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Pre-Crisis Determinants of Tourism Resilience

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Abstract

In this study, I provide a location choice model incorporating five pre-crisis determinants for tourists' destination choice to study the impact of these determinants on the resilience of tourism. The determinants are the kind of destination (rural vs. urban), the pre-crisis origin country specific attractiveness of the destination, the infrastructure size, the density, and the local culture. I estimate the effect of these determinants on the recovery of hotel overnight stays during the COVID-19 pandemic in Switzerland. I find that urban areas had an up to 75% percent lower recovery level. Half of this difference is due to their pre-crisis specific attractiveness for international tourists. This implies that a miss-match between long-run local touristic capital and domestic demand preferences prevents destinations from substituting the missing international tourists with domestic tourists. While infrastructure size affects the resilience ambiguously, density weakens the resilience in cities. Culture does not play a role if there are no local COVID-19 policies.

Key words: Tourism, COVID-19, resilience, structure, estimation.

JEL classification: Z3, R12, H12

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1 Introduction

The COVID-19 crisis has triggered a huge discussion about the resilience of the tourism economy (Sharma et al., 2021) among tourism scholars. Developed in order to model ecological systems in 1970, the concept itself is not new to tourism (see e.g. Cochrane, 2010). In the context of tourism, resilience describes the recovery of systems from perturbations based on various forms of capital (Cochrane, 2010) where the recovery does not necessarily lead to the pre-perturbation equilibrium (Sharma et al., 2021). While major parts of the literature focuses on frameworks identifying actors and fields of action for these actors to gain a more resilient touristic economy (see e.g. Sharma et al., 2021; Filimonau et al., 2020; Okafor et al., 2022), there are only a few empirical studies investigating the resilience conditional on the kind of tourism or the tourists' origin (see e.g. Shi et al., 2022; Anguera-Torrell et al., 2021). Yet, the literature lacks reliable empirical evidence on how long-run local capital or structures affect the resilience of the tourism economy. This is striking because the long-run local capital and structures cannot be changed quickly in response to crises. Therefore, their planning must consider their effects on the resilience which demands knowing these effects.

One major reason for the lack of evidence is that studies usually exploit between country variation (see e.g. Roman et al., 2022) and only few within country variations (see e.g. Santos and Moreira, 2021). However, different countries also put different COVID-19 measures in place which directly and indirectly affected the resilience (Okafor and Yan, 2022). Hence, empirically disentangling this effect using between country variation is hardly possible. This study therefore exploits within country variation in pre-crisis structures to estimate their effect on the resilience. Based on a location choice model, I estimate the effect of five pre-crisis determinants on the recovery of hotel overnight stays during the COVID-19 pandemic in Switzerland. The determinants are the kind of destination (rural vs. urban), the pre-crisis origin country specific attractiveness of the destination, the infrastructure size, the density, and the local culture. Switzerland provides a natural laboratory for this study because there exists a huge variation in the combinations of all these determinants across different touristic destinations while the COVID-19 measures were the same all over Switzerland during the major time of the pandemic. To estimate the effect of the determinants on the recovery, I apply an adapted event study approach based on Schmidheiny and Siegloch (2019).

I find that urban areas had an up to 75% percent lower recovery level. However, I can show that about half of this difference is due to their pre-crisis origin country specific attractiveness. About one fifth of the difference is due to the higher density of the municipalities. Infrastructure size has an ambiguous and small impact on the recovery level. Cultural differences do not play any role, i.e., tourists did not consider spatial differences like the private handling of COVID-19 when choosing their touristic destination. Most effects also hold within the groups of rural and urban destinations. Furthermore, I can show that the pre-crisis origin country specific attractiveness explains most of the difference in the recovery between urban and rural destinations. Other unobserved determinants like the fact that urban areas have higher shares of business tourism and rural higher shares of leisure tourism play only a minor role. This means that internationally focused destinations could not substitute the missing tourists from overseas with domestic tourists due to the unobserved differences in the local touristic supply that did not meet the Swiss tourists' preferences. Since this local touristic supply is to a large extent determined by infrastructure, it cannot be easily adapted nor can the negative effect be effectively mitigated by local actions like marketing activities unlike Volgger et al. (2021) suggest. Hence, the choice of the target markets and the respective long-run local touristic capital are crucial for the resilience of local tourism.

The literature on the relation of COVID-19 and tourism is huge. A relatively recent review is provided by Yang et al. (2021). One strand of this literature deals with the question of forecasting tourism in times of such crises (see e.g. Zhang et al., 2021; Liu et al., 2021; Kourentzes et al., 2021; Qiu et al., 2021; Plzáková and Smeral, 2022; Provenzano and Volo, 2022). Another strand investigates the impact of COVID-19 on tourism. Roman et al. (2022) perform a cluster analysis of these impacts on different touristic measures of European countries resulting in four different clusters. There are few country specific studies investigating heterogeneous effects of the COVID-19 pandemic across the country: Santos and Moreira (2021), e.g., find that rural areas in Portugal were less affected by the COVID-19 pandemic. This study is closest to the one at hand. The comparison of only eight regions in Portugal, however, leads to rather descriptive results. Arbulú et al. (2021) investigate the potential of domestic tourism for the resilience of Spanish regions. They show that the potential depends on the traditional orientation of a region's portfolio on the domestic market, the volatility of its domestic demand and the capacity to attract new segments of domestic tourists. Yet, they to not rigorously identify the actual impact but investigate the potential using pre-crisis data.

The empirical evidence on the relation of COVID-19 and tourism for Switzerland is scarce. Most studies are conceptional (see e.g. Laesser et al., 2022, 2021). The empirical evidence on the impact of the COVID-19 pandemic on tourism is limited to Roller and Steiner (2021) who investigate the impact on the tourist labor market, Bandi and Roller (2020) who provide descriptive evidence for spatial heterogeneity, and Kraenzlin et al. (2020) who provide descriptive evidence for spatial heterogeneity in the impact on touristic consumption. Funk et al. (2022) present estimates on the effectiveness of COVID-19 measures in Switzerland which partly also relate to tourism.

This study contributes to the literature by being the first study providing a location choice model incorporating five pre-crisis determinants and rigorously identified and quantified evidence on the effect of these determinants on the resilience of local tourism.

2 Model

Suppose there are two countries $c \in \{A, B\}$ where each country has a set of $\mathscr{J}^c$ destinations that number J^c. Each country is inhabited by a set of $\mathscr{N}^c$ inhabitants that number N^c. The overall number of tourists is then $N = N^A + N^B$. The tourists choose between all destinations in both countries. The utility that tourist i who comes from the origin country o gets from travelling to destination j at time t is:

$$V^o_{i,j,t} = U^o_t(R_j, I_j, D_j, K_j, B_{ij}, \epsilon_j) + \eta_{jit} \tag{1}$$

The utility depends on the kind of destination R_j which equals one for urban destinations and zero for rural destinations. It also depends on the size of the infrastructure I_j and the density D_j. Furthermore, it depends on the local culture K_j and an origin country B specific attraction parameter for destination j B_{ij}. ϵ_j is an unobserved general taste parameter for destination j capturing size differences of the destinations not attributed to the other factors and η_{jit} an unobserved destination individual specific taste parameter. Individual i now chooses the destination z that gives the highest utility:

$$V^o_{i,z,t} \geq V^o_{i,j,t} \qquad \forall j \in \mathscr{J} \tag{2}$$

Since equation 1 contains an unobserved stochastic part, we can write the probability of individual i choosing destination z as:

$$P^o_{i,z,t} = P[V^o_{i,z,t} \geq V^o_{i,j,t} \forall j \in \mathscr{J}] \tag{3}$$

If we further assume that the error term follows Type I extreme value distribution, we can write the the probability using a conditional logit model:

$$P^o_{i,z,t} = \frac{\exp{[V^o_{i,z,t}]}}{\sum_{j=1}^{J} \exp{[V^o_{i,j,t}]}} \tag{4}$$

The expected number of visitors in destination j at $t = 0$ is then:

$$E[n_{z,0}] = \sum_{i=1}^{N} P_{i,z,0} \tag{5}$$

Now, suppose that travelling between countries becomes impossible for periods $t > 0$ due to COVID-19. Then the expected number of visitors for destination z in country A is:

$$E[n_{z,t}] = \sum_{i=1|i \in \mathscr{N}^A}^{N} P_{i,z,t} \tag{6}$$

The resilience of destination z at time t is then defined as the difference to the reference period $t = 0$:

$$E[n_{z,t}] - E[n_{z,0}] \tag{7}$$

The effect of the determinant x_k on the resilience is generally given by:

$$
\begin{aligned}
\frac{\partial E[n_{z,t}] - E[n_{z,0}]}{\partial x_k} =& \frac{\sum_{i=1|i\in\mathcal{N}^A}^{N} P_{i,z,t}^A}{\partial x_k} + \frac{\sum_{i=1|i\in\mathcal{N}^B}^{N} P_{i,z,t}^B}{\partial x_k} \\
&- \frac{\sum_{i=1|i\in\mathcal{N}^A}^{N} P_{i,z,0}^A}{\partial x_k} - \frac{\sum_{i=1|i\in\mathcal{N}^B}^{N} P_{i,z,0}^B}{\partial x_k} \\
=& \sum_{i=1|i\in\mathcal{N}^A}^{N} (P_{i,z,t}^A - {P_{i,z,t}^A}^2)\frac{\partial V_{i,z,t}^A}{\partial x_k} - \sum_{i=1|i\in\mathcal{N}^A}^{N} (P_{i,z,0}^A - {P_{i,z,0}^A}^2)\frac{\partial V_{i,z,0}^A}{\partial x_k} \\
&- \sum_{i=1|i\in\mathcal{N}^B}^{N} (P_{i,z,0}^B - {P_{i,z,0}^B}^2)\frac{\partial V_{i,z,0}^B}{\partial x_k} \\
=& \sum_{i=1|i\in\mathcal{N}^A}^{N} \Phi_{i,z,t}^A \frac{\partial V_{i,z,t}^A}{\partial x_k} - \Phi_{i,z,0}^A \frac{\partial V_{i,z,0}^A}{\partial x_k} - \sum_{i=1|i\in\mathcal{N}^B}^{N} \Phi_{i,z,0}^B \frac{\partial V_{i,z,0}^B}{\partial x_k} \\
=& \sum_{i=1|i\in\mathcal{N}^A}^{N} \Phi_{i,z,t}^A \left(\frac{\partial V_{i,z,t}^A}{\partial x_k} - \frac{\partial V_{i,z,0}^A}{\partial x_k} \right) + (\Phi_{i,z,t}^A - \Phi_{i,z,0}^A)\frac{\partial V_{i,z,0}^A}{\partial x_k} \\
&- \sum_{i=1|i\in\mathcal{N}^B}^{N} \Phi_{i,z,0}^B \frac{\partial V_{i,z,0}^B}{\partial x_k}
\end{aligned} \tag{8}
$$

Note that in the case of travel restrictions $P_{i,z,t}^B = 0$ and for small destinations with less then have of country A's visitors, $\Phi_{i,z,t}^A > \Phi_{i,z,0}^A$.

Hence, the effect on the resilience depends on how important the determinant was for country B visitors, the relative probabilities at $t = 0$ and t, and the change in preferences for the domestic tourists. I will discuss this mechanisms for the five determinants in the utility function in equation 1 separately.

The first determinant considered is an indicator whether the destination is urban or rural. It has often been claimed that city tourism developed differently during the pandemic (see e.g. Laesser et al., 2021; Bandi and Roller, 2020). But the actual evidence is only descriptive so far. It is also unclear if the underlying travel motivations or pre-crisis structural differences that are rather linked to the supply side drive these results. Formally, I can write:

$$
\begin{aligned}
\frac{\partial E[n_{j,t}] - E[n_{j,0}]}{\partial R_j} =& \sum_{i=1|i\in\mathcal{N}^A}^{N} \Phi_{i,j,t}^A \left(\frac{\partial V_{i,j,t}^A}{\partial R_j} - \frac{\partial V_{i,j,0}^A}{\partial R_j} \right) + (\Phi_{i,j,t}^A - \Phi_{i,j,0}^A)\frac{\partial V_{i,j,0}^A}{\partial R_j} \\
&- \sum_{i=1|i\in\mathcal{N}^B}^{N} \Phi_{i,j,0}^B \frac{\partial V_{i,j,0}^B}{\partial R_j}
\end{aligned} \tag{9}
$$

The first addend is likely to be negative since the demand for business meetings was reduced during COVID-19. The second addend is ambiguous. It is positive if there are comparably many domestic business tourists and negative else. The last term is negative since the share of foreign tourists in cities was higher than in rural areas before the crisis (Bandi and Roller, 2020). Overall, it is therefore likely that the overall effect is negative.

Cities host business tourists, leisure tourists, and bleisure tourists (Lichy and McLeay, 2018; Roller, 2022; Pinho and Marques, 2021). In rural areas, we mainly find leisure tourism. Thus, the travel motives between urban and rural tourists cannot be separated sharply. Therefore, attributing the well known descriptive difference in the resilience between cities and rural areas entirely to a lack of business tourism falls short. Hence, I include further determinants that capture other structural differences between cities and rural areas that I expect to explain the difference in resilience between both areas.

The second determinant is the size of infrastructure. Infrastructure is an important part of the local touristic capital that cannot be changed quickly. While the size generally offers economies of scale and therefore makes places more productive (see e.g. Dimitrić et al., 2019), many small infrastructural units could offer a larger variety that can cover different preferences and make it easier for destinations to substitute the missing international tourist with domestic tourists. Furthermore, small units could also provide better social distancing. Hence, the expected sign of the effect of infrastructure size on resilience is not clear ex-ante. Formally, I can write:

$$\frac{\partial E[n_{j,t}] - E[n_{j,0}]}{\partial I_j} = \sum_{i=1|i\in\mathcal{N}^A}^{N} \Phi^A_{i,j,t}\left(\frac{\partial V^A_{i,j,t}}{\partial I_j} - \frac{\partial V^A_{i,j,0}}{\partial I_j}\right) + (\Phi^A_{i,j,t} - \Phi^A_{i,j,0})\frac{\partial V^A_{i,j,0}}{\partial I_j} - \sum_{i=1|i\in\mathcal{N}^B}^{N} \Phi^B_{i,j,0}\frac{\partial V^B_{i,j,0}}{\partial I_j} \tag{10}$$

The first addend is likely to be negative due to the higher demand for social distancing. The second addend is ambiguous as discussed above. The last term is likely to be negative because foreign tourists rather visit places with larger infrastructure. The overall effect is therefore not clear.

The third determinant considered is the density of the destination. It is expected that tourist have a higher need for social distancing during a pandemic (Lapointe, 2020). This makes less densely populated places more attractive to tourists. While the difference between urban and rural areas is obvious, there might also be an effect within the groups. Formally, I expect the density to have a negative impact on the resilience:

$$\frac{\partial E[n_{j,t}] - E[n_{j,0}]}{\partial D_j} = \sum_{i=1|i\in\mathcal{N}^A}^{N} \Phi_{i,j,t}^{A}\left(\frac{\partial V_{i,j,t}^{A}}{\partial D_j} - \frac{\partial V_{i,j,0}^{A}}{\partial D_j}\right) + (\Phi_{i,j,t}^{A} - \Phi_{i,j,0}^{A})\frac{\partial V_{i,j,0}^{A}}{\partial D_j} - \sum_{i=1|i\in\mathcal{N}^B}^{N} \Phi_{i,j,0}^{B}\frac{\partial V_{i,j,0}^{B}}{\partial D_j} \tag{11}$$

The first addend is likely to be negative due to the higher demand for social distancing. The second addend is ambiguous. The last term is negative since the share of foreign tourists in cities was higher than in rural areas before the crisis (Bandi and Roller, 2020). The overall effect is therefore likely to be negative.

The fourth determinant is the local culture. Switzerland consists of four language regions, i.e. German, French, Italian, and Romansh. It is well known that the related cultural differences translate into different political and economic outcomes (see e.g. Eugster and Parchet, 2019; Roller and Schmidheiny, 2016). Cultural differences also mattered in the private reactions to COVID-19 (Mohanty and Sharma, 2022; Moser et al., 2021). These heterogeneous private reactions again could affect the resilience of the local tourism. I can exclude the political channel since the COVID-19 measures were the same across the country in Switzerland during the pandemic. Thus, all this indicator captures must be related to culturally influenced private actions like social distancing. Since the compliance with the COVID-19 measures were better in the non-German areas and the vaccination rates are higher there as well (Bundesamt für Gesundheit, 2022), I would expect a negative preference effect of being a German speaking destination on the resilience:

$$\frac{\partial E[n_{j,t}] - E[n_{j,0}]}{\partial K_j} = \sum_{i=1|i\in\mathcal{N}^A}^{N} \Phi_{i,j,t}^{A}\left(\frac{\partial V_{i,j,t}^{A}}{\partial K_j} - \frac{\partial V_{i,j,0}^{A}}{\partial K_j}\right) + (\Phi_{i,j,t}^{A} - \Phi_{i,j,0}^{A})\frac{\partial V_{i,j,0}^{A}}{\partial K_j} - \sum_{i=1|i\in\mathcal{N}^B}^{N} \Phi_{i,j,0}^{B}\frac{\partial V_{i,j,0}^{B}}{\partial K_j} \tag{12}$$

The first addend is likely to be negative due to the lower perceived protection from COVID-19 and the higher demand for health issues. The signs of the second addend and the last term are not ex ante clear because they depend on the pre-crisis sorting of tourists. The overall effect is ex ante ambiguous.

The fifth determinant considered is the origin country B specific attraction parameter. Note that the pre-crisis market equilibrium is determined by local supply and capital and domestic and international demand. Domestic tourists might value different local capital than international tourists (Seddighi and Theocharous, 2002) leading to different attractiveness and, therefore, heterogeneous shares of international tourists across space. Hence, we can later identify the influence of the pre-crisis local attraction differences on the recovery by regressing the market outcomes during the pandemic on pre-crisis guest structures without observing the actual heterogeneity in the local touristic capital and their different attractiveness for different groups. Formally, I can write:

$$\frac{\partial E[n_{j,t}] - E[n_{j,0}]}{\partial B_{ij}} = \sum_{i=1|i\in\mathcal{N}^A}^{N} \Phi^A_{i,j,t} \left(\frac{\partial V^A_{i,j,t}}{\partial B_{ij}} - \frac{\partial V^A_{i,j,0}}{\partial B_{ij}} \right) + (\Phi^A_{i,j,t} - \Phi^A_{i,j,0}) \frac{\partial V^A_{i,j,0}}{\partial B_{ij}}$$
$$- \sum_{i=1|i\in\mathcal{N}^B}^{N} \Phi^B_{i,j,0} \frac{\partial V^B_{i,j,0}}{\partial B_{ij}} = - \sum_{i=1|i\in\mathcal{N}^B}^{N} \Phi^B_{i,j,0} \frac{\partial V^B_{i,j,0}}{\partial B_{ij}} \quad (13)$$

The first and second addends are zero since the the group specific taste parameter of visitors from country B does not affect the relative probabilities of visitors from country A. The last term is clearly negative. Hence, I expect the overall effect to be negative. This means that destinations cannot easily substitute missing foreign tourists due to differences in the origin specific attractiveness of destinations.

3 Empirical strategy

The final goal of the empirical strategy is to estimate the impact of the pre-crisis determinants on the recovery of overnight stays using monthly municipal data from Switzerland. The general strategy is an adapted version of the event study design approach by Schmidheiny and Siegloch (2019) and estimates the following equation using OLS:

$$Y_{jt} = \alpha + \sum_{k=1}^{K} \sum_{s=1|s\notin\Omega}^{T} \beta_{sk} z_{st} x_{kj} + \sum_{k=1}^{K} \sum_{m=1}^{12} \delta_m n_{mt} x_{kj} + \sum_{s=1|s\notin\Omega}^{T} \zeta_s z_{st} + \sum_{m=1}^{12} \nu_m n_{mt} + \sum_{i=2}^{J} \gamma_i g_{ij} + \eta_{jt} \quad (14)$$

where Y_{jt} is the natural logarithm of overnight stays in municipality j at time t. x_{kj} denotes the kth determinant of interest and β_{tk} the coefficients of interest for each month considered. Hence, we will get month specific estimates which will allow me to study the dynamic development of the effect. Note that the effects are not identified for the entire sample, thus, we need to define a baseline year (Ω) which will be 2019 in our case. δ_m are month specific effects of the determinants capturing any seasonal differences between the municipalities that can be attributed to these determinant. ζ_s are time-fixed effects, ν_m month fixed effects and γ_i municipality fixed effects.

The five determinants are measured as follows: The kind of destination is captured by an indicator that equals one if a destination is an urban destination and zero if it is rural. The size of infrastructure is measured as the average number of beds per hotel in each municipality. Density is measured as the share of settlement area which gives a good measure of available open space. Culture is captured by an indicator that equals one if a municipality is mainly German speaking and zero otherwise. The unobserved foreign specific attraction is captured by the share of foreign tourists in 2019. This identifies the effect of the unobserved parameter because supply is fix in the short run while the international demand was ceased during the lockdowns as derived in section 2.

There are three key assumptions needed for the identification of the effects of the five determinants: The first assumption is a common trend assumption. It states that without the pandemic all municipalities were on the same overnight stays growth path with respect to the five determinants. Note that this assumption applies only to the jointly explained differences not to the general growth path which is allowed to differ between the municipalities. This means that we should not find significant effects of the determinants on the growth differences prior to the crisis. As indicated in section 5 this holds for all determinants.

The second assumption is that there is no different supply effect across the municipalities induced by COVID-19 that is related to the determinants. This assumption is very likely to hold since the COVID-19 measures where the same across Switzerland during the considered period. This is especially important because local policies would have likely differed due to the heterogeneous political preferences across cultures (see e.g. Eugster and Parchet, 2019; Roller and Schmidheiny, 2016) and affected the touristic outcome (Mohanty and Sharma, 2022). Thus, I have a unique setting where I can isolate the pre-existing structural effects on the demand because I can hold supply effects fixed. This is not possible for example for cross-country studies where COVID-19 measures affect the spatial differences in the resilience.

The third assumption is that there were no systematic differences in the anticipation of the COVID-19 crisis. Since COVID-19 was a world wide surprising phenomenon, the assumption is likely to hold. Furthermore, there should be anticipation effects prior to the crisis which is not the case (see section 5).

Furthermore, I am interested how much of the differences in the resilience between urban and rural areas can be attributed to the other four determinants. Therefore, I estimate equation 14 using only the urban indicator and get $\tilde{\beta}_{s1}$ for each month. $\hat{\rho} = 100\tilde{\beta}_{s1}/\hat{\beta}_{s1}$ gives the percent of explained difference where $\hat{\beta}_{s1}$ is the estimate from equation 14 using all five determinants. For the single determinant x_{lj}, I first replace the values of determinant l of the urban municipalities with the mean of determinant l of the rural municipalities:

$$
\begin{aligned}
\tilde{x}_{lj} &= x_{lj} && \forall j \in \mathscr{R} \\
\tilde{x}_{lj} &= \bar{x}_l^r && \forall j \in \mathscr{U} \\
\tilde{x}_{kj} &= x_{kj} && \forall k \neq l
\end{aligned}
$$

where

$$
\bar{x}_l^r = \frac{1}{R} \sum_{j=1|j\in\mathscr{R}}^{J} x_{lj} \tag{15}
$$

and $\mathscr{U}$ is the set of urban municipalities, $\mathscr{R}$ the set of rural municipalities, and R the number of rural municipalities.

Then I predict the outcome variable $\tilde{Y}_{jt}$ using the estimates of equation 14 and the manipulated $\tilde{x}_{kj}$:

$$
\tilde{Y}_{jt} = \alpha + \sum_{k=1}^{K} \sum_{s=1|s\notin\Omega}^{T} \hat{\beta}_{sk} z_{st} \tilde{x}_{kj} + \sum_{k=1}^{K} \sum_{m=1}^{12} \hat{\delta}_m n_{mt} \tilde{x}_{kj} + \sum_{s=1|s\notin\Omega}^{T} \hat{\zeta}_s z_{st} + \sum_{m=1}^{12} \hat{\nu}_m n_{mt} + \sum_{i=2}^{J} \hat{\gamma}_i g_{ij} \tag{16}
$$

Finally, I estimate the effects using $\tilde{Y}_{jt}$ in equation 14. This results in new estimates $\tilde{\beta}^l_{sk}$. The procedure intuitively mimics the urban municipalities being rural in the considered determinant

l. Hence, we can compare the estimates for the urban indicator $\tilde{\beta}^l_{s1}$ with the actual estimates and get the explained ratio for each factor l:

$$\hat{\rho}^l = 100\frac{\hat{\beta}_{s1} - \tilde{\beta}^l_{s1}}{\hat{\beta}_{s1}} \tag{17}$$

These ratios allow me to assess the importance of each of the four other determinant in explaining the difference in resilience between the urban and rural areas.

4 Data

My outcome variable is monthly overnight stays in 76 Swiss municipalities from January 2017 to December 2021. The 76 municipalities are the subset of the 100 largest touristic municipalities from the hotel statistic of the federal statistical office (Bundesamt für Statistik, 2022b) that comprise a balanced panel over the entire period. The 76 sample municipalities (out of 2,175) were responsible for 67% of all overnight stays in Switzerland in 2019. Apart from overnight stays and the respective origins, the data also contains information about the hotels. I match this data with data from the municipality portraits of the the federal statistical office (Bundesamt für Statistik, 2022a) that contain the area and settlement area of the municipalities needed to calculate the share of settlement area. Furthermore, I categorize the municipalities into urban and rural based on Hanser Consulting AG (2020). Finally, I match the data with the language data from the federal statistical office (Bundesamt für Statistik, 2016). Table 1 contains the descriptive statistics. Note that all data except the overnight stays is not time-varying and therefore only presented for the cross-section. The majority of municipalities are rural and German speaking. The share of international tourists in 2019 is on average 47% but it varies a lot across municipalities. The same is true for hotel size and share of settlement area.

Table 1: Descriptive statistics

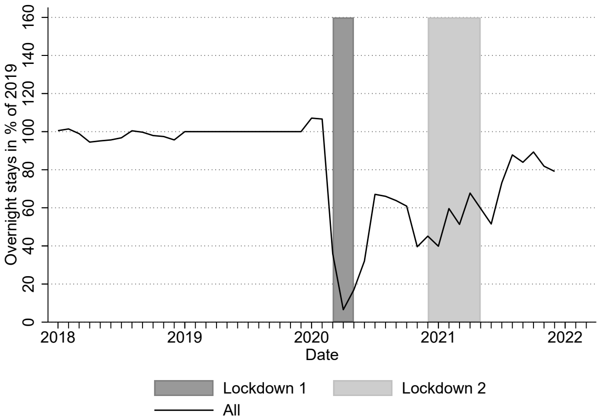
Variable	Obs	Mean	SD	Min	Max
Monthly overnight stays	4,560	24,148	39,240	27	370,484
Share international tourists (%)	76	47	19	10	88
Share EU/EFTA tourists (%)	76	26	9	9	46
Share others tourists (%)	76	21	17	1	70
Hotel size (beds)	76	80	45	38	340
Share settelment area (%)	76	23	25	1	94
Urban	76	0.20	0.40	0	1
German speaking	76	0.82	0.39	0	1

Notes: All variables except the overnight stays are time-invariant data from 2019. The language data from 2016.

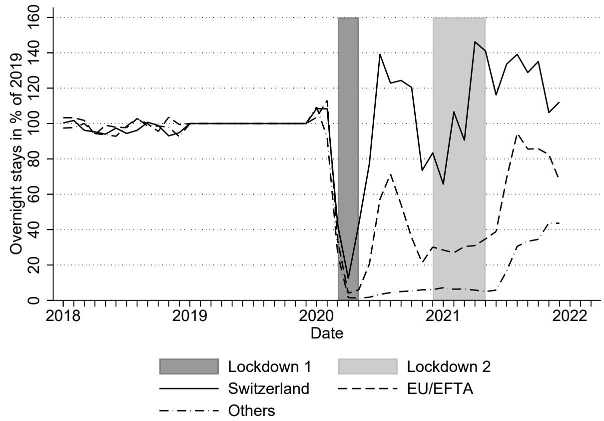
Figure 1 presents the evolution of the overnight stays in Switzerland prior to and during the pandemic. In panel (a), the overnight stays are indexed to their respective month in 2019. There is a sharp drop in March 2020 when the first lockdown was put in place in Switzerland. The drop is followed by a recovery during the following summer to about 70% of the pre-crisis level. The second lockdown in Winter 2020/21 had again a negative effect but only moderately. This is mainly due to the ski areas which were open in Switzerland unlike in the neighboring countries. Panel (b) splits the overall overnight stays into overnight stays from Switzerland, EU/EFTA area, and other origins. One can clearly see that, in 2020 and 2021, the overnight stays from Switzerland exceeded the overnight stays of 2019 when there was no lockdown. The overnight stays from Europe recovered outside the lockdowns to almost 100% again in August 2021. The overnight stays from other origins did not start to recover prior to summer 2021. The different patterns are not surprising given the different travel restrictions in place (c.f. Cheng et al., 2020). Panel (c) already indicates that the recovery in urban areas was slower than in rural areas. However, this is only true on average. Panel (d) plots a map of the index for the single municipalities in July 2020. It depicts not only differences between rural and urban areas but also within the respective groups. Hence, there must also be other differences between the municipalities except the location that generate spatial differences in the resilience. I investigate these differences in detail in the following section.

Figure 1: Overnight stays in Switzerland

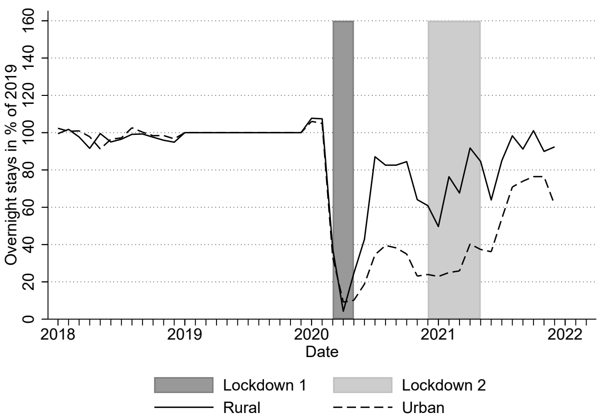
(a) Total



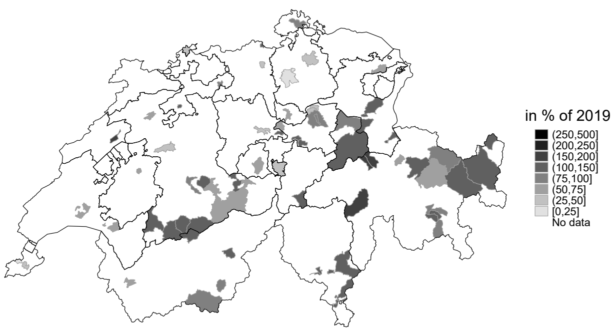
(b) By origin



(c) By place



(d) Recovery by place



Notes: Panel (a) shows the monthly overnight stays in Switzerland as in percent of the respective month in 2019. Panel (b) shows the monthly overnight stays in Switzerland as in percent of the respective month in 2019 by the tourists' origin. Panel (c) shows the monthly overnight stays in Switzerland for rural and urban municipalities separately as in percent of the respective month in 2019. Panel (d) shows the recovery of overnight stays in Switzerland in July 2020 as in percent of July 2019.

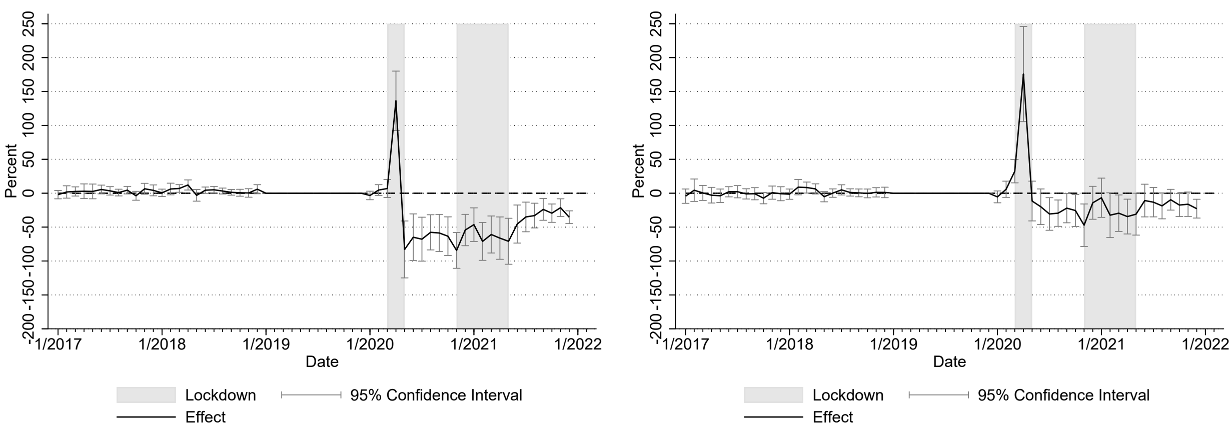
5 Results

5.1 Estimation results

Figure 2 presents the results for the differences in the recovery between urban and rural municipalities. Panel (a) shows the effect estimating equation 14 but using the urban indicator as only determinant. By construction there are no estimates for the year 2019 because these months are the reference months. Prior to 2019, there are no significant differences in the growth rates between urban an rural places. Hence, the assumption of parallel trends is likely to be satisfied. During the first lockdown there is a positive effect of being urban in April. This effect is explained by the international guests that could not travel during the lockdown and were stuck in city hotels. Although hotels did have to close during the lockdown most other hotels had only few guests or closed voluntarily. This results in the large percentage difference. After the lockdown, there are strong negative effects of about 75% until spring 2021. This means that in this period the recovery of the urban areas was only one fourth of the rural areas. In 2021, the difference shrinks gradually. Given panel (c) of figure 1, these descriptive findings are not surprising. However, if I add the other determinants to the estimation equation, I get a different picture. The pre-trends are still parallel and the spike in April 2020 still exists but the effect of being urban on the recovery reduces to about 25%. Hence, the other determinants can explain parts of the descriptive difference in the recovery rates between rural and urban areas in Switzerland.

Figure 2: Effect of urban on recovery

(a) Without controls **(b)** With controls

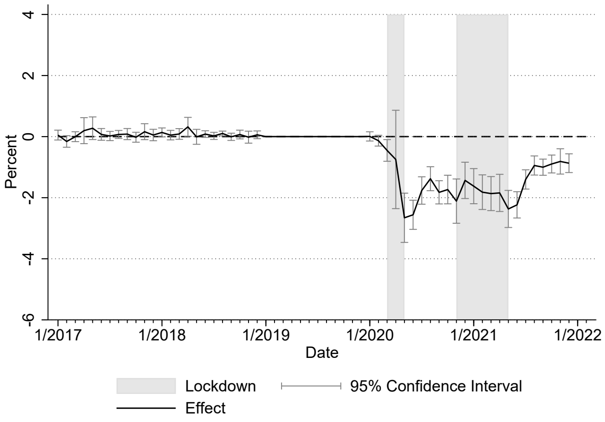


Notes: (a) Difference in the recovery of the hotel overnight stays between rural and urban areas without considering other determinants. 4,560 observations. (b) Difference in the recovery of the hotel overnight stays between rural and urban areas considering all determinants. 4,560 observations. All confidence intervals are based on cluster-robust standard errors with municipalities as clusters.

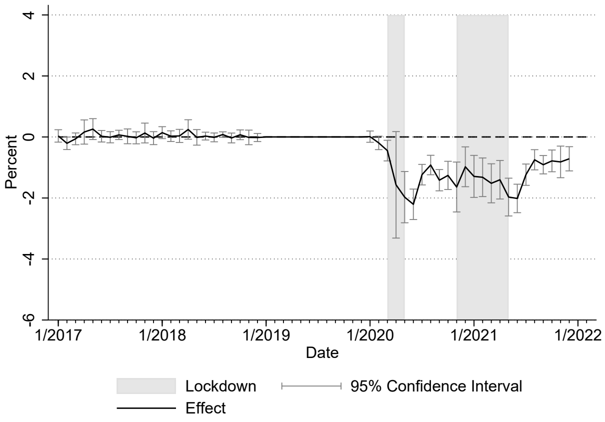
The second determinant considered is the share of international tourists in 2019. The results are presented in figure 3. Panel (a) shows the results excluding all other determinants from the estimation equation. One percentage point more international tourists reduced the recovery by about two percent until spring 2021. The effect strongly reduces in 2021 with the return of the international tourists. This rather descriptive evidence only slightly reduces when including the other determinants to the estimation equation. This means that places with a high pre-crisis share of international tourists could not substitute them with domestic tourists. This also holds if I estimate the equation for urban and rural areas separately as panels (c) and (d) indicate. Hence, the effect is not only due to the general difference in the touristic supply between urban and rural areas but to a very large extent due to differences between the municipalities within each group. Even more light is shed on this issue if I consider the share of European and tourists from overseas separately as in panels (e) and (f). There is no effect of the share of European tourists but strong negative effect of the share of tourists from overseas. Hence, the missing European tourist could be substituted by Swiss tourists during 2020 and 2021 but not the overseas tourists. This is consistent with the hypothesis that the observed differences are due to general long-run supply structures being mainly attractive to tourists from outside Europe. This follows from the argument that European tourists have rather similar preferences to Swiss tourists than tourists from overseas (see e.g. Maeda et al., 2016).

Figure 3: Effect of share of international tourists on recovery

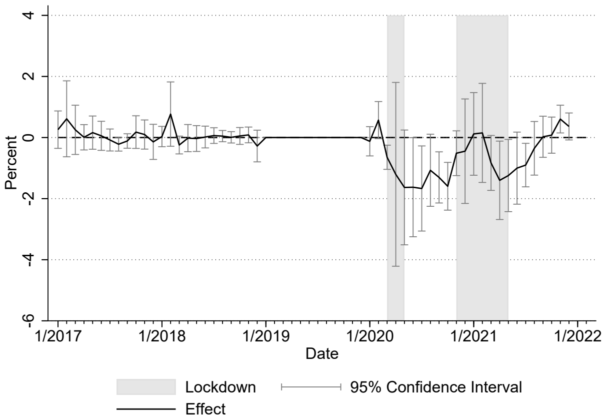
(a) Without controls



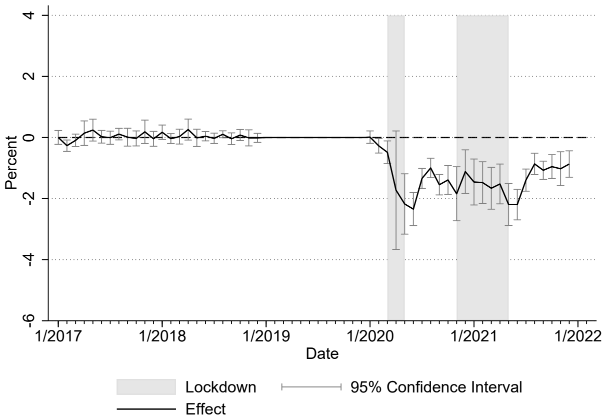
(b) With controls



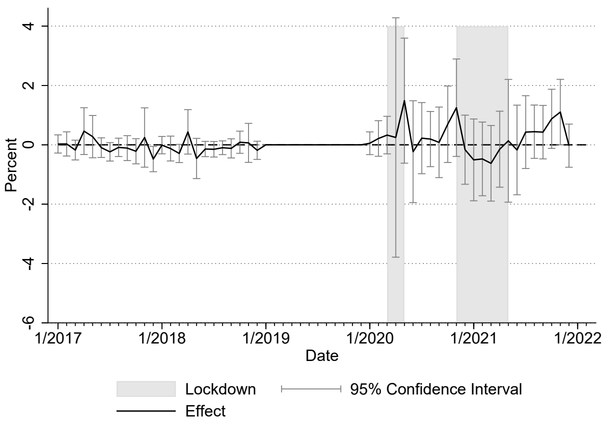
(c) With controls - urban areas



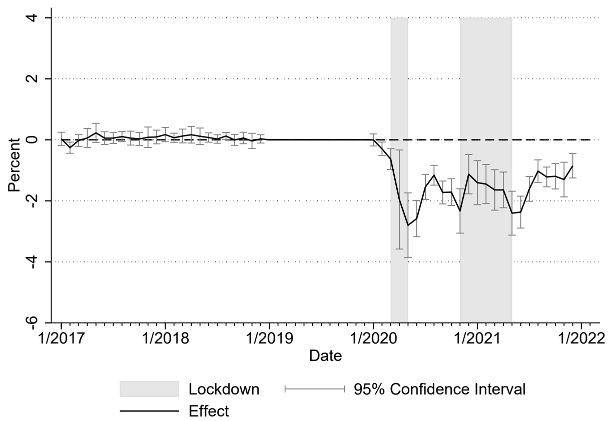
(d) With controls - rural areas



(e) With controls - EU/EFTA



(f) With controls - Other origin



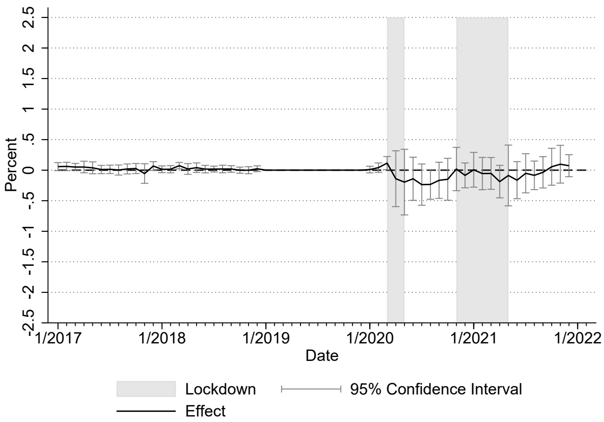
Notes: (a) Effect of the share of international tourists in 2019 on the recovery of the hotel overnight stays without considering other determinants. 4,560 observations. (b) Effect of the share of international tourists in 2019 on the recovery of the hotel overnight stays considering all determinants. 4,560 observations. (c) Effect of the share of international tourists in 2019 on the recovery of the hotel overnight stays for urban areas considering all determinants. 900 observations. (d) Effect of the share of international tourists in 2019 on the recovery of the hotel overnight stays for rural areas considering all determinants. 3,660 observations. (e) Effect of the share of tourists from EU/EFTA in 2019 on the recovery of the hotel overnight stays considering all determinants. 4,560 observations. (f) Effect of the share of tourists from outside Switzerland/EU/EFTA in 2019 on the recovery of the hotel overnight stays considering all determinants. 4,560 observations. All confidence intervals are based on cluster-robust standard errors with municipalities as clusters.

The third determinant is the average hotel size in the municipalities. Panel (a) of figure 4 indicates that there is no overall effect. However, according to panel (c), there is a negative effect within the urban areas. This could indicate that cities with large hotels had even more problems to fill them than cities with smaller hotels. This effect could be driven by missing events like fairs where cities typically have large hotel capacities with lower occupancy rates during the year (see e.g. Roller, 2022). For rural areas, the effect goes into the opposite direction but is not significant for most of the months. This might be caused by the fact that small hotels in the rural areas had higher occupancy rates prior to the crisis and therefore less capacity to absorb more tourists.

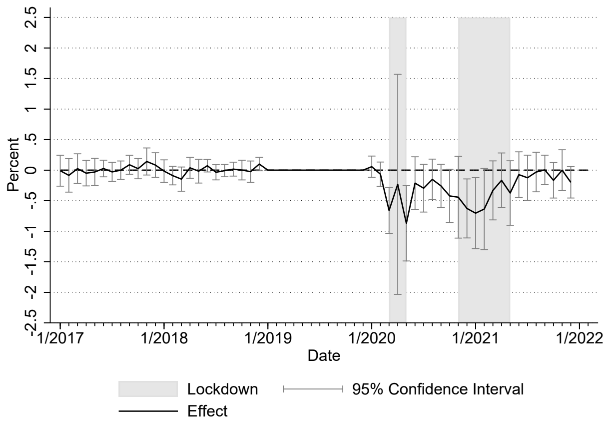
The fourth determinant is the share of settlement area. Overall, there are negative effects but they are only significant during the second lockdown as one can see in panel (b). Panels (d) and (f) indicate that this effect comes from the urban areas, not from the rural areas. Hence, tourists preferred destinations with more space, especially during pandemic peaks, but there is a satisfactory level of space which is met by all rural areas.

Figure 4: Effect of other structures on recovery

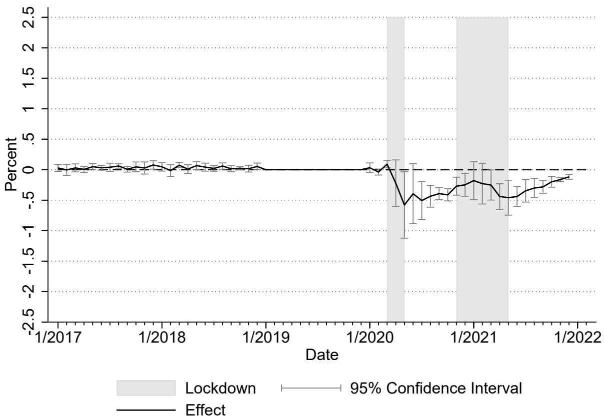
(a) Hotel size



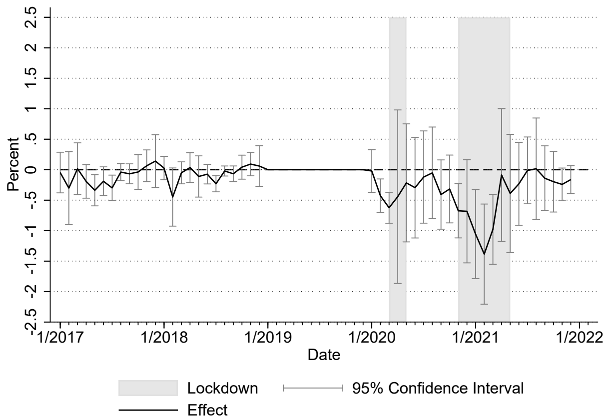
(b) Share of settlement area



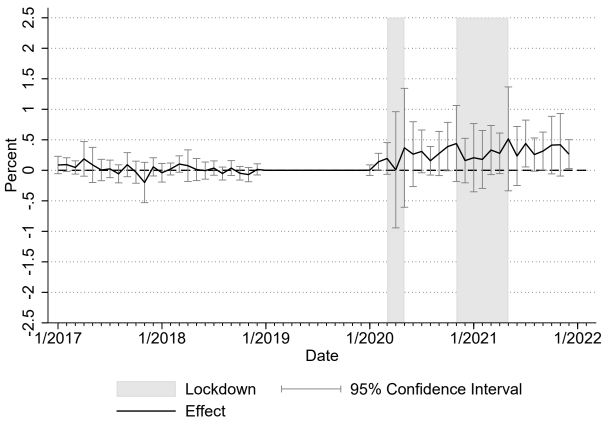
(c) Hotel size - urban areas



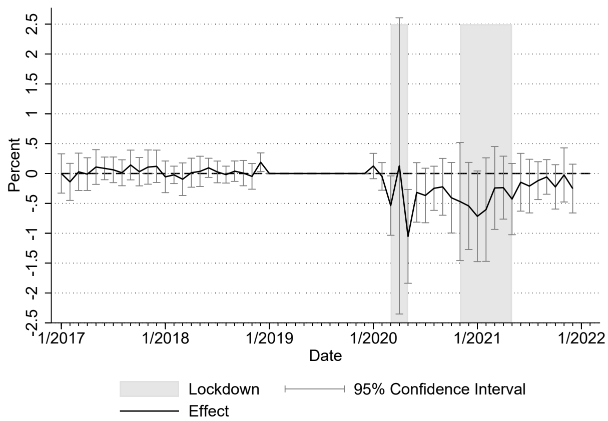
(d) Share of settlement area - urban areas



(e) Hotel size - rural areas



(f) Share of settlement area - rural areas

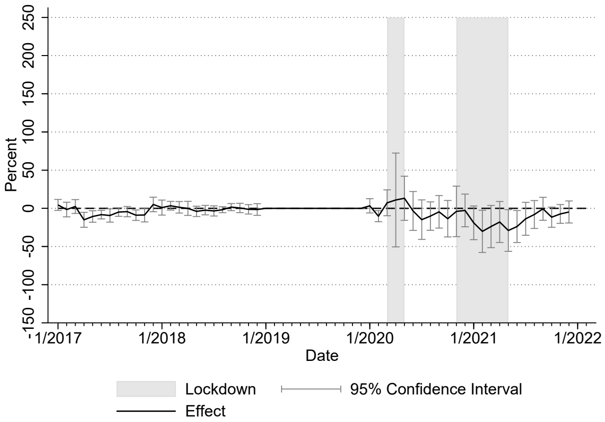


Notes: (a) Effect of hotel size on the recovery of the hotel overnight stays considering all determinants. 4,560 observations. (b) Effect of share of share of settlement area on the recovery of the hotel overnight stays considering all determinants. 4,560 observations. (c) Effect of hotel size on the recovery of the hotel overnight stays for urban areas considering all determinants. 900 observations. (d) Effect of share of share of settlement area on the recovery of the hotel overnight stays for rural areas considering all determinants. 900 observations. (e) Effect of hotel size on the recovery of the hotel overnight stays considering all determinants. 3,660 observations. (f) Effect of share of share of settlement area on the recovery of the hotel overnight stays considering all determinants. 3,660 observations. All confidence intervals are based on cluster-robust standard errors with municipalities as clusters.

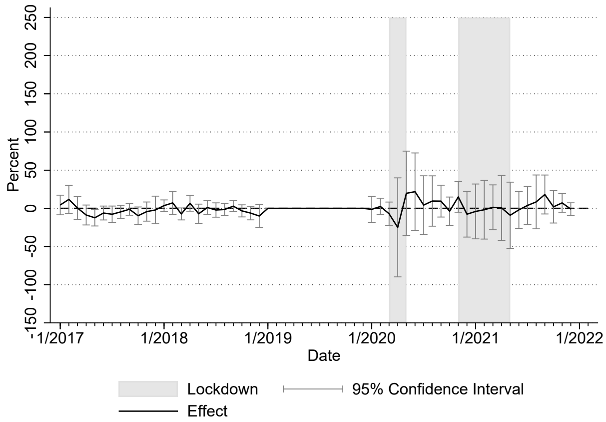
The results for the fifth determinant, culture, are presented in figure 5. In none of the specifications, there are significant effects. Hence, cultural aspects related to the language region do not drive the differences in the recovery rate. Note that these results reflect the local private supply differences because the COVID-19 measures were the same across all municipalities during the time considered. These findings are in line with Okafor and Yan (2022) who neither find effects for vaccination differences between countries that are likely due to cultural differences. This means that tourists did not consider private behavior of locals with respect to COVID-19 in the choice of their tourism destination. The results would likely differ if there had been local COVID-19 measures (see e.g. Eugster and Parchet, 2019) which are well know to affect travel behavior (Mohanty and Sharma, 2022).

Figure 5: Effect of culture on recovery

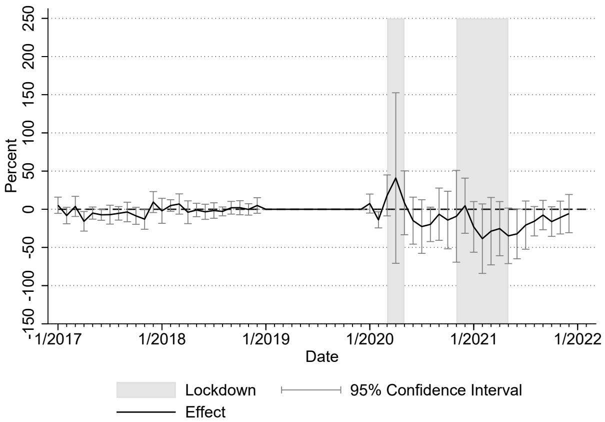
(a) German speaking



(b) German speaking - urban areas



(c) German speaking - rural areas



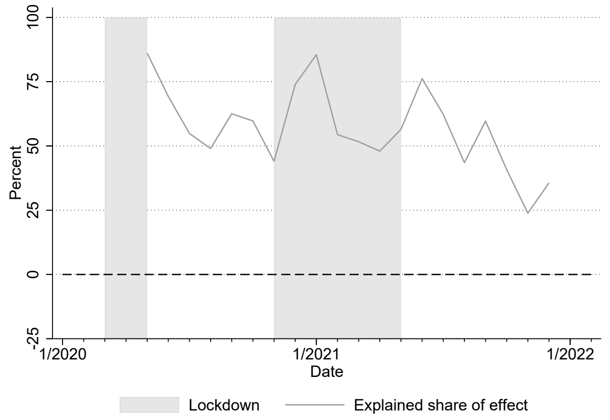
Notes: (a) Difference in the recovery of the hotel overnight stays between German speaking and other municipalities considering all determinants. 4,560 observations. (b) Difference in the recovery of the hotel overnight stays between German speaking and other municipalities for urban areas considering all determinants. 900 observations. (c) Difference in the recovery of the hotel overnight stays between German speaking and other municipalities for rural areas considering all determinants. 3,660 observations.

5.2 Explanatory power

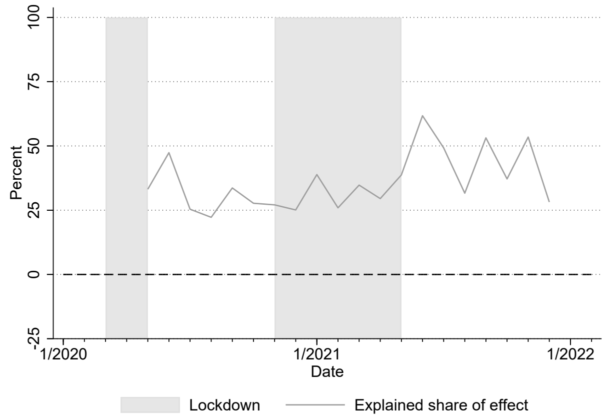
My findings indicate that except for culture the determinants at least partly resulted in significant estimates. Yet, the size of the estimates of the different determinants are hard to compare since the determinants are all scaled differently and their distribution across municipalities matters for their interpretation. Therefore, I followed the procedure described in section 3 in order to evaluate how much the other determinants help to explain the descriptive difference in the rate of recovery between rural and urban areas. The results are presented in figure 6. The four determinants can explain 50% to 75% of this difference as indicated in panel (a). However, the explanatory power is declining as is the difference to explain in 2021. 25% up to 50% of the difference is explained by the 2019 share of international tourists as depicted in panel (b). Hotel size only explains about 10% (panel (c)) but these effects were not significant on the aggregate level. Panel (d) shows that the share of settlement area explains up to 50% of the difference especially during the second lockdown but only about 10% outside this lockdown. Culture has no explanatory power as can be seen in panel (e). Hence, the pre-crisis guest structure that measures the destination specific attractiveness for international tourists explains most of the difference in the recovery between rural and urban areas.

Figure 6: Share of explained effect

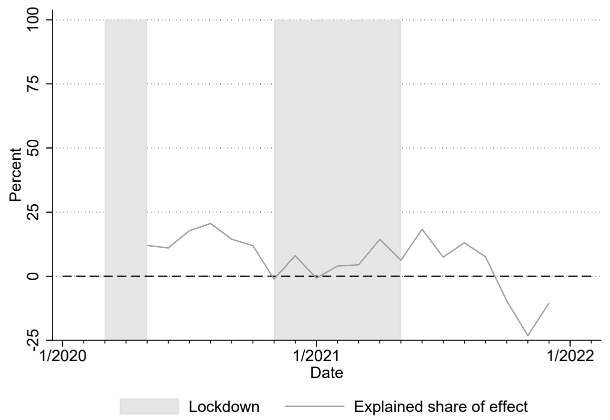
(a) All factors - relative



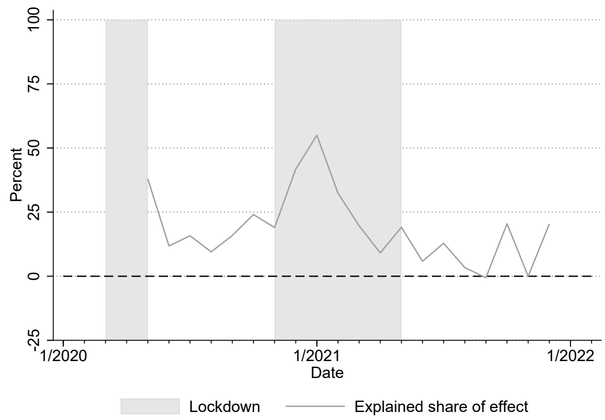
(b) Share if international tourists



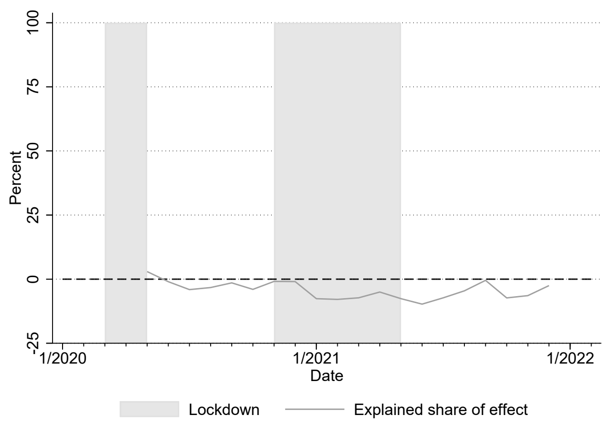
(c) Hotel size



(d) Share if settlement area



(e) German speaking - rural areas



6 Discussion

I observe spatial differences in the recovery rates of overnight stays in Switzerland. These differences are pronounced between urban and rural areas but also within both groups. My empirical results indicate that hotel size and culture only play a minor role explaining spatial differences in the recovery rate. The share of settlement area seemed to be important during pandemic peaks where tourists aimed for social distance. However, there was something like a satisfactory space which is guaranteed by all rural municipalities. The destination specific attractiveness for international tourists measured by the pre-crisis guest structure is the most powerful explanatory determinant of spatial differences in the recovery rate, especially between rural and urban areas. The factor explains up-to 50% of the difference and is much larger as the unexplained part which can be attributed to unobserved general differences in the kind of destinations like business, cultural, or leisure destinations. This means that destinations were not able to substitute their missing overseas tourists by domestic tourists because the local touristic supply did not meet the preferences of Swiss (and European) tourist. Since the general supply of touristic infrastructure is fix in the short-run, there is no possibility to change it quickly during crises. Also marketing activities and other short-run supply activities obviously could not overcome this discrepancy between local supply and preferences of domestic tourists. Hence, the target market of tourist destinations is one of the most important factors in establishing future short-run resilience.

7 Conclusion

In this study, I develop a destination choice model incorporating five location specific and location tourist specific pre-crisis determinants to study the impact of these determinants on the resilience of tourism. The determinants are the kind of destination (rural vs. urban), the pre-crisis origin country specific attractiveness of the destination, the infrastructure size, the density, and the local culture. Switzerland provides a natural laboratory for to study the effects of the determinants on the resilience of tourism because there exists a huge variation in the combinations of all these determinants across different touristic destinations while the COVID-19 measures were the same all over Switzerland during the major time of the pandemic. I apply an event study approach (c.f. Schmidheiny and Siegloch, 2019; Roller, 2022) using data

on overnight stays from 76 Swiss municipalities combined with data on the determinants.
I find that urban areas had an up to 75% percent lower recovery level. However, I can show that about half of this difference is due to their pre-crisis share of international guests, i.e. due to their pre-crisis origin specific attractiveness. About one fifth of the difference is due to the higher density of the municipalities. Infrastructure size has an ambiguous impact on the recovery level and the size is small. Cultural differences do not play any role, i.e., tourists did not consider spatial differences like the private handling of COVID-19 when choosing their touristic destination. Most effects also hold within the groups of rural and urban destinations. Furthermore, I can show that the pre-crisis origin country specific attractiveness explains most of the difference in the recovery between urban and rural destinations and not other unobserved determinants like the fact that urban areas have higher shares of business tourism and rural higher shares of leisure tourism.
My results imply that internationally focused destinations could not substitute the missing tourists from overseas with domestic tourists due to the unobserved differences in the local touristic supply that did not meet the domestic tourists' preferences. This local touristic supply is mainly defined by infrastructure, which cannot be adapted quickly during pandemics. The results, furthermore, suggest that the negative effect could not effectively be moderated by other activities like marketing. Hence, the choice of the target markets and the respective long-run local touristic capital are crucial for the resilience of local tourism. Consequently, tourism destinations should take these effects into account in their strategic considerations. Further research is needed to estimate which factors mainly govern the origin country specific attractiveness.

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