***	**1**	**2.1384**	**0.0325**
	2	**4.8429**	**0.0000**
	3	**3.6051**	**0.0003**
GDPGR **does not Granger-cause** ***TOUR***	**1**	**-0.4555**	**0.6488**
	2	**0.0019**	**0.9985**
	3	**-0.0061**	**0.9951**

*** Dumitrescu & Hurlin Granger non-causality test**

**** "Z-bar tilde" statistic**

⇒ changes in tourism specialization level *cause* changes in GDP per capita growth rate

Results

Countries with statistically significant Granger causality:

	Country	W	p-value
1	Albania	17,648**	0,012
2	Argentina	14,901**	0,020
3	Armenia	22,429***	0,005
4	Australia	10,551*	0,053
5	Austria	13,180**	0,029
6	Bulgaria	13,511**	0,027
7	Belize	18,977***	0,009
8	Chile	8,402*	0,090
9	Ireland	19,382***	0,009
10	Israel	20,809***	0,007
11	Italy	8,285*	0,092
12	Kazakhstan	17,757**	0,012
13	Kenya	18,329**	0,011
14	Kyrgyz Republic	8,796*	0,081
15	Lao PDR	14,113**	0,024
16	Morocco	9,643*	0,065
17	Malawi	9,331*	0,071
18	New Zealand	12,264**	0,035
19	Philippines	16,965**	0,014
20	Poland	8,129*	0,096
21	Puerto Rico	15,402**	0,018
22	United States	20,742***	0,007
23	Zimbabwe	8,670*	0,084

H_0: *TOUR* does not Granger-cause *GDPGR*

W – individual Wald statistics

Conclusions

- ✓ **Tourism specialization parameter is not statistically significant in pooled regression models**
- ✓ **Fixed effects and correlated random effects models are preferable for this research**
- ✓ **According to the models chosen, on average, growing tourism specialization in a country affects GDP growth rate significantly and positively**
- ✓ **Countries with the higher average tourism specialization level are likely to have lower GDP growth rate**
- ✓ **There is Granger causality relationship of the expansion of tourism to economic growth for the set of countries included in the panel**

To summarize,

tourism development (along with the other determinants) *can* be considered as a factor for economic growth enhancement, which provides evidence in favor of the TLG-hypothesis

Thank you for your attention!

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