The Effects of World Heritage Sites on Domestic Tourism: A Spatial Interaction Model for Italy

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Motivations

- Cultural tourism is gaining increasing importance in modern tourism industry
- It allows destinations and regions to:
  - ✓ expand their customer base, by gaining new clients otherwise interested in other types of attractions
  - ✓ diversify their offer, particularly for destinations which typically exploit different tourism typologies (e.g. seaside, lake, mountain tourism) and/or off-season tourism (decreasing seasonality)
  - ✓ extend the stay of tourists (overnight stays)
- National governments and regions make efforts to obtain accreditation for their historical and cultural attractions, like UNESCO's World Heritage Sites (WHS) label
- Particularly relevant for Italy which has:
  - ✓ rich historical heritage and highest number of WHS entries
  - ✓ regions taking an active role in promoting tourism

Motivations (2)

- Tourism is one of the fastest growing and most profitable sectors of the Italian economy
- We analyse Italian 'domestic tourism' (tourism involving residents of a given country travelling only within the country itself)
- Recently, the tourism industry has shifted from the promotion of inbound tourism to the promotion of domestic tourism, to contribute to the local economy
  - ✓ Domestic tourism, historically speaking, is the first form of tourism, and today continues to account – by far – for most of this activity
  - ✓ In Italy, it represents the greatest share of the entire tourism sector

Objective

- To investigate the **importance of the regional endowment in WHS** for domestic tourism
- How and to what extent **WHS accreditation** affects the flows of tourists between each pair of Italian regions
  1) by separating the effects on tourism flows of WHS located in the residence region of the tourists (origin region) and in the destination region
  2) by taking into account potential spatial substitution or complementarity between regions induced by their WHS endowment
- (Eventually,) to develop an interpretative framework for the bilateral (orig. and dest.) significance and sign of the explanatory variables

Literature

- Several studies have investigated whether or not WHS endowment, or more generally cultural offer, increases tourism demand, but the empirical evidence is mixed
  - ✓ Cultural heritage and attractions of a country as important determinants of tourism demand (e.g., Carr 1994; Alzua et al. 1998; Vietze 2008)
  - ✓ No clear positive relationship between cultural endowment and tourism flows (e.g., Cellini and Cuccia 2007 and 2009; Di Lascio et al. 2011)
  - ✓ Other cultural 'goods': contrasting evidence on tourism flows and attendance at cultural attractions such as temporary arts exhibitions (Di Lascio et al. 2011) or museums and monuments (Cellini and Cuccia 2009)
  - ✓ WHS: the debate is still open (e.g., Arezki et al. 2009; Yang et al. 2010; Cellini 2011; Yang and Lin 2011)

Research Questions

- In particular, we investigate the **importance of the regional endowment in WHS** for domestic tourism, through two research questions

1) Origin- and destination-level effects of WHS endowment
   - ❖ Does destination region's WHS endowment attract greater 'incoming' tourism flows (inflows)? → 'pull effect'
   - ❖ Does origin region's WHS endowment push the inhabitants to travel more (or less), influencing 'outgoing' tourism flows (outflows)? → 'push effect'
   - ❖ How does the WHS endowment pull effect vary depending on the WHS endowment of the origin region? Do tourists have a preference for variety (love of variety) or uniformity (no love of variety)? → 'interaction effect'

Research Questions (2)

2) How are the tourists' choices influenced by the spatial distribution of the WHS?

- Does the WHS endowment of the regions surrounding each possible destination region cause a spatial competition for tourism demand or complementarity (mutual beneficial effects deriving by trip-chaining) between regions?

  → from a policy perspective, regions could use WHS certification for competition or towards joint benefits

- Does the WHS endowment of the regions surrounding the tourist's origin region create a substitution between 'recordable' tourism (hotel arrivals and overnight stays) and daily trips of excursionists?

Modelling Framework and Data

- Modelling framework → spatial interaction model
  a) Push variables (push effect)
  b) Pull variables (pull effect)
  c) Deterrence variables (distance) – usually not identifiable in a panel framework
- Unconstrained model (*vs.* doubly-constrained model)
- Poisson-based (*vs.* log-linear) estimation

  → negative binomial (two-way fixed effects) estimation
- Main effects and interaction effects
- Spatial lags of WHS endowment

  → surrounding regions

Modelling Framework and Data (2)

- Model:

$$T_{ijt} = \exp(\alpha_{ij}, year_t, X_{it}, WHS_{it}, L.WHS_{it}, X_{jt}, WHS_{jt}, L.WHS_{jt}) + \varepsilon_{ij},$$

where α_{it} are individual fixed effects and $year_t$ are time fixed effects

- Data (Source: Italian Statistics Institute-ISTAT):
  - ✓ 11-year panel (years 1999–2009) of domestic tourism flows, between the 20 Italian regions
    - → dependent variable (T_{ijt})
      - ❖ Arrivals

Interpretative Framework

- Objective is to provide a general framework within which to interpret – e.g., in a tourism economics perspective – the signs and significance of orig. and dest. variables
- Possible cases for a generic X: … $\alpha X_i + \beta X_j$ …
  - ✓ $\alpha, \beta \neq 0$: both push and pull effects
  - ✓ $\alpha = 0$: pull effect only
  - ✓ $\beta = 0$: push effect only
  - ✓ Special case: $\alpha = \beta$, then $\alpha(X_i - X_j)$

Interpretative Framework (2)

- Origin: $\alpha > 0$, propensity to travel
- Destination: $\beta > 0$: attractiveness, receptivity
- The matrix is not symmetrical unless $\alpha = \beta$
- Effects interpretation can be linked to spillovers
  - ✓ … which make regional policy inefficient

Orig/ Dest	Pos	Neg	Null
Pos	+ +	+ –	+ 0
Neg	– +	– –	– 0
Null	0 +	0 –	0 0

Interpretative Framework (3)

- Relevant matrix areas:
  - ✓ External row and column: unilateral spillovers
  - ✓ Cell (null, null): independence between regions, regional policy is efficient
  - ✓ Core submatrix: bilateral spillovers, most complex case
    - ❖ Along the diagonal: positive or negative synergy
    - ❖ Outside the diagonal: contrasting effects: either an 'origin'- or 'destination'-policy exists that cancel out flows
  - ✓ Considerations on signs can be made at two levels
    - ❖ National
    - ❖ Regional

Interpretative Framework (4)

- National level
  - ✓The size of the sector is what matters
  - ✓Then, positive synergy (+ +) is desirable, negative synergy (– –) is undesirable, contraposition to be evaluated
- Regional level
  - ✓More complex: outgoing flows can be seen as import, and inflows as export

Interpretative Framework (5)

Orig/Dest	Pos	Neg	Null
Pos	contraction expansion	contraction contraction	contraction null
Neg	expansion expansion	expansion contraction	expansion null
Null	null expansion	null contraction	independence

Interpretative Framework: Example

- For WHS:
  - ✓ National level: if pos. synergy, interest in increasing WHS anywhere; opposite for neg. synergy, disincentivating regions' requests for WHS; a national policy is not necessary for independence
  - ✓ Regional level:
    - ❖ Pos. synergy: origin destinations don't have interest in increasing its own WHS, destination region does; vice versa for neg. synergy
    - ❖ Contraposition: joint interest to increase WHS for (– +), vice versa for (+ –)
    - ❖ Independence: regional policies do not interact

Explanatory Variables

- Key variables → WHS endowment (WHS_{it} and WHS_{jt})
- Control variables → characteristics of the regions which are relevant for tourism demand, but not a key interest for our research topic (X_{it} and X_{jt})
- WHS spatial lags → $L.WHS_{it} = \mathbf{W} * WHS_{it}$ and $L.WHS_{jt} = \mathbf{W} * WHS_{jt}$
- WHS interaction term → $WHS_{it} * WHS_{jt}$
- Origin-related variables / Destination-related variables
- Demand variables / Supply variables

Explanatory Variables (2)

- Demand side → control variables
  - ✓ regional GDP, capturing market size (*GDP*)
  - ✓ regional per capita GDP, capturing income (*GDPpc*)
  - ✓ prices index for accommodation and related goods/services, e.g. restaurants (*PricesH&R*)
  - ✓ cultural demand per state institute, aiming to capture museum quality (*CultDem*)
  - ✓ diffusion of cultural and recreational events: tickets sold per inhabitant for theatrical and musical events (*DiffShows*)
- Supply side → key variable
  - ✓ WHS endowment (*WHS*)

Explanatory Variables (3)

- Supply side → tourism specialization
  - ✓ share of total regional value added by "accommodation and restaurants, transports and communication, commerce, repairs" (*SpecTour*)
  - ✓ share of total regional public spending in recreational, cultural and religious activities (*ExpRecr*)
  - ✓ off-season tourism: overnight stays per inhabitant (*OffSeas*)
  - ✓ percentage of non-bathable coastline (*NonBath*)
- Supply side → other control variables
  - ✓ share of customers satisfied with railway service (*SatisTrain*)
  - ✓ small and violent crime indices (*CrimDiff* and *CrimVio*)
  - ✓ households' perception of crime-related risk (*PercCrim*)

Empirical Estimates

	Estimate (Std error) (1)	p-value	Estimate (Std error) (2)	p-value	Estimate (Std error) (3)	p-value
GDP orig	–0.2469 (0.3568)	0.4890	0.0688 (0.3636)	0.8500	–0.0128 (0.0106)	0.2261
GDP dest	–2.2147 (0.4986)	<0.0001	–1.9436 (0.4571)	<0.0001	0.0315 (0.0092)	0.0006
SpecTour orig	0.3245 (0.1095)	0.0030	0.3314 (0.1098)	0.0025	0.0752 (0.3640)	0.8364
SpecTour dest	0.2412 (0.1342)	0.0722	0.0593 (0.1378)	0.6672	–1.9373 (0.4606)	<0.0001
ExpRecr orig	0.1050 (0.0666)	0.1148	0.0626 (0.0665)	0.3465	0.3324 (0.1098)	0.0025
ExpRecr dest	–0.1433 (0.0567)	0.0114	–0.1722 (0.0626)	0.0060	0.0603 (0.1383)	0.6632
PricesH&R orig	0.2499 (0.2633)	0.3425	0.2703 (0.2664)	0.3102	0.0616 (0.0666)	0.3546
PricesH&R dest	–1.0454 (0.2374)	<0.0001	–1.3154 (0.2404)	<0.0001	–0.1731 (0.0630)	0.0060
GDPpc orig	0.4607 (0.4778)	0.3349	0.1303 (0.4734)	0.7832	0.2729 (0.2675)	0.3076
GDPpc dest	–0.1129 (0.2916)	0.6986	–0.5675 (0.2583)	0.0280	–1.3129 (0.2413)	<0.0001
CrimDiff orig	0.0940 (0.0513)	0.0667	0.0953 (0.0512)	0.0628	0.1245 (0.4762)	0.7938
CrimDiff dest	0.0476 (0.0274)	0.0821	0.0664 (0.0273)	0.0152	–0.5737 (0.2591)	0.0268
CrimVio orig	0.0607 (0.0264)	0.0215	0.0639 (0.0270)	0.0181	0.0950 (0.0514)	0.0648
CrimVio dest	–0.0449 (0.0244)	0.0654	–0.0134 (0.0245)	0.5835	0.0660 (0.0273)	0.0157
PercCrim orig	0.0547 (0.0202)	0.0066	0.0509 (0.0202)	0.0116	0.0643 (0.0271)	0.0177
PercCrim dest	–0.1850 (0.0234)	<0.0001	–0.1851 (0.0240)	<0.0001	–0.0130 (0.0246)	0.5971

Empirical Estimates (2)

	Estimate (Std error) (1)	p-value	Estimate (Std error) (2)	p-value	Estimate (Std error) (3)	p-value
SatisTrain orig	0.0798 (0.0440)	0.0695	0.0400 (0.0451)	0.3754	0.0508 (0.0202)	0.0119
SatisTrain dest	0.0287 (0.0519)	0.5797	0.0224 (0.0508)	0.6585	–0.1852 (0.0241)	<0.0001
CultDem orig	–0.0313 (0.0221)	0.1566	–0.0265 (0.0222)	0.2337	0.0407 (0.0453)	0.3690
CultDem dest	0.1754 (0.0214)	<0.0001	0.1959 (0.0225)	<0.0001	0.0231 (0.0507)	0.6485
DiffShows orig	0.0655 (0.0399)	0.1005	0.0727 (0.0399)	0.0686	–0.0263 (0.0222)	0.2355
DiffShows dest	0.0700 (0.0318)	0.0278	0.0638 (0.0325)	0.0495	0.1960 (0.0225)	<0.0001
NonBath orig	0.0004 (0.0026)	0.8932	0.0008 (0.0026)	0.7481	0.0732 (0.0397)	0.0648
NonBath dest	0.0020 (0.0027)	0.4403	0.0031 (0.0027)	0.2456	0.0644 (0.0324)	0.0467
OffSeas orig	–0.0174 (0.0402)	0.6656	–0.0106 (0.0398)	0.7895	0.0009 (0.0026)	0.7410
OffSeas dest	0.4572 (0.0533)	<0.0001	0.4339 (0.0525)	<0.0001	0.0032 (0.0027)	0.2440
WHS orig	–	–	–0.0146 (0.0079)	0.0630	–0.0116 (0.0396)	0.7701
WHS dest	–	–	0.0297 (0.0070)	<0.0001	0.4329 (0.0519)	<0.0001
L.WHS orig	–	–	–0.0427 (0.0195)	0.0285	–0.1139 (0.0202)	<0.0001
L.WHS dest	–	–	–0.1137 (0.0202)	<0.0001	–0.0008 (0.0022)	0.7357
WHS orig * WHS dest	–	–	–	–	–0.0428 (0.0195)	0.0281
AIC	71705	–	71660	–	71662	–
BIC	74136	–	74116	–	74124	–
Res. dof	2977	–	2973	–	2972	–
McFadden's pseudo-R^2	0.4068	–	0.4073		0.4073	–
ANOVA (χ^2 LR test)	–	–	52.9132	<0.0001	0.0824	0.7741

Results

- Demand side
  - ✓ regional GDP (*GDP*)
    - ❖ Negative effect for destination → tourists look for less-industrialized, more relaxing destinations (search of getaway from heavily industrialized regions?)
    - ❖ NOT SIGNIFICANT for origin
  - ✓ regional per capita GDP (*GDPpc*)
    - ❖ Negative effect for destination → same as for regional GDP (North-South productivity differences?)
    - ❖ NOT SIGNIFICANT for the origin
  - ✓ prices of accommodation and related goods/services, e.g. restaurants (*PricesH&R*)
    - ❖ Negative effect on destination → confirmation of theory
    - ❖ Not significant for origin

Results (2)

- Demand side → quality of cultural offer
  - ✓Diffusion of cultural and recreational events, per inhabitant (*DiffShows*)
    - ❖ Positive effect for destination
    - ❖ NOT SIGNIFICANT for origin
  - ✓Cultural demand per institute (*CultDem*)
    - ❖ Positive effect for destination
    - ❖ NOT SIGNIFICANT for origin

Results (3)

- Supply side → tourism specialization
  - ✓ Share of total regional public spending in recreational, cultural and religious activities (*ExpRecr*)
    - ❖ Negative effect for destination (counterintuitive effect)

      → the direction of causality here might be the opposite: local administrations most likely attempt – over the years – to catch up with more successful destinations by organizing public events (regions with low tourism flows could have an incentive to invest more)
    - ❖ NOT SIGNIFICANT for origin
  - ✓ Off-season tourism: overnight stays in the off-season, per inhabitant (*OffSeas*)
    - ❖ Positive effect for destination
    - ❖ NOT SIGNIFICANT for origin

Results (4)

- Supply side → tourism specialization
  - ✓ Share of total regional value added by "accommodation and restaurants, transports and communication, commerce, repairs" (*SpecTour*)
    - ❖ Positive effect for origin → possibly 'addiction to tourism' or search for a refuge from the summer overcrowding
    - ❖ NOT SIGNIFICANT for destination
  - ✓ Satisfaction levels of railway services (*SatisTrain*)
    - ❖ NOT SIGNIFICANT

Results (5)

- Supply side → other control variables
  - ✓ Small crime index (*CrimDiff*)
    - ❖ Positive effect for destination (counterintuitive effect) → could be an endogenous variable (i.e. more tourism means more small crime) or there could be a relationship with North-South criminality patterns?
    - ❖ NOT SIGNIFICANT for origin
  - ✓ Violent crime index (*CrimVio*)
    - ❖ Positive effect for origin → residents of at-risk areas tend to get away in search of safer (and therefore, again, more relaxing) destinations
    - ❖ NOT SIGNIFICANT for destination
  - ✓ Households' perception of crime related risk, in their residence region (*PercCrim*)
    - ❖ Positive effect for origin → same as for Violent crime index
    - ❖ Negative effect for destination (but is it suitable for destinations?)

Results (6)

- Key variable → WHS endowment (*WHS*)
  - ❖ Positive effect for destination → an increase of one WHS, for a generic destination, would imply an inflows increase of 3%
  - ❖ Negative effect for origin → but only MARGINALLY SIGNIFICANT
  - ❖ Interaction effect → Possible mispecification?
- Spatial lags
  - ✓ WHS endowment of surrounding regions ($L.WHS_{it}$ and $L.WHS_{jt}$)
    - ❖ Negative effect for both origin and destination
      - – Destination region → spatial competition between contiguous regions induced by WHS endowment (role of regional tourism promotion agencies)
      - – Origin region → substitution for nearby (alternative?) destinations between overnight stays (traditional tourism) and daily excursions

Preliminary Remarks

- Regions' endowment in terms of World Heritage sites (WHS) affect tourism flows
  - ✓ Destination region's WHS endowment can attract further tourism flows, all else being equal → an increase of one WHS in a region's endowment implies a 3% increase of inflows
  - ✓ Origin region's WHS endowment does not have a clear significant effect on regional outflows → marginally significant evidence suggests that a negative effect could exist (most likely because of substitution between overnight stays and daily excursions)

Preliminary Remarks (2)

- Interaction effect of WHS endowment: love of variety (negative) or multiplicative effects (positive)?
  - ✓ Possible mispecification induced
- Spatial lags in destination
  - ✓ WHS endowment in regions surrounding possible destinations has a negative effect on its inflows (effect measured around 11% for an average variation of 1 in neighbours' WHS endowment)
  - ✓ There is spatial substitution between regions (tourists appear to consider, in forming their travelling choices, the WHS endowment of alternative destinations)
- Spatial lags in origin
  - ✓ WHS endowment in regions surrounding the residence region constrains tourism outflows
  - ✓ There is substitution between overnight stays and daily excursions

Policy Implications

1) WHS endowment does appear to influence arrivals to tourism destinations

   → the local policymakers' lobbying towards the national government for obtaining UNESCO certification for further cultural sites can be justified

2) The results pertaining to spatial substitution strengthen this view

   → competition among regions for WHS certification can be justified, since the positive effects of trip-chaining are outweighed by the competition for tourists between regions

Many Things to Do...

- Estimation
  - ✓ Deterrence variables: spatial filtering-based or system GMM estimation, allowing to estimate the effect of distance (particularly interesting for tourism) and kms of coastline (necessary for identifying better the polluted coasts variable)
  - ✓ Constrained estimation? (e.g. doubly-constrained model)
- Model specification
  - ✓ Clean-up of model
  - ✓ Inclusion of physical characteristics
    - ❖ Kms of coastline
    - ❖ Mean elevation
    - ❖ Squared kms of wooded surface