Coming by Air or by Boat

Which Type of Tourist is Better for the Caribbean?

J. Khadan[1] R. Seecharan[2]

E. Strobl[3]

[1]Inter-American Development Bank

[2]Roayal Bank of Canada

[3]University of Bern

Introduction

- Caribbean Tourism 2017 (WTTC, 2017):
  - 15 % (5 % direct) contribution to GDP
  - 13 % (4 % direct) contribution to Employment
- Likely to rise by a further 4 percentage points in next 10 yrs (WTTC, 2017)
- Important feature: the share of Cruise of total tourists has been rising steadily
  - 1980: 55 %
  - 2017: 90 %

Introduction

- *Common Complaint* #1: Cruise tourism contributes much less to the local economy than Non-Cruise tourism:
  - No accommodation expenditure
  - Non-accomodation spending also lower (roughly 50 % less per day)
  - Purchases by cruise lines mostly done elsewhere
- *But*:
  - No reliable quantitative evidence
  - Indirect impact is also likely to be important
- *Common Complaint* #2: Cruise tourism 'crowds out' Non-Cruise tourism
- But:
  - No reliable quantitative evidence either

This Paper

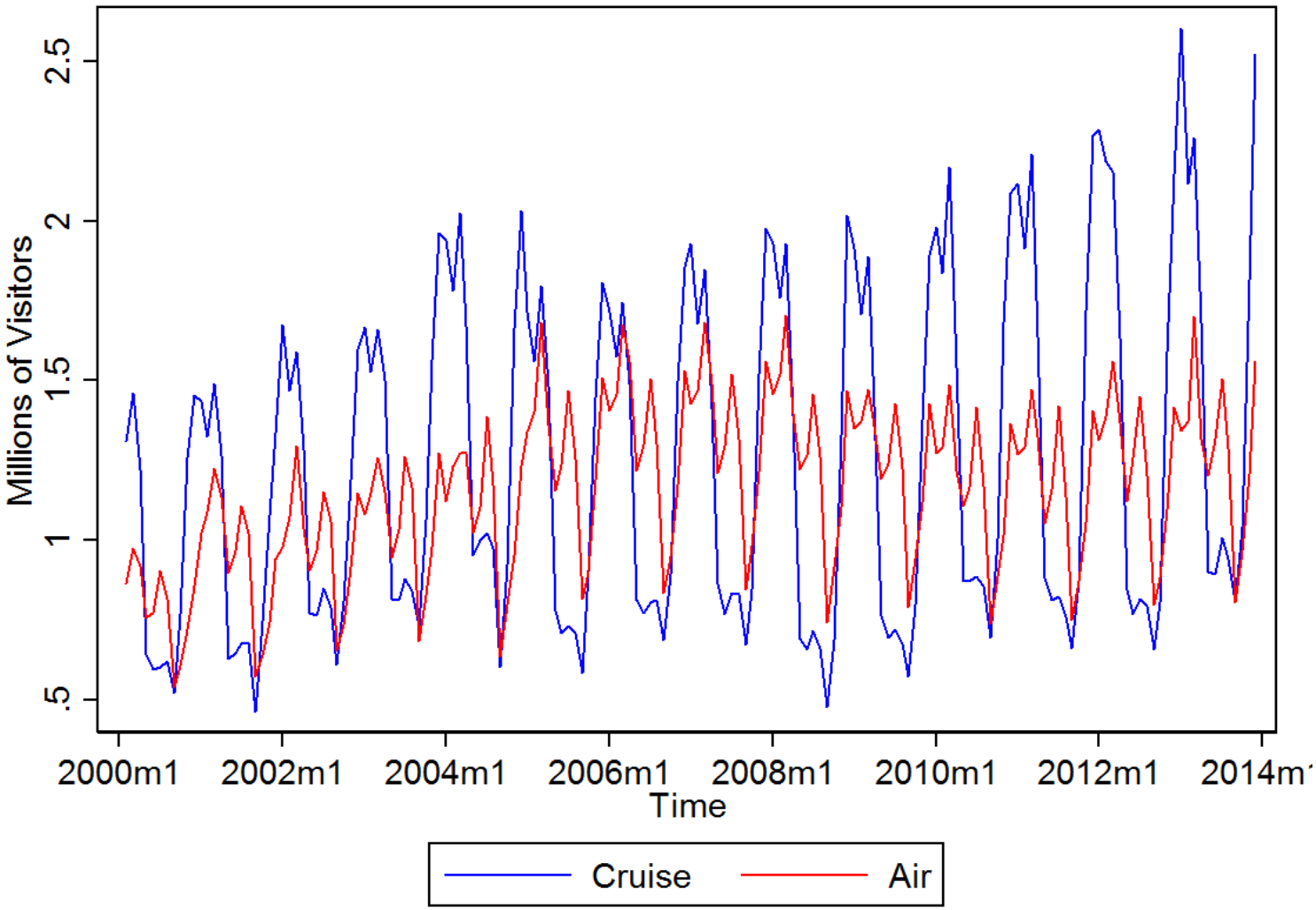
- This paper investigates:
  1. Extent of 'Crowding Out'
  2. Comparison of total (direct & indirect) Impact on Economic Activity

- To do so:
  1. Assembles monthly data set of cruise and non-cruise tourist arrivals and GDP
  2. Estimates a Panel VAR

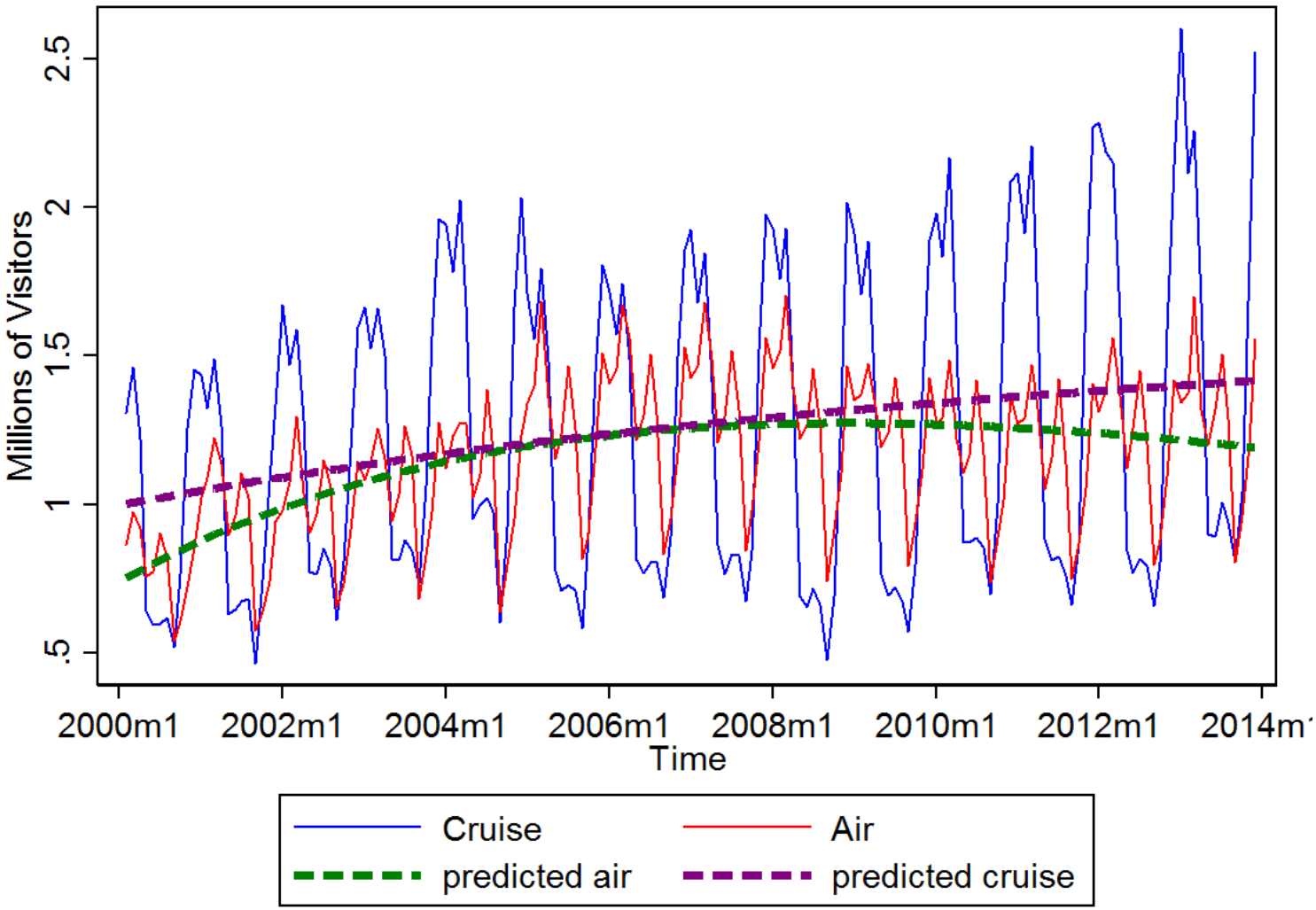
Data Sources

1. Cruise and Air Arrivals:
   - Source: Caribbean Tourism Organization
   - Monthly data from 2000
2. Economic Activity:
   - Nightlight intensity as a proxy for economic activity
   - Source: DMSP Satellites
   - Monthly at approx. $1km^2$ for 1992-2013 (0-63 scale) $\rightarrow$ aggregate to national level
   - But: What do nightlights Really capture?
3. Sample: 2000-2013 for 22 Caribbean islands

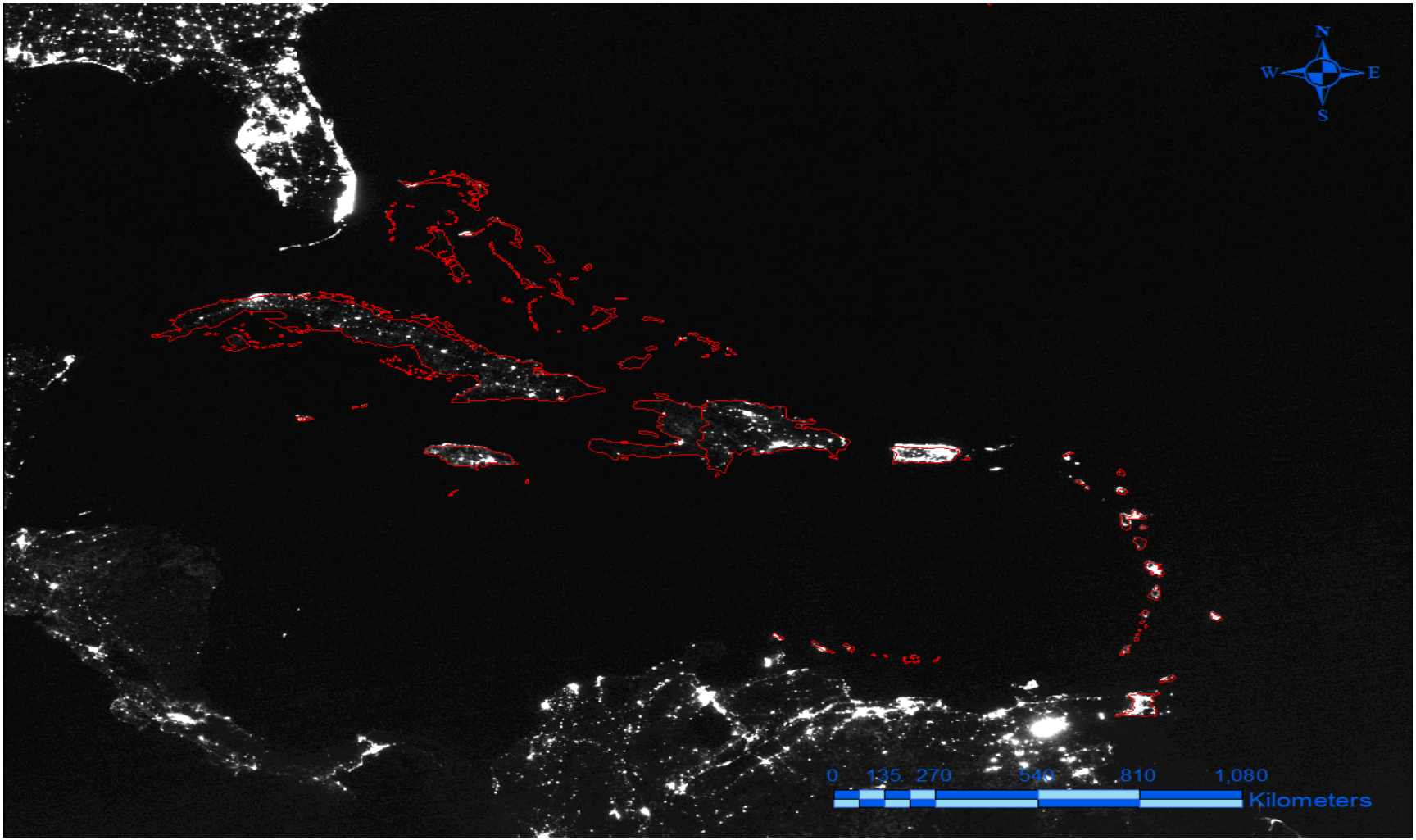
Cruise and Air Arrivals



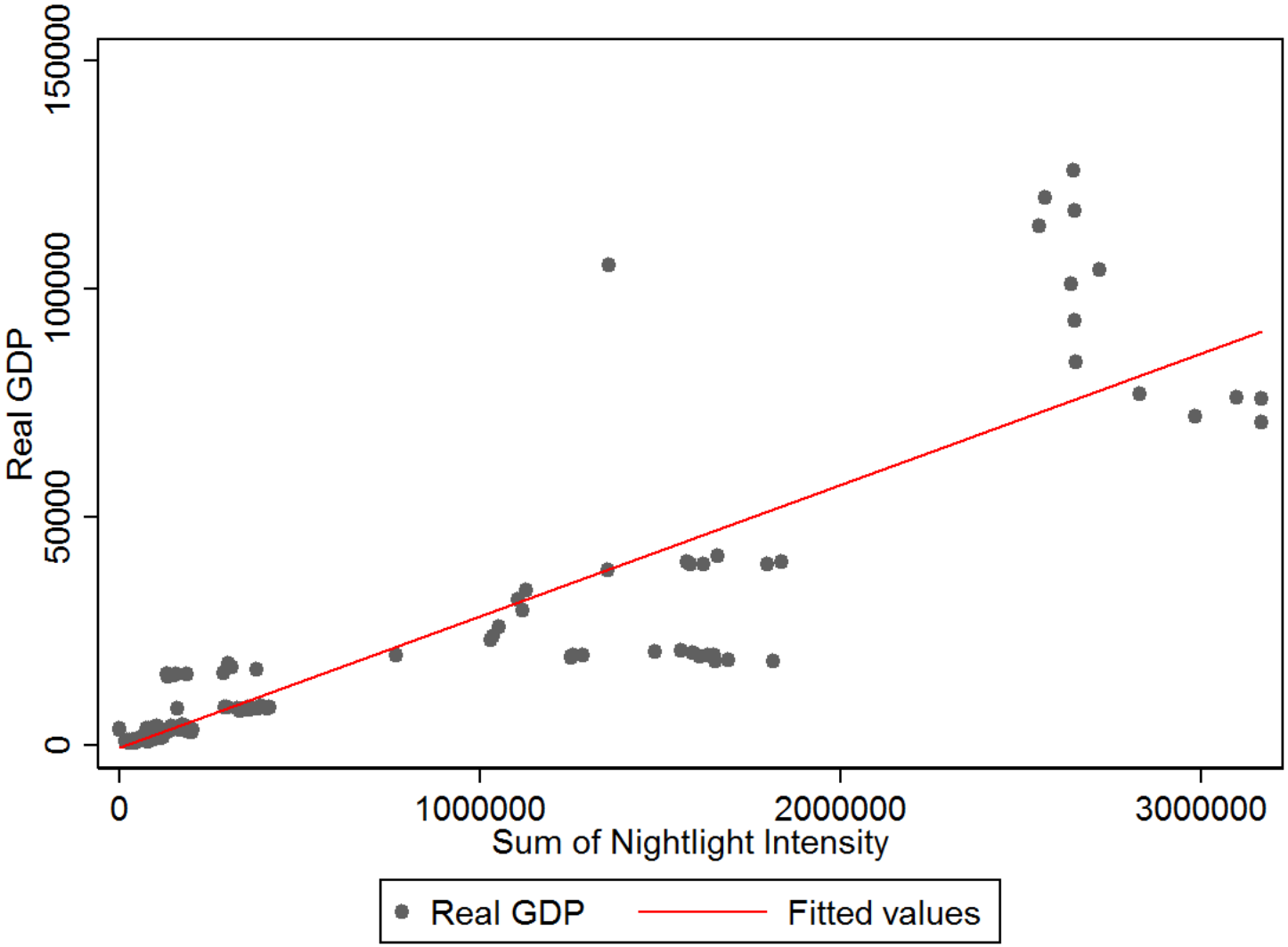
Cruise and Air Arrivals - Fractional-Polynomial Trend Fit



Nightlight Intensity - 2013



Relationship b/w Island Level GDP and Nightlights



Panel VAR

- Panel VAR Model:

$$\mathbf{Y}_{it} = \mathbf{Y}_{it-1}\mathbf{A}_1 + ...\mathbf{Y}_{it-p}\mathbf{A}_p + \mathbf{X}_{it}\mathbf{B}_t + \mu_i + \epsilon_{it} \qquad (1)$$

Y: Cruise Arrivals, Air Arrivals, Economic Activity
A: Coefficients to be estimated
B: Exogenous (predetermined) factors (year and month dummies for now)
μ_i: Island specific effects; ϵ_{it}: Error Term

- Causal Ordering: Cruise Arrivals $\longrightarrow$ Air Arrivals $\longrightarrow$ Economic Activity

Panel VAR

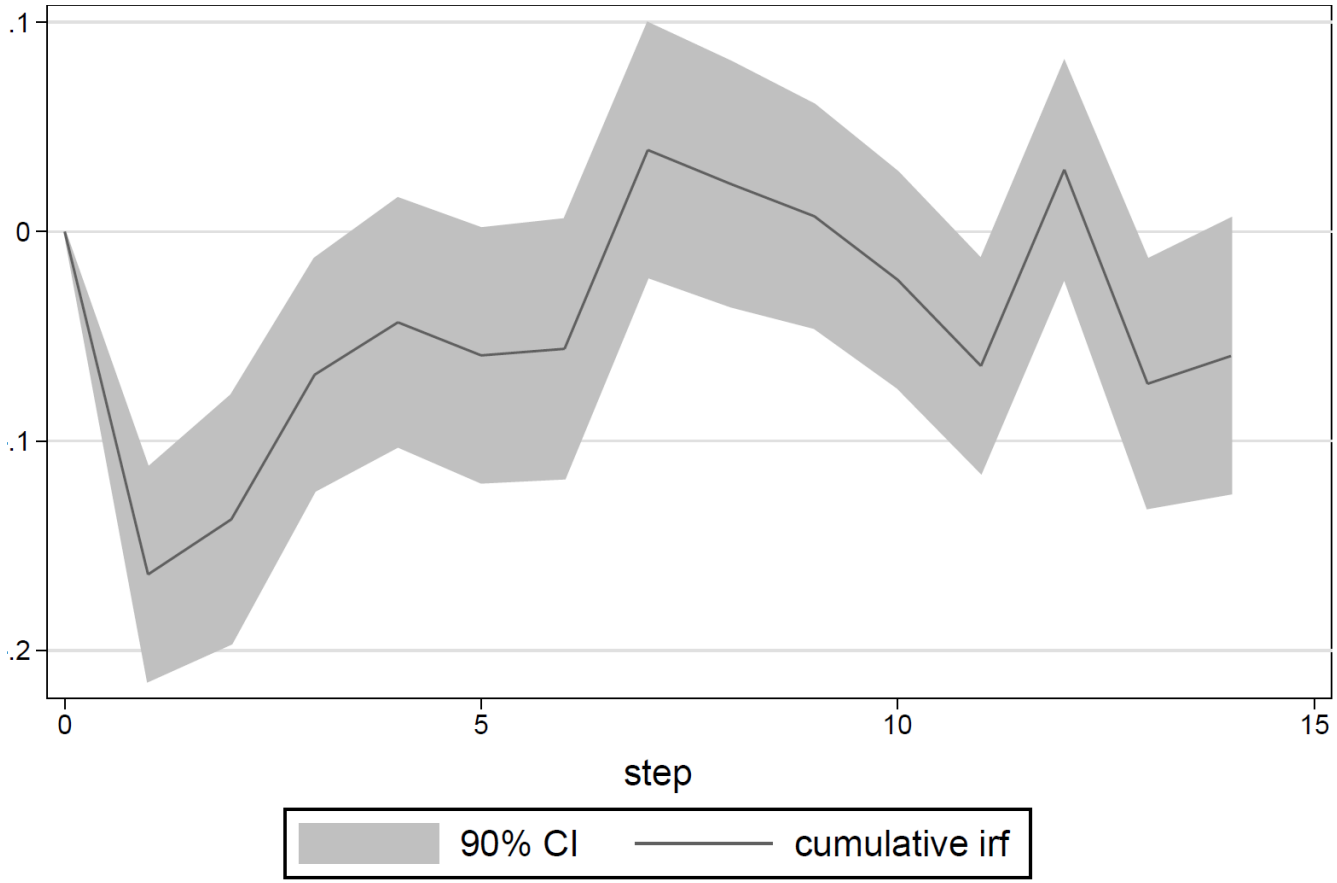
- Panel Unit Root Tests: all **3** series have a unit root, but are difference stationary $\Rightarrow$

$$\Delta \mathbf{Y}_{it} = \Delta \mathbf{Y}_{it-1}\mathbf{A}_1 + ...\Delta \mathbf{Y}_{it-p}\mathbf{A}_p + \mathbf{X}_{it}\mathbf{B}_t + \mu_i + \epsilon_{it} \quad (2)$$

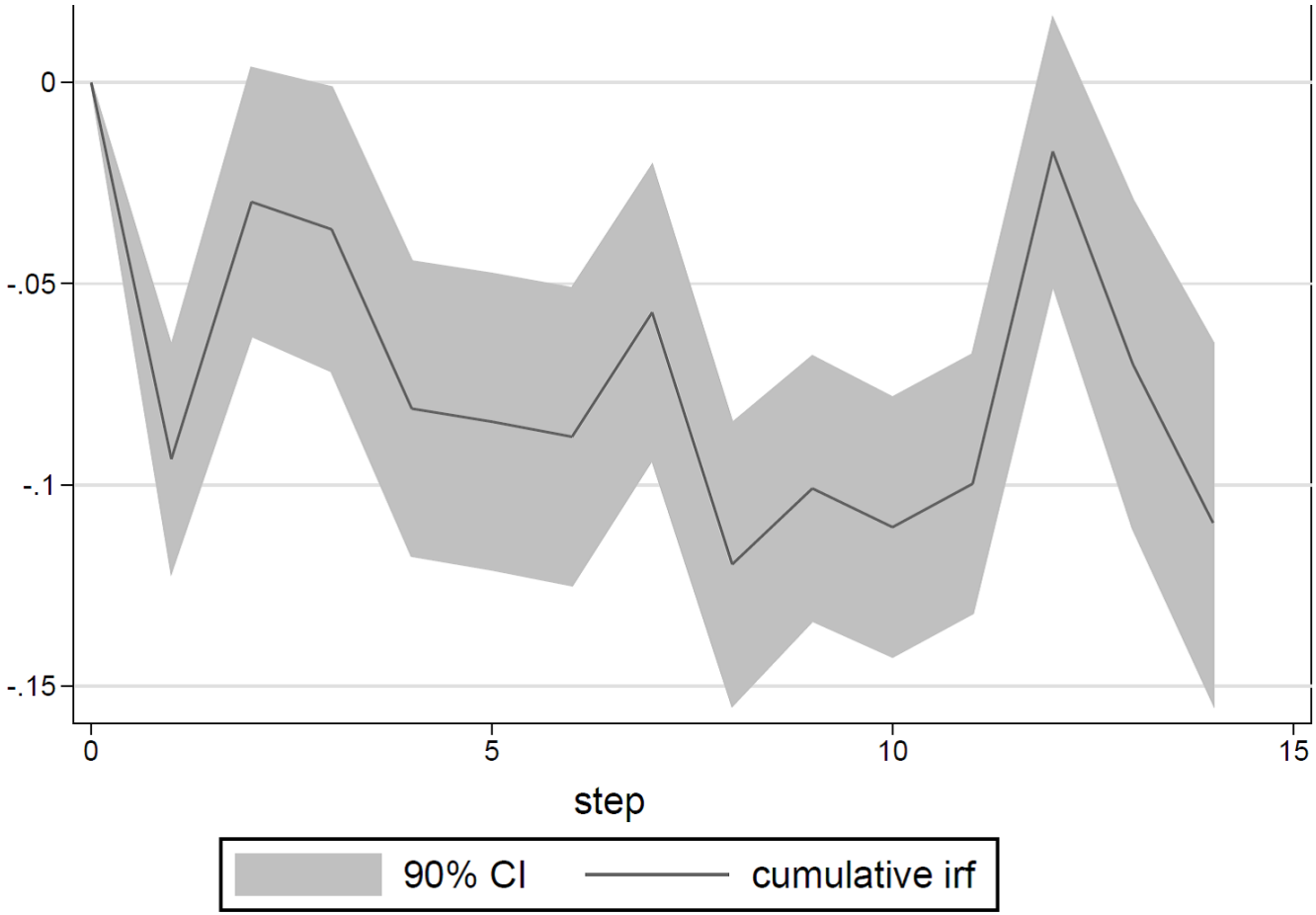
- AIC, BIC, and HQIC $\Rightarrow$ 14 (?) lags

- Estimation of (2): since T>30 and T>N $\rightarrow$ LSDV estimator (Bun and Kiviet, 2006)

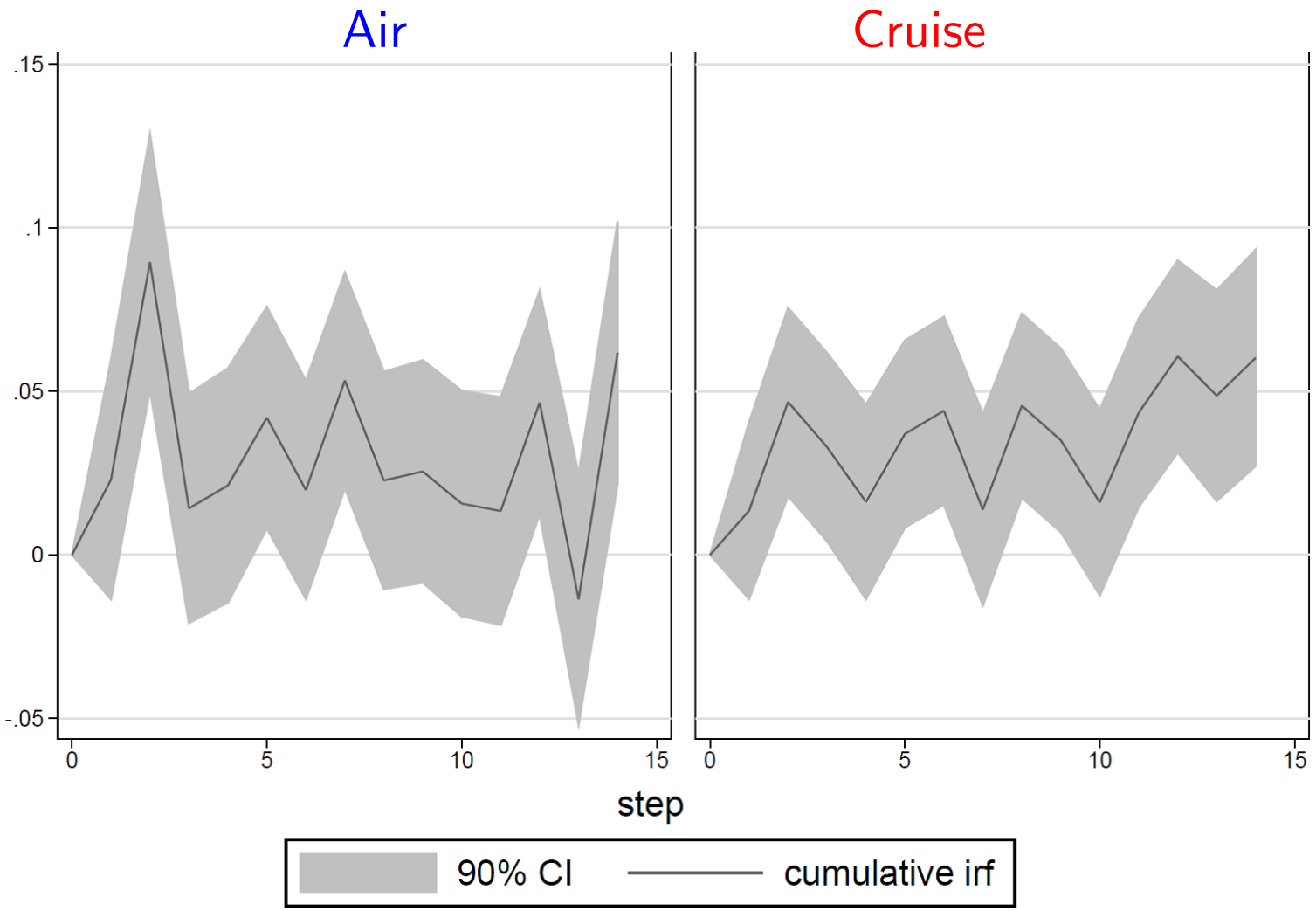
Air Arrivals $\longrightarrow$ Cruise Arrivals



Cruise Arrivals $\longrightarrow$ Air Arrivals



Air/Cruise Arrivals $\longrightarrow$ Economic Activity



Conclusion

- Findings:
  1. Some 'crowding out' b/w Cruise and Air tourism, particularly Cruise → Air arrivals
  2. Evidence of impact of Air and Cruise tourism on Local Economy, with Air tourism more immediate, and Cruise tourism more long-term

- Caveats:
  - Nightlights as a measure of GDP
  - Imprecision of the estimates
  - Failure to take account of tourism expenditure

- Future Research could focus on:
  - Spillovers between islands
  - Role of tourism type in absorbing shocks (ex: hurricanes)