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Covid-19 And Tourism: What Can We Learn From The Past?

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Motivation

- COVID-19 first appeared in China in December 2019 and rapidly spread to the rest of the world, causing one of the deepest economic crises since the Great Depression in the 1930s.

- The rapid transmission and high number of asymptomatic people induced governments to shut down the activity in many sectors and impose travel and mobility restrictions.

- Thus, tourism has been one of the most affected sectors.

Motivation

- Tourist arrivals fell sharply in March, approximately 57 percent, with a decline between 69 and 84 percent being recorded for the whole year with respect to 2019 numbers (UNWTO 2021).

- The International Air Transport Association (IATA, 2020) suggests that a full recovery of international air travel at the pre-COVID-19 levels will take place not before 2023-2024.

- The scenario for global tourism flows will depend on the future course of the pandemic and governments' release of travel restrictions.

Motivation

- Some studies have focused on the short-term impact of COVID-19 and on forecasting the future economic panorama (Baker et al., 2020; McKibbin and Fernando, 2020; Li et al., 2020).

- Some other studies, instead, try to infer its possible consequences by analyzing past pandemics' economic effects (Jordà et al., 2020; Barro et al., 2020; Furceri et al., 2020a).

- Since there is high uncertainty on this pandemic's medium and long-run implications, the study of historical events can be a useful guide to understand how the actual pandemic could end up.

Related Studies

- The tourism sector has experienced several crises not only due to past pandemic events (e.g., SARS, H1N1) but also to natural disasters.

- The literature on the consequences of natural catastrophes, e.g., earthquakes and tsunami, provide evidence of a contraction of tourist flows in the affected area (Shi and Li, 2017; Novelli et al., 2018; Rossellò et al., 2020; Ma et al., 2020b).

- Similarly, existing studies on the impact of pandemic episodes on tourism have shown the shrinking effects of these epidemic/pandemic episodes on the tourism sector (Page et al. 2012; Novelli et al., 2018; Joo et al., 2019).

Related Studies

- Existing studies have often adopted a case-study approach, with few studies discussing and comparing the effects of different pandemic episodes in a unique framework (i.e., Gössling et al., 2020).

- However, the focus on a single pair “country-pandemic” has limited use to explain both the social and economic consequences of these kinds of events (see Zenker and Kock, 2020).

Aim

- Our research contributes to the existing literature investigating in a unique framework several pandemic episodes and a large panel of advanced, emerging and low income economies.

- Indeed, notwithstanding the uniqueness of COVID-19, a lot can be learned from the past to understand how the current pandemic could end up.

- Thus, we provide evidence on the impact of pandemics and major epidemics (hereinafter “pandemics”) from the past two decades on international tourist arrivals to infer a possible future scenario after the COVID-19 era.

Data & Methodology

- The analysis focuses on the impact of the most important pandemic events of the last two decades: SARS (2003), H1N1 (2009), MERS (2012), Ebola (2014), and Zika (2016).

- To this purpose, in line with Ma et al. (2020a) and Furceri et al. (2020a), we define a dummy variable (the pandemic event) assuming value 1 when WHO declares a pandemic for the country and 0 otherwise.

- Data on the number of tourist arrivals are from the World Bank's World Development Indicators (WDI) database and cover an unbalanced sample of 183 countries for the period 1995-2018.

List of Pandemic and Epidemic Episodes

Starting year	Event Name	Affected Countries	Number of countries
2003	SARS	AUS, CAN, CHE, CHN, DEU, ESP, FRA, GBR, HKG, IDN, IND, IRL, ITA, KOR, KWT, MAC, MNG, MYS, NZL, PHL, ROU, RUS, SGP, SWE, THA, USA, VNM, ZAF	28
2009	H1N1	AGO, ALB, ARG, ARM, ATG, AUS, AUT, AZE, BDI, BEL, BGD, BGR, BHR, BHS, BIH, BLR, BLZ, BOL, BRA, BRB, BRN, BTN, BWA, CAN, CHE, CHL, CHN, CIV, CMR, COD, COG, COL, CPV, CRI, CYP, CZE, DEU, DJI, DMA, DNK, DOM, DZA, ECU, EGY, ESP, EST, ETH, FIN, FJI, FRA, FSM, GBR, GHA, GRC, GRD, GTM, GUY, HND, HRV, HTI, HUN, IDN, IND, IRL, IRN, IRQ, ISL, ISR, ITA, JAM, JOR, JPN, KAZ, KEN, KHM, KIR, KNA, KOR, KWT, LAO, LBN, LCA, LKA, LSO, LTU, LUX, LVA, MAR, MDA, MDG, MDV, MEX, MHL, MKD, MLT, MMR, MNE, MNG, MOZ, MUS, MWI, MYS, NAM, NGA, NIC, NLD, NOR, NPL, NZL, OMN, PAK, PAN, PER, PHL, PLW, PNG, POL, PRI, PRT, PRY, ROU, RUS, RWA, SAU, SDN, SGP, SLB, SLV, STP, SUR, SVK, SVN, SWE, SWZ, SYC, SYR, TCD, THA, TJK, TON, TTO, TUN, TUR, TUV, TZA, UGA, UKR, URY, USA, VCT, VEN, VNM, VUT, WSM, YEM, ZAF, ZMB, ZWE.	158
2012	MERS	AUT, CHN, DEU, DZA, EGY, FRA, GBR, GRC, IRN, ITA, JOR, KOR, KWT, LBN, MYS, NLD, OMN, PHL, QAT, SAU, THA, TUN, TUR, USA, YEM.	25
2014	Ebola	ESP, GBR, GIN, ITA, MLI, NGA, SEN, SLE, USA	9
2016	Zika	ARG, ATG, BHS, BLZ, BOL, BRA, BRB, CAN, CHL, COL, CRI, DMA, DOM, ECU, GRD, GTM, GUY, HND, HTI, JAM, KNA, LCA, NIC, PAN, PER, PRI, PRY, SLV, SUR, TTO, URY, USA, VCT, VEN	34
		Total Pandemic and Epidemic Events	254

Note: Based on Ma et al. (2020a)

Data & Methodology

To examine the effect of pandemics on tourist arrivals, following Jordà (2005), we estimate the **impulse response functions (IRFs)** based on local projections of the effect of pandemics on international tourist arrivals:

$$y_{i,t+k} - y_{i,t-1} = \alpha_i^k + \gamma_t^k + \beta^k D_{i,t} + \theta^k X_{i,t} + \varepsilon_{i,t+k} \qquad (1)$$

where:

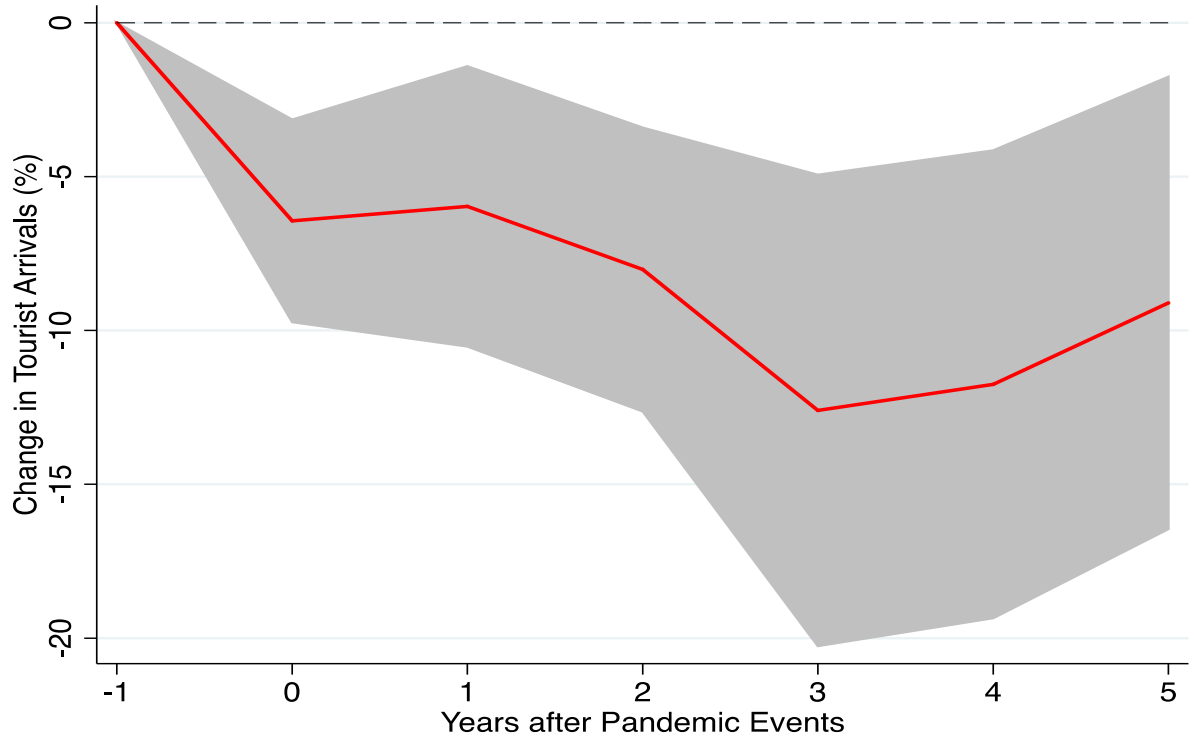
- $y_{i,t}$ is the log of tourist arrivals for country i in year t;
- α_i are country fixed effects;
- γ_t are time fixed effects;
- $D_{i,t}$ is a dummy variable indicating a pandemic event affecting country i in year t;
- $X_{i,t}$ is the vector of control variables

Equation (1) is estimated for each horizon (year) k=0,..,5. Impulse response functions are obtained from the estimated coefficients β^k.

Impact of pandemics on tourist arrivals

Major pandemics of the latest two decades led to a **long-lasting decrease in tourist arrivals**, with a peak (average) cumulative fall of about 12.5 percent three years after the event.

Figure 1. Impact of pandemics on tourist arrivals (%)



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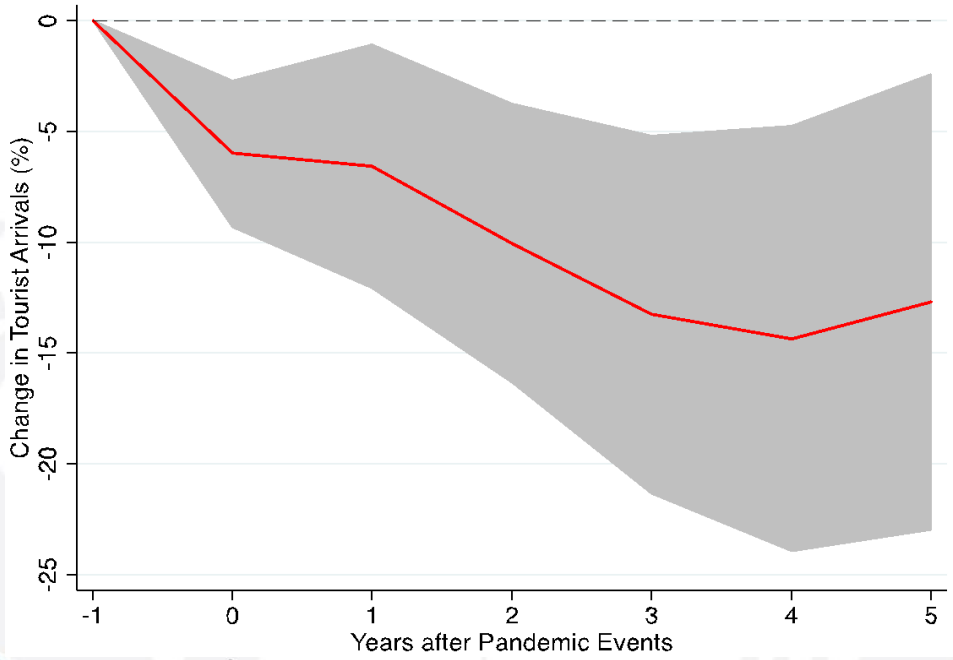
Robustness checks

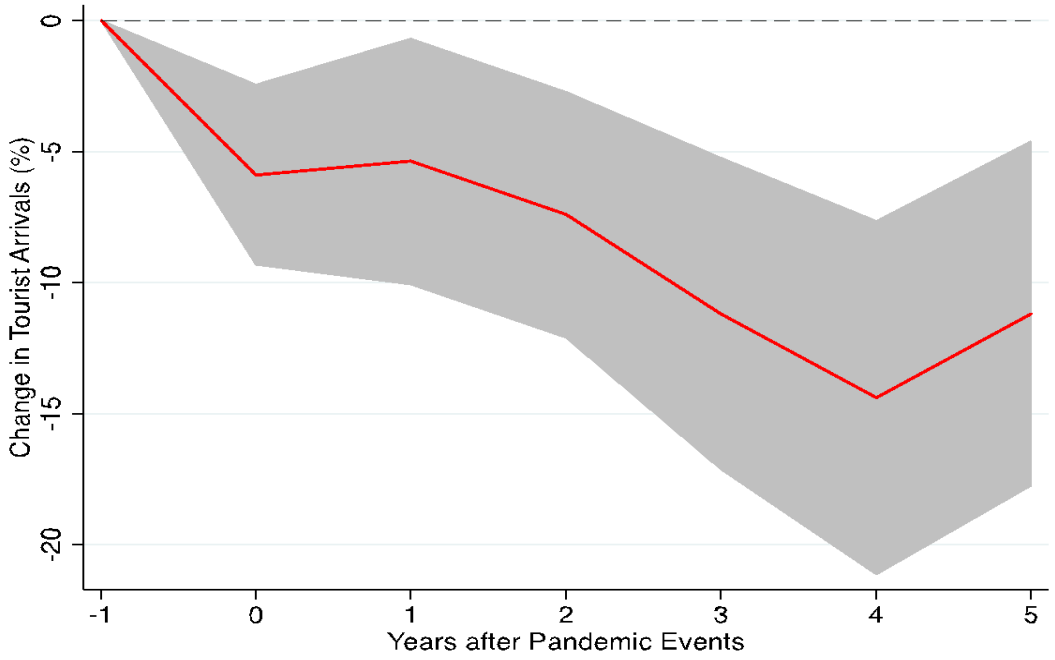
Our results are robust to an alternative methodology (autoregressive distributed lag model - ADL) and to the inclusion of additional control variables in the model (such as proxies for the level of economic development, trade openness, international competitiveness and population density).

Figure 2. Impact of Pandemics on international tourist arrivals (%) – Robustness checks

Panel A – ADL



Panel B – Additional Controls



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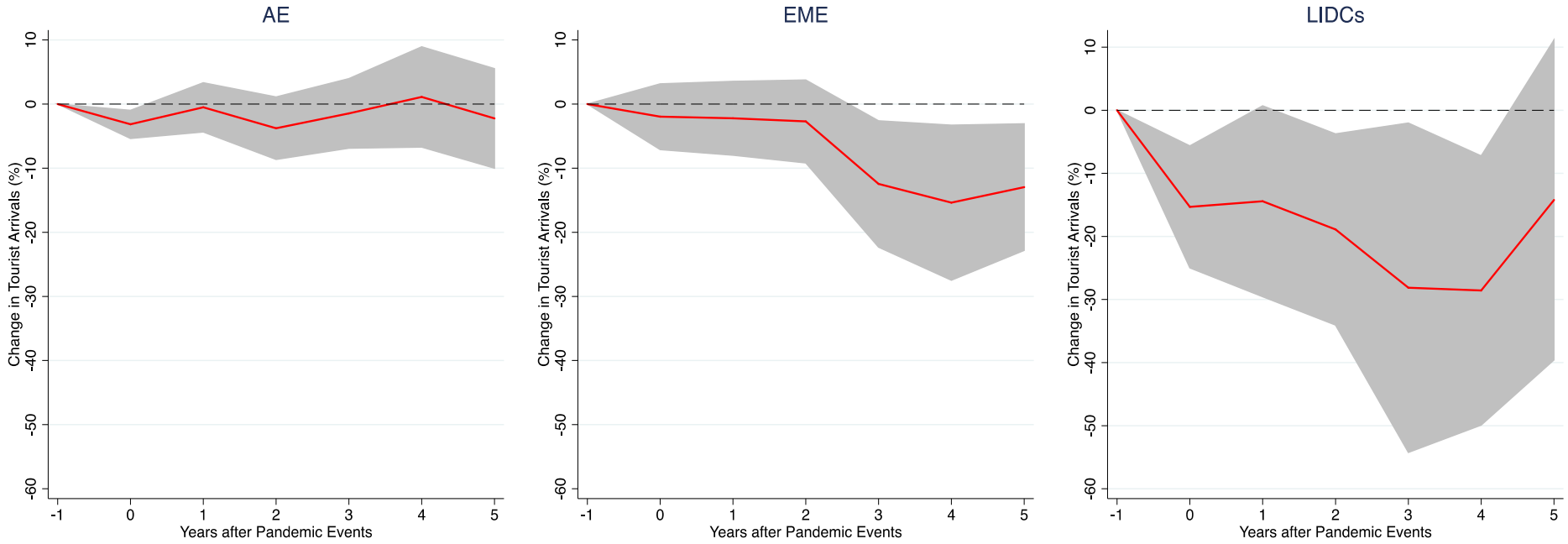
Cross-country heterogeneity

EME and LIDCs seem to be the most affected by pandemics. Notably, the average cumulative decline in tourist arrivals four years after the outbreak of a pandemic event is about 12 and 28 percent, respectively.

Figure 3. Impact of pandemics on tourist arrivals (%) – by country groups



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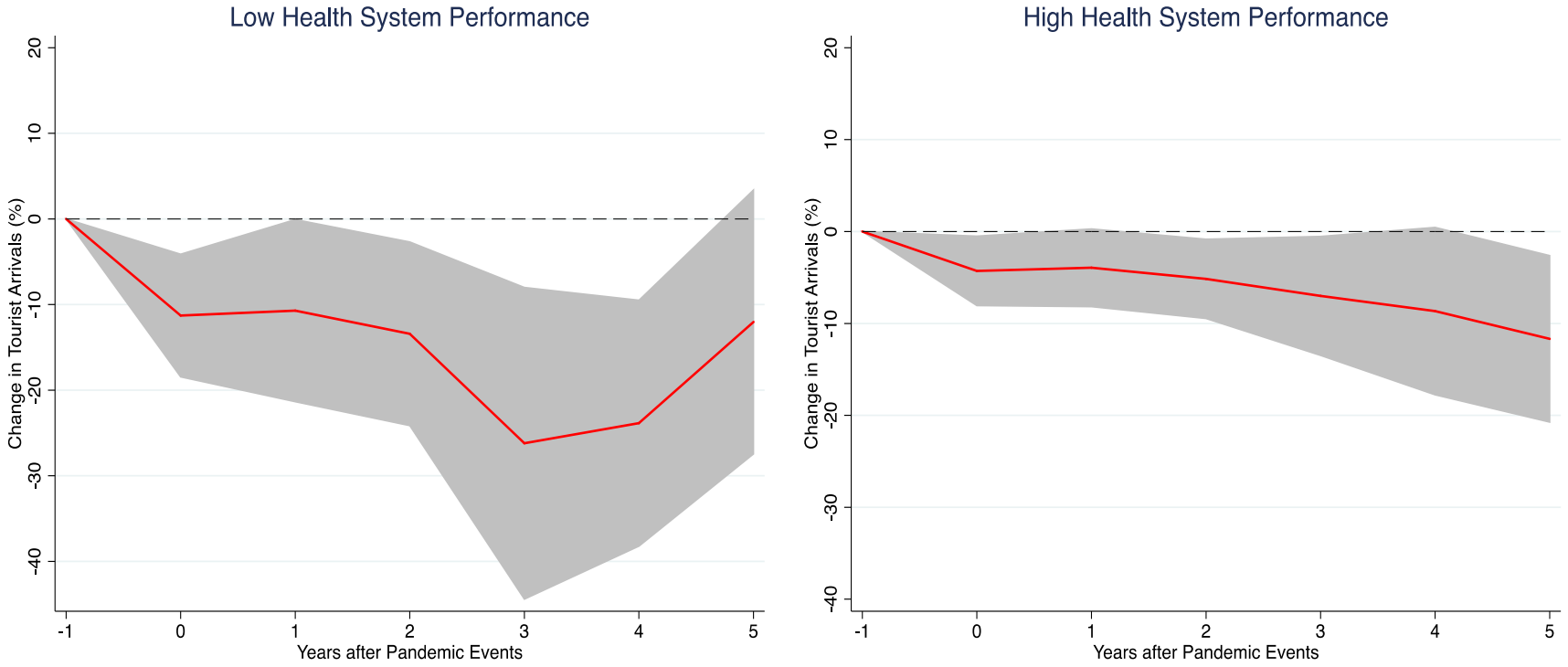
The relevance of the health system

- The heterogeneity across country groups could also be explained by different health systems.
- Indeed, less developed economies also tend to have worse performances in the health system than advanced ones.
- This appears when looking at the Health Efficiency Index by the World Health Organization (WHO) in 2000 (Tandon et al. 2000).
- Advanced countries perform better (average value of 0.89) than emerging economies and low-income and developing countries that show lower scores (average values of 0.67 and 0.43, respectively).

The relevance of the health system

Figure 4. Impact of pandemics on tourist arrivals (%) – by Health System Performance



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Results

- Results show that countries with lower overall health system performances suffer a larger reduction in tourist flows following a pandemic event.

- The average peak cumulative fall in tourist arrivals is about 27% three years after the outbreak of the pandemic event, with the effects being up to three-four times larger with respect to countries with better health systems.

- These results are robust to alternative Health Index, such as the Global Health Security (GHS) Index.

Heterogeneity across episodes

- The effects of pandemics may also vary across episodes.

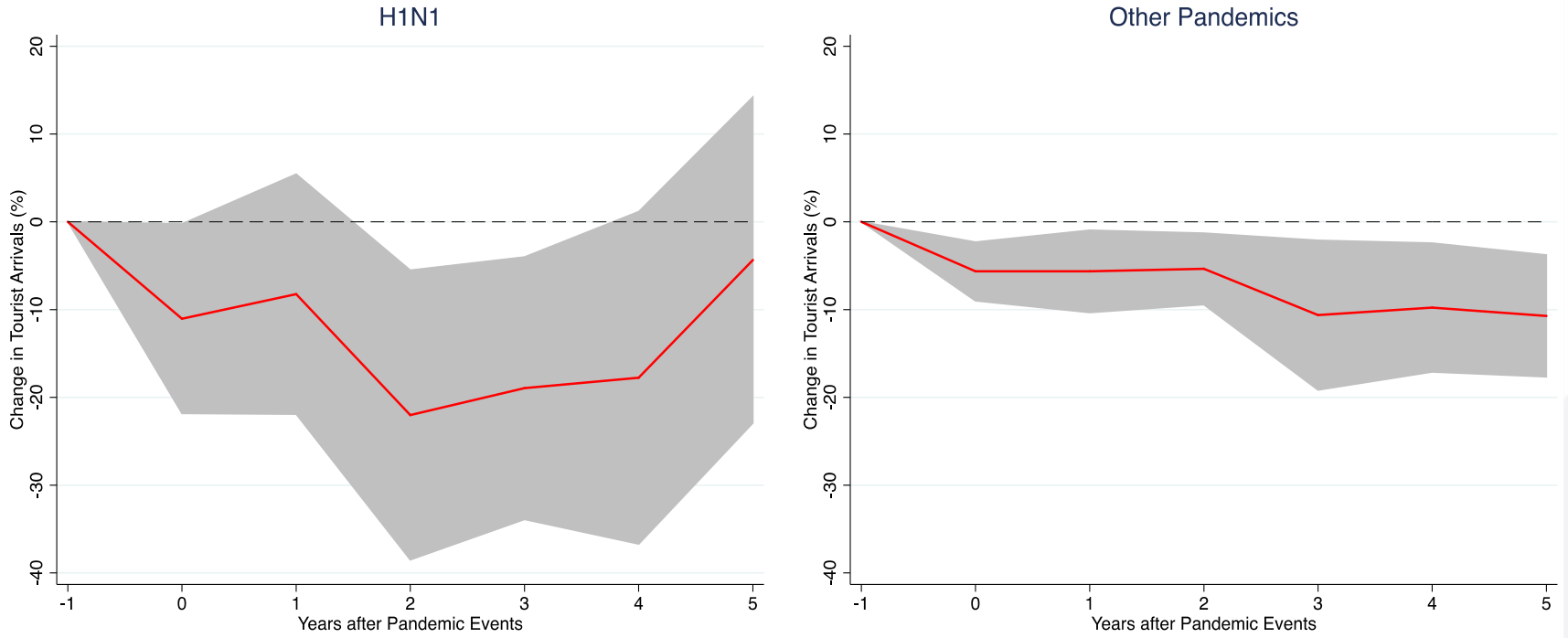
- H1N1 is the most widespread and deadly pandemic in our sample (it affected 158 countries) and it is likely to be the most similar to the COVID-19 in terms of worldwide spread (even much smaller in scale).

- Thus, we compare the effects generated by this pandemic *vis-à-vis* to those caused by other pandemics in our sample.

H1N1 vs Other pandemics

The average short-term fall in tourist arrivals is higher in the case of H1N1 (about -20%) than in other pandemics (about -8%).

Figure 5. Impact of pandemics on tourist arrivals (%) – by pandemics



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The role of severity and uncertainty

- Finally, the **severity** of the shock and the **uncertainty** associated with the pandemic event may be relevant in shaping its impact on tourist arrivals.

- We account for severity using the ratio of confirmed cases to population.

- To examine the role of uncertainty we use the World Pandemic Uncertainty Index (WPUI), that is a sub-index of the World Uncertainty Index (WUI) developed by Ahir et al. (2018).

- WPUI is constructed by counting the number of times uncertainty is mentioned within a proximity to a word related to pandemics in the Economist Intelligence Unit (EIU) country reports. A higher number means higher uncertainty related to pandemics and vice versa (data available at the country level).

Baseline Extension

We extend our first specification (1) allowing the average response of arrivals to major epidemics and pandemics to vary across countries according to different country-specific characteristics (i.e., the degree of uncertainty induced by the pandemic event and its severity) (see also Furceri et al. 2020a)

$$y_{i,t+k} - y_{i,t-1} = \alpha_i^k + \gamma_t^k + F(z_{it})\left[\beta_L^k D_{i,t} + \theta_L^k X_{i,t}\right] + \left(1 - F(z_{it})\right)\left[\beta_H^k D_{i,t} + \theta_H^k X_{i,t}\right] + \varepsilon_{i,t+k} \quad (2)$$

$$\text{with } F(z_{it}) = \frac{exp^{-\gamma z_{it}}}{(1+exp^{-\gamma z_{it}})}$$

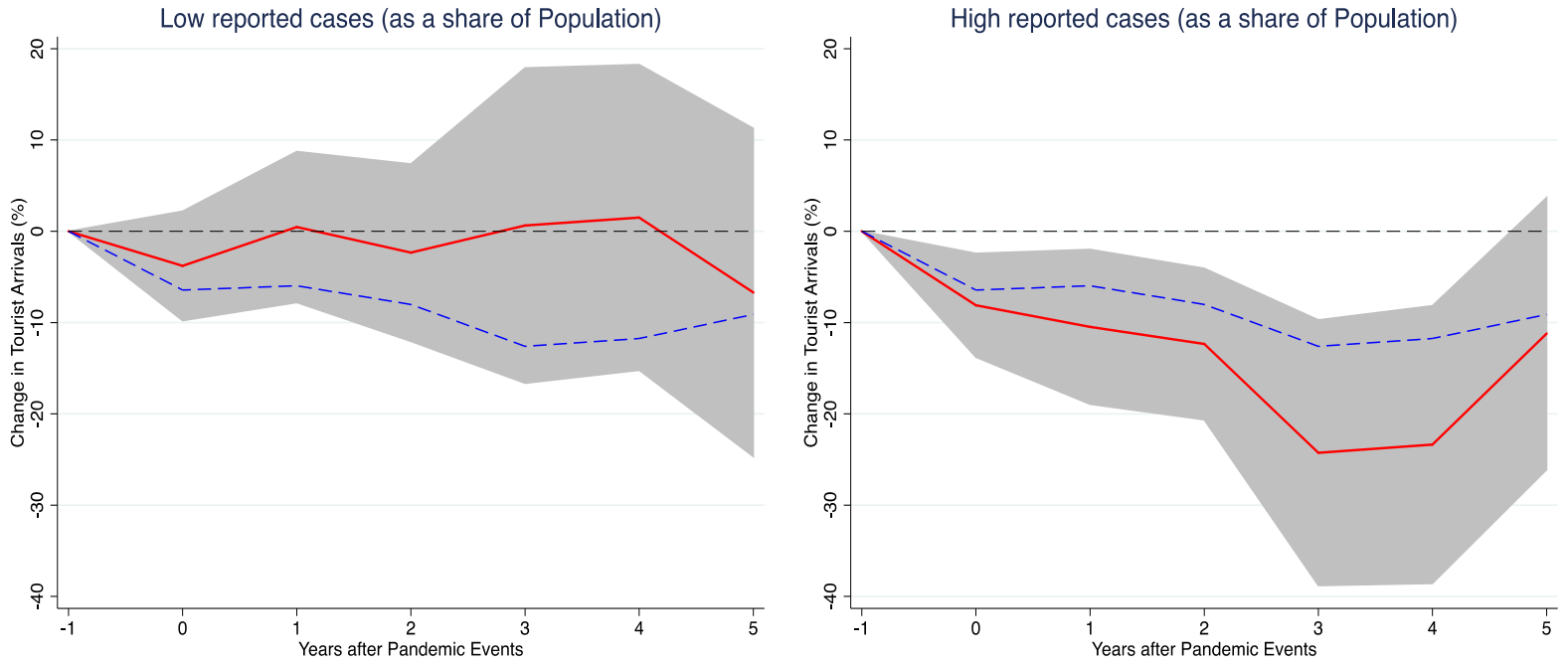
where z is an indicator of the severity of the pandemic or the uncertainty associated with such exogenous shock. $F(z_{it})$ can be interpreted as the probability of having a given level of uncertainty (or severity).

The coefficient β_L^k is the coefficient in the case of low uncertainty (severity) (that is, when *z* goes to minus infinity) and β_H^k is the coefficient in the case of high uncertainty (severity) (that is when *z* goes to plus infinity).

The role of severity

Not all pandemics are the same. Much stronger decline in tourist arrivals in countries with a higher degree of per-capita reported cases. This highlights the importance of the severity of the pandemic in shaping tourist arrivals' response.

Figure 6. Impact of pandemics on tourist arrivals (%) – The role of the number of cases



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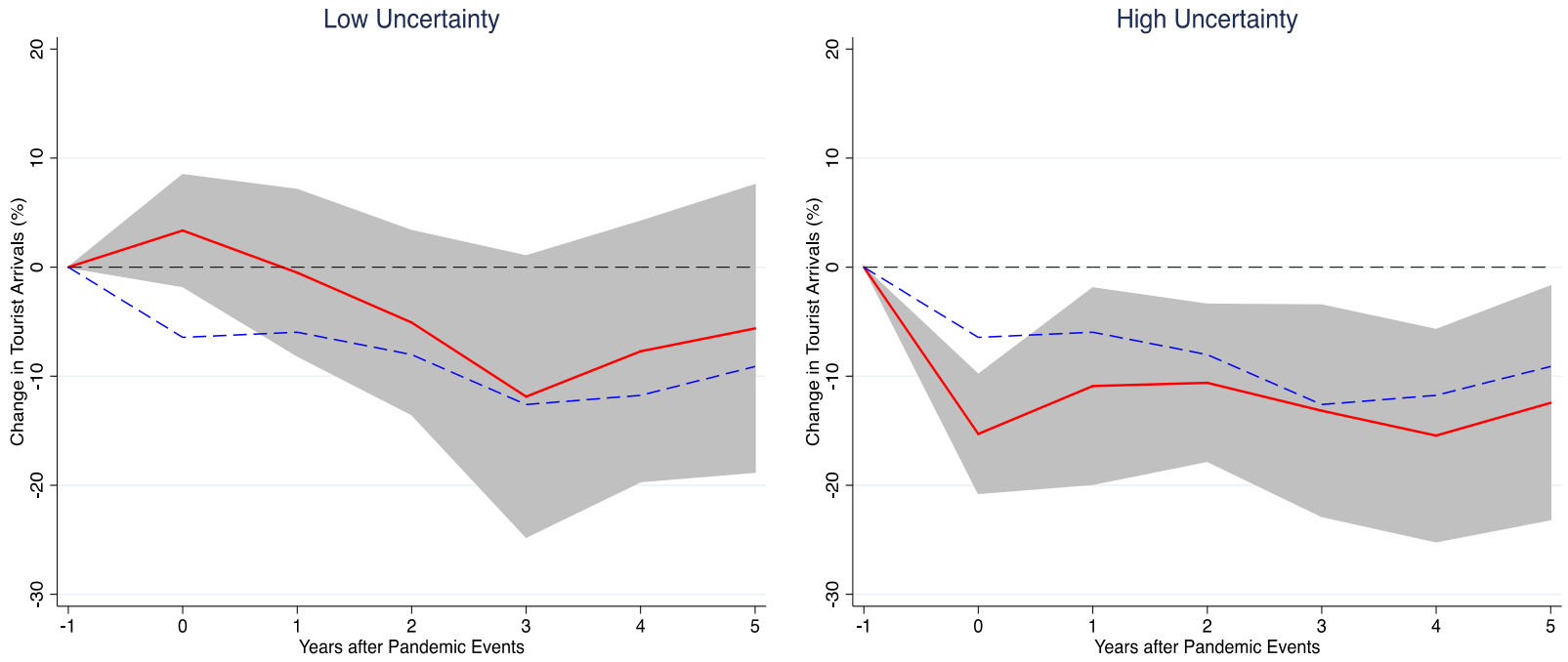
The role of uncertainty

The impact of pandemic events on tourist arrivals varies with the uncertainty associated with the shock.

In particular, the difference is striking (about 18 percentage points) in the year of the pandemic event (and the first two years after the shock) while it attenuates at later stages, even remaining above 7 percentage points.

Figure 7. Impact of pandemics on tourist arrivals (%) – The role of uncertainty



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Conclusions

- Major epidemics and pandemics of the last two decades led to a persistent decline in tourist arrivals with the impact being larger in developing and emerging countries.

- The effects are heterogeneous across countries and episodes and depends on several economic conditions such as the overall health system performance, the severity of the shock, and the uncertainty induced by the pandemic event.

- These results relate to COVID-19 which is characterized by high uncertainty and severity. Thus, looking at the impacts of past pandemic episodes, we could reasonably expect long-lasting negative effects on tourism.

Policy Implications

- On the demand side, higher fall in tourism in the case of higher uncertainty and lower health system performances, advocate policymakers to undertake policies aimed at improving such dimensions.

- For example, to reduce the uncertainty associated with the pandemic event, tourism authorities could require the observation of minimum safety protocols in restaurants and places related to the traveling and hospitality sectors.

- Likewise, they could promote and reassure tourists that the destination is safe to attract tourists when COVID-19 is controlled.

- Crucial role for public health services and vaccination campaigns: The sooner countries will be able to complete their campaigns, the faster the recovery of the tourism sector will occur.

Policy Implications

- On the supply side, instead, there is a need for coordinated policies aimed at preserving the productive assets in the short term.

- Governments should continue to provide low-interest loans and transfers to companies, ensure full support to people employed in the tourism sector, especially workers with temporary contracts that are the most affected by the crisis.

- The shift in tourists' preferences towards less crowded destinations may foster novel forms of alternative and more sustainable tourism.

- Diversifying tourism value chains and making places less tourism-dependent could be an option to prevent the harmful effects of possible future health crises and to increase the resilience of more vulnerable economies.

Thanks for your attention

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