Impact of Foreign Direct Investment on Tourism in the Caribbean

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Research Question(s)

1. What is the relationship between FDI and tourism?

2. Is there a **causal** *impact?*

Summary of Results

- FDI has a positive impact on tourism

- The relationship appears causal

- The results are robust to a variety of measures of tourism and econometric estimation techniques

- A one percent increase in FDI is found to increase tourism receipts in the range of 8 to 13 percent.

What We Know...

- Tourism expenditures represent the single largest inflow of funds to the Caribbean:
  - Absolute terms
  - Contribution to output
- Tourism contributes more to output in the Caribbean relative to other parts of the world
- Tourism pervades other important sectors of the economy
  - Employment
  - Exports
  - Capital Investment

The Role of FDI...

- The IMF defines a [foreign] direct investment as any "*cross-border investment associated with a resident in one economy having control or a significant degree of influence on the management of an enterprise that is resident in another economy*." (IMF, 2009, pg. 100).

- FDI attracts a significant amount of capital investment for tourism (World Bank, 2018)

- FDI extremely important for the Caribbean (Craigwell, 2006; De Groot & Ludeña, 2014)

Literature

- Numerous studies on the relationship between FDI and growth
- Growing, but relatively small, number of studies on the relationship between FDI and Tourism:
  - Jayaraman, Chen and Bhatt (2014); Katircioglu (2011); Samimi, Sadeghi, and Sadeghi (2013); Selvanathan, Selvanthan and Viswanathan (2012)
- Fewer studies on the FDI-tourism nexus in the Caribbean
  - Te Velde and Nair (2006)
    - Nine (9) countries over the period 1997-2003, **but…**
    - Examined the role of services trade on inward FDI
  - Craigwell and Moore (2008)
    - Included twelve (12) Caribbean over the period 1980-2004
    - Utilizes Panel causality tests
    - Bi-directional causal relationship between FDI and tourism

Contribution

- Empirically examine the impact of FDI on tourism, with specific focus on the Caribbean

- Use of various measures of tourism to study the FDI-Tourism link

- Use of data over an extended time period in a panel framework

- Use of multiple estimation techniques to estimate the causal impact of FDI on tourism

Data

- Panel Data
  - Eighteen (18) Caribbean countries
  - Period: 1980-2017

- Data Sources
  - World Bank World Development Indicators (WDI)
  - World Bank World Economic Outlook (WEO) database
  - IMF IFS Balance of Payment (BOP) statistics
  - Eastern Caribbean Central Bank (ECCB)
  - Caribbean Tourism Organization (CTO)
  - UNCTADStat

Summary Statistics – Outcomes and Main Variables *(back)*

Variables	Median	Mean	Std. Dev.	Min.	Max.	No. of. Obs.
Log (Tourism Receipts)	4.66	4.81	1.56	0.85	7.93	247
Log (Tourism Receipts/GDP)	2.87	2.60	1.13	-1.19	5.06	247
Log (Tourism Receipts/Export)	3.75	3.43	1.05	0.11	5.84	247
Log (Tourism Receipts per capita)	7.02	6.71	1.95	0.66	9.57	247
Log (Tourism Receipts/Import)	-1.19	-1.37	1.06	-4.93	1.13	247
Log (Tourist Arrivals per capita)	0.24	0.01	1.53	-4.57	2.57	247
Log (FDI/GDP)	-2.84	-3.03	1.43	-7.07	2.91	226

To minimize the effects of business cycle, we transform the data by averaging data over 13 non-overlapping 3-year periods

Summary Statistics – Control Variables *(back)*

Variables	Median	Mean	Std. Dev.	Min.	Max.	No. of. Obs.
Log (RGDP per capita)	1.95	2.01	1.13	-0.81	4.41	247
Log (Trade/GDP)	0.00	-0.02	0.28	-1.57	0.52	247
Log (1+ Inflation)	1.44	1.57	0.89	-2.40	4.92	247
Log (Investment/GDP)	-1.44	-1.42	0.32	-2.40	-0.45	247
Log (Government Consumption/GDP)	-1.89	-1.91	0.43	-3.88	-0.64	247
Real Exchange Rate	106.66	118.53	99.27	68.00	1263.67	247
Unemployment Rate (USA)	6.22	6.28	1.36	4.23	8.87	247
Unemployment Rate (Canada)	7.61	8.28	1.49	6.66	11.29	247
Unemployment Rate (UK)	7.72	7.51	2.11	4.65	11.53	247

To minimize the effects of business cycle, we transform the data by averaging data over 13 non-overlapping 3-year periods

Figure 1: Foreign Direct Investment Inflows as a Percent of GDP, 1980-2017
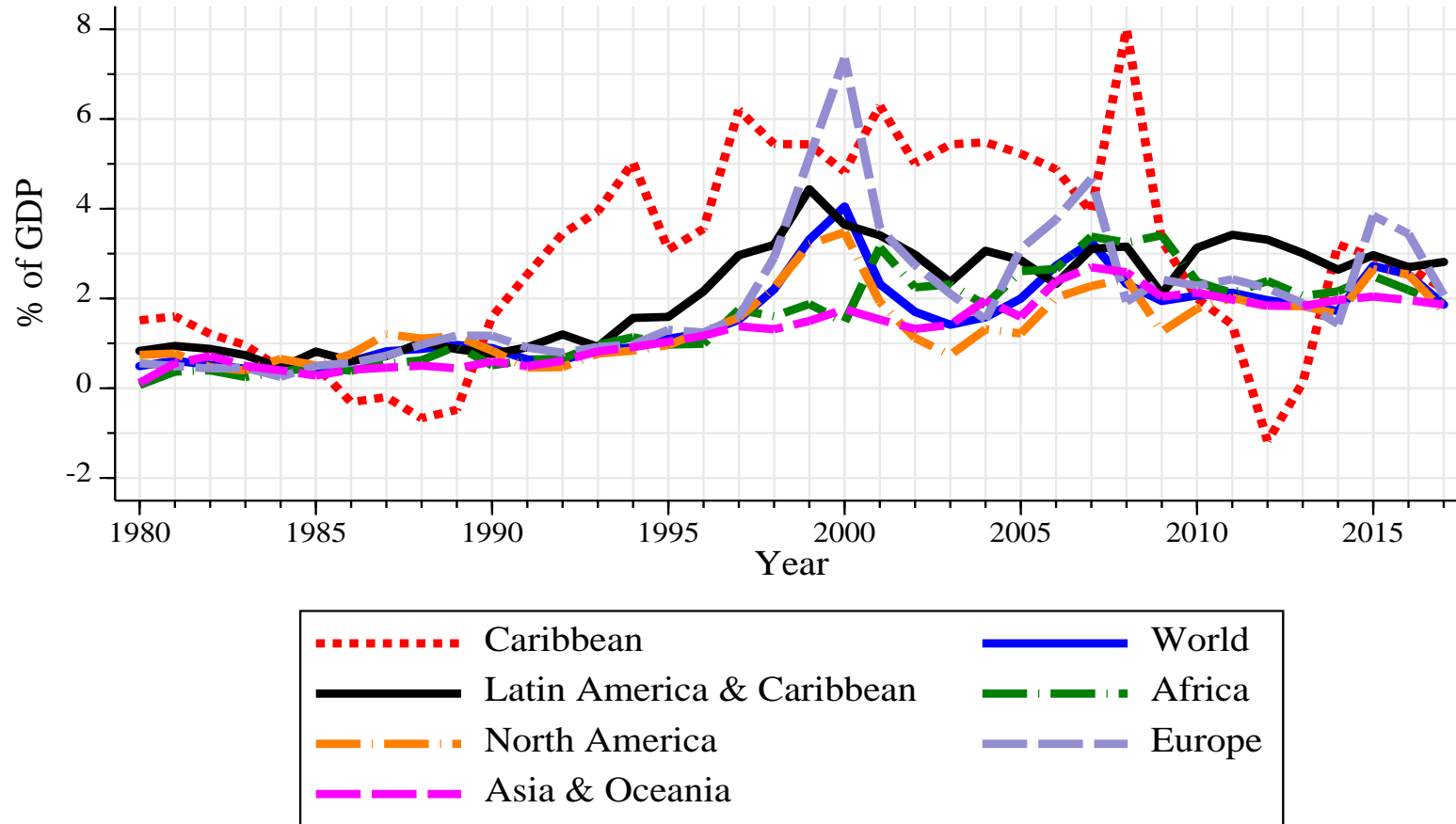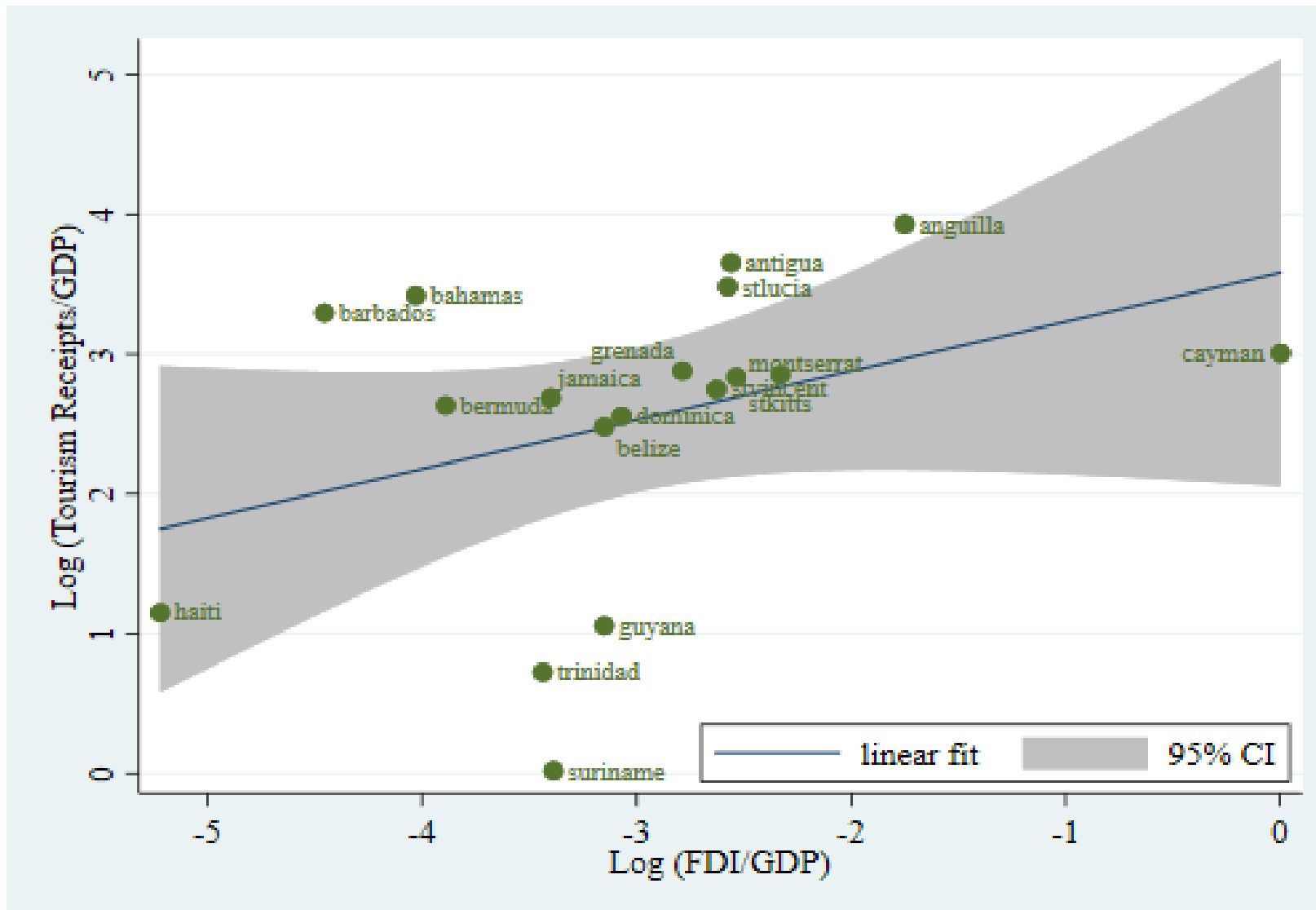

Source: UNCTADStat (2019)
(Caribbean comprise Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, and Trinidad and Tobago).

FDI and Tourism

Scatterplot: FDI and Tourism

Correlation Matrix

	Variables	1	2	3	4	5	6	7
1	Log (Tourism Receipts/GDP)	1.00						
2	Log (Tourism Receipts/Export)	0.94***	1.00					
3	Log (Tourism Receipts per capita)	0.82***	0.70***	1.00				
4	Log (Tourism Receipts/Import)	0.96***	0.93***	0.82***	1.00			
5	Log (Tourist Arrivals per capita)	0.76***	0.59***	0.96***	0.73***	1.00		
6	Log (FDI/GDP)	0.31***	0.22***	0.45***	0.19***	0.45***	1.00	
7	Log (RGDP per capita)	0.45***	0.28***	0.85***	0.49***	0.87***	0.38***	1.00

Note: Statistical levels of significance are: * indicates p<0.1, ** indicates p<0.05, *** indicates p<0.01. Correlations are unweighted.

Empirical Strategy - *Impact of FDI on Tourism*

$$Tourism_{it} = \alpha_0 + \alpha_1 \, Tourism_{i,t-1} + \alpha_2 FDI_{i,t-1} + \mathbf{X_{it}} \, \mathbf{\Omega} + \gamma_i + \delta_t + \mathbf{\varepsilon}_{it}$$

- <u>$Tourism_{it}$</u> : Various measures of tourism activity occurring in country *i* during period *t*
- $FDI_{i,t-1}$: FDI as a percent of GDP in country *i* during period *t*
- **$\mathbf{X_{it}}$** : <u>Control variables</u>
- γ_i : country fixed-effects
- δ_t : time fixed-effects
- $\mathbf{\varepsilon}_{it}$: error term
- α_2 : parameter of interest and measures the impact of FDI on tourism activity

Empirical Strategy – *Endogeneity Issues*

- **OLS and First-Differencing**
  - Biased results due to measurement error (OLS)
  - Classical error-in variables problem (First-difference) (Wooldridge, 2013)
- **Instrumental Variables (IV)**
  - External instruments: extent of natural disasters (total deaths and number of occurrences)
- **Generalized Method of Moment** (Holtz-Eakin, Newey and Rosen, 1988)
  1. Difference GMM: Lagged regressors in levels as instruments in a first-differenced equation
     - Arellano and Bond (1991)
  2. System GMM: Lagged regressors in levels (first-differences) as instruments
     - Arellano and Bover (1995); Blundell and Bond (1998)

Impact of FDI on Tourism

$$Tourism_{it}= \alpha_0 + \alpha_1 \, Tourism_{i,t-1} + \alpha_2 FDI_{i,t-1}+\mathbf{X}_{it}\, \mathbf{\Omega} + \gamma_i + \delta_t + \mathbf{\varepsilon}_{it}$$

Variable	(1)	(2)	(3)	(4)	(5)	
	Log (Tourism Receipts)	Log (Tourism Receipts/ GDP)	Log (Tourism Receipts per Capita)	Log (Tourism Receipts/ Export)	Log (Tourism Receipts/ Import)	Log (Tourist Arrivals per Capita)
Lagged log (FDI/GDP)	0.092***	0.069*	0.097***	0.031	0.093***	0.118***
	(0.033)	(0.035)	(0.034)	(0.030)	(0.029)	(0.031)
Observations	201	201	201	201	201	201
R-Square	0.981	0.964	0.991	0.965	0.952	0.993

Results – Difference GMM
Impact of FDI on Tourism

$$Tourism_{it} = \alpha_0 + \alpha_1 Tourism_{i,t-1} + \alpha_2 FDI_{i,t-1} + X_{it}\,\Omega + \gamma_i + \delta_t + \varepsilon_{it}$$

Variable	(1)	(2)	(3)	(4)	(5)	
	Log (Tourism Receipts)	Log (Tourism Receipts/ GDP)	Log (Tourism Receipts per Capita)	Log (Tourism Receipts/ Export)	Log (Tourism Receipts/ Import)	Log (Tourist Arrivals per Capita)
Lagged log (FDI/GDP)	0.128***	0.101***	0.126***	0.073**	0.136***	0.116**
	(0.029)	(0.025)	(0.029)	(0.027)	(0.027)	(0.050)
Observations	180	180	180	180	180	180
No. of countries	18	18	18	18	18	18
AR(2) test statistic	-2.396	-1.921	-2.405	-1.346	-1.517	2.855
p-value of AR(2) test	0.017	0.055	0.016	0.178	0.129	0.004
p-value of Sargan test	0.000	0.001	0.000	0.089	0.005	0.328

Results – System GMM
Impact of FDI on Tourism

$$Tourism_{it} = \alpha_0 + \alpha_1 Tourism_{i,t-1} + \alpha_2 FDI_{i,t-1} + X_{it}\,\Omega + \gamma_i + \delta_t + \varepsilon_{it}$$

Variable	(1)	(2)	(3)	(4)	(5)	
	Log (Tourism Receipts)	Log (Tourism Receipts/ GDP)	Log (Tourism Receipts per Capita)	Log (Tourism Receipts/ Export)	Log (Tourism Receipts/ Import)	Log (Tourist Arrivals per Capita)
Lagged log (FDI/GDP)	0.125**	0.112**	0.131**	0.061	0.129**	0.143***
	(0.045)	(0.048)	(0.050)	(0.043)	(0.045)	(0.043)
Observations	201	201	201	201	201	201
No. of countries	18	18	18	18	18	18
AR(2) test statistic	-2.725	-2.245	-2.760	-1.436	-1.578	2.801
p-value of AR(2) test	0.006	0.025	0.006	0.151	0.114	0.005
p-value of Sargan test	0.000	0.000	0.000	0.001	0.000	0.113

Results – Instrumental Variables
Impact of FDI on Tourism

$$Tourism_{it} = \alpha_0 + \alpha_1 \, Tourism_{i,t-1} + \alpha_2 FDI_{i,t-1} + \mathbf{X}_{it} \, \Omega + \gamma_i + \delta_t + \varepsilon_{it}$$

Variable	(1)	(2)	(3)	(4)	(5)	
	Log (Tourism Receipts)	Log (Tourism Receipts/ GDP)	Log (Tourism Receipts per Capita)	Log (Tourism Receipts/ Export)	Log (Tourism Receipts/ Import)	Log (Tourist Arrivals per Capita)
Lagged log (FDI/GDP)	0.081**	0.122**	0.074*	0.031	0.102**	0.161***
	(0.040)	(0.054)	(0.038)	(0.041)	(0.047)	(0.046)
Observations	201	201	201	201	201	201
No. of countries	18	18	18	18	18	18
Kleibergen-Paap first- stage F-stat.	5.729	6.288	6.581	3.396	4.749	7.141
Kleibergen-Paap LM test stat.	9.315	10.855	10.196	7.802	9.639	11.241
P-value of Kleibergen-Paap LM test	0.025	0.013	0.017	0.050	0.022	0.010

Impact of FDI on Tourism *(back)*

$$Tourism_{it} = \alpha_0 + \alpha_1 Tourism_{i,t-1} + \alpha_2 FDI_{i,t-1} + \mathbf{X_{it}}\ \mathbf{\Omega} + \gamma_i + \delta_t + \mathbf{\varepsilon}_{it}$$

Variable	(1)	(2)	(3)	(4)	(5)	
	Log (Tourism Receipts)	Log (Tourism Receipts/ GDP)	Log (Tourism Receipts per Capita)	Log (Tourism Receipts/ Export)	Log (Tourism Receipts/ Import)	Log (Tourist Arrivals per Capita)
Lagged log (FDI/GDP)	0.289	0.174*	0.275	0.048	0.141*	0.240**
	(0.370)	(0.092)	(0.362)	(0.062)	(0.081)	(0.100)
Observations	201	201	201	201	201	201
No. of countries	18	18	18	18	18	18
Kleibergen-Paap first- stage *F*-stat.	5.729	6.288	6.581	3.396	4.749	7.141
Kleibergen-Paap LM test stat.	9.315	10.855	10.196	7.802	9.639	11.241
P-value of Kleibergen-Paap LM test	0.025	0.013	0.017	0.050	0.022	0.010

Conclusion

- FDI has a consistent and positive impact on economic growth across various measures of tourism

- The relationship appears causal through the use of traditional instrumental variables regression as well as GMM framework

- Based on our estimates:

  - *A 1 percent increase in FDI increases tourism receipts in the range of 8 to 13 percent.*

  - *A 1 percent increase in FDI increases tourism activity in the range of 7 to 16 percent.*

- How do results compare with other studies?