Agglomeration and performance in Norwegian tourism

by

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Abstract

Natural-based attractions are central for Norwegian tourism. Northern lights, rugged arctic landscapes, fjords and mountains, rural areas with culture landscapes are all part of the Norwegian experience. However, Norwegian tourism businesses, particularly in rural areas, struggle to gain profitability. High-cost level and seasonality impose challenges to tourism firms. As the attractions are mainly nature-based and located along the coast, the country is also a thriving destination to cruise tourism. The growth in cruise tourism is mostly due to increased competitiveness of cruises relative to other modes of travel, food, and accommodation services. For the fjord and coastal destinations, cruises bring in large volumes of tourists to the benefit of many tourist suppliers, but they also compete with onshore services. Moreover, the tourism experience relies on construction of a seamless product – as opposed to many other industry sectors, competitiveness goes beyond intra-market concerns, as each firm in the tourism agglomeration rely on its collective competitiveness. Since production and consumption is geographically localized, the limited product range is a disadvantage to many rural destinations. Rural destinations may also be more prone to seasonal variations, since unlike urban destinations they do not benefit from wider market segments and activities in the off season.

This thesis sheds light on these issues by recognizing the external effects that arise from geographically localized production. Market characteristics on the supply and demand sides spill over to other firms in the same area and to adjacent areas. The availability of register data on tourism firms, accompanied by refined regression techniques enables spatial analysis of tourism development. In the context of cruise tourism, a spatial econometric model is applied to investigate the effect of cruise tourism on onshore HORECA (hotels, restaurants, cafés, and similar) firms. The results indicate modest, but significant and positive effects of cruise tourism on demand of onshore firms.

Urbanization is of particular relevance to tourism because of the localized nature of production, as well as of the implications of product range on competitiveness. Our results are in line with the presumption that population growth is strongly associated with decreased seasonality. Moreover, seasonal variations, approximated by sold guest nights, is detrimental to revenue of accommodation firms. Attractions in the off season appear more promising than prolonging the peak season, which is supported by the finding that areas that have seized the opportunity of developing skiing tourism have found a successful remedy to revenue deterioration. The external effects of revenue management decisions should not be neglected; first, we see empirically that hoteliers respond to falling demand in the off season not by dropping prices, but rather by allowing the occupancy rate to fall. Secondly, as we find that diversity

of tourism firms associates strongly and positively with firm survival, more refined pricing decisions, that also encompass a broader destination-specific perspective is called upon.

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1 Introduction

The economic contribution of tourism in Norway is increasing. Since the development of the early tourist destinations in rural Norway nearly two centuries ago (Sletvold, 1993), tourism has developed into a major business sector, employing 171 200 people in urban and rural communities in 2019, according to Innovation Norway (2021). The share of tourism in Norway's mainland GDP is 4,1% as of 2018.[1] Although tourism plays a lesser role with respect to its direct economic contribution to the economy, it is a sector that generates high employment.

As a tourist destination, the attractions of Norway have always included the fjord landscape, which drew European travelers centuries ago (Sletvold, 1993). Now, the range of offerings and attractions have been expanded, spanning a range of nature-based products such as the northern lights, glacier trips, whale safari and mountain hiking to urban centers with cultural attractions and gastronomy (Björk, Prebensen,

[1] Statistics Norway. Mainland GDP excludes the economic contribution of the offshore oil and gas industry.

Räikkönen, & Sundbo, 2021; Furunes & Mykletun, 2012; Mehmetoglu, 2007; Smith & Strand, 2011).

Despite of its attractive nature scenery and cultural attractions, the Norwegian tourism sector faces complex challenges linked to sustainability and profitability (Oklevik et al., 2019). The relatively short tourist season mandates tourist businesses to have cost-efficient production and high-capacity utilization during the peak season to avoid ending up in the red in the accounting records (Sikveland, Xie, & Zhang, 2022; Zhang & Xie, 2021). Many firms in core sectors such as accommodation and food experience struggle to gain profitability, particularly outside major cities as main attractions are nature-based and seasonal demand variations more prominent. The tourism sector displays weak profitability compared to other industry sectors in Norway as shown in Figure 1 below (Tveteraas & Xie, 2022). Falk, Tveteraas, and Xie (2021) reaffirm this pattern comparing tourism with other industries with a more detailed breakdown of economic indicators on productivity, profitability, and industry structure.

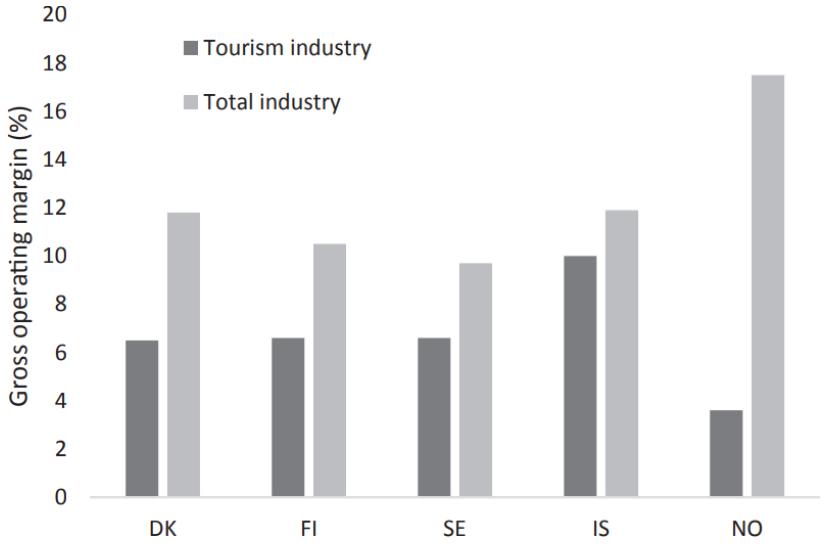

Figure 1. Average gross operating margins in the tourism industry and all industries, compared to Denmark (DK), Finland (FI), Sweden (SE), and Iceland (IS) (Tveteraas and Xie 2022; Eurostat).

While the difference in gross operating margin between the two sectors is four-fold in Norway, the difference in other Nordic countries is smaller. The countries differ in composition of industry sectors, with the Norwegian industrial sector depending highly on oil and gas production and its related service-industries. The oil and gas driven economy has stimulated the hotel and food sectors in Norway (Bjørnland & Thorsrud, 2015), but at the same time the inflationary effects on costs and prices have led to crowding-out effects on international tourism to Norway (Xie & Tveterås, 2020). International tourists tend to stay longer in a destination and buy a wider range of products and services. This

behavioral pattern implies that the development of product offerings in a destination becomes more restricted without them. Nonetheless, Larsen and Wolff (2019) show that domestic tourists in Norway are among the top spenders, which indicates that an economically sustainable tourist industry need not rely on inbound visitors.

Another relevant point is that the high wage level in Norway puts a strain on profitability in labor-intensive industries such as tourism. Tourism labor has historically been regarded relatively low-skilled, but increased importance of tourist experiences as a travel motive as well as higher requirements of quality in product delivery is making tourism increasingly dependent on formal competence (Innovation Norway, 2021).

The strong Norwegian kroner and overall high price level have made Norway comparatively one of the most expensive destinations internationally. Norwegian tourism has become more competitive internationally since 2014 due to the oil price shock and subsequent depreciation of the Norwegian krone (Xie & Tveterås, 2020). In 2014, Norway was ranked as the country with the highest cost of living globally with an index value of 144.[2] Two years later the cost-of-living index dropped to 100 placing Norway on a fourth place. Importantly, a

[2] Numbeo.com

weakening of the currency has aligned the cost levels in Norway closer to its Nordic neighbors Denmark, Finland, Iceland, and Sweden.

The downside of the contraction of the oil-dependent economy was reduced business-driven demand for hotel and food services, especially in those regions strongly dependent on the oil industry. Nonetheless, this has opened opportunity spaces for the tourist and leisure tourists markets to develop more products linked to tourist experiences (Grillitsch & Sotarauta, 2020). The increased attention of research on tourist experiences in a Nordic context during the last five years may also be indicative of the growing importance of the experience economy in Norway (Björk et al., 2021).

Cruise tourists represented a significant share of pre-COVID19 inbound tourists to Norway (Skrede & Tveteraas, 2019). The volume of cruise tourists increased significantly compared to the number of sold guest nights at Norwegian hotels, see Figure 2. Cruise tourists spend a large proportion of their budget on accommodation and food onboard, and represent only negligible word-of-mouth effects that could possibly act to enhance demand (Larsen & Wolff, 2016). In this sense, international cruises shelter their passengers to some extent against the high-cost level in Norway, while at the same time providing access to its most prominent nature attractions, including the fjords and Northern lights.

Figure 2. Million hotel guest nights and cruise day visitors in Norway (Statistics Norway; Cruise Norway).

A benefit to the Norwegian tourism sector of cruises is that it allows the development of experience tourist products. The cruises provide more volumes of guests that want to participate in activities when they are onshore. In this sense, the cruise industry has played an important role of developing more tourist products. As a result, even if cruises have modest economic impact (Skrede & Tveteraas, 2019), they contribute to build a more competitive tourism destination.

The cruise industry is working to extend the season, particularly by tapping into the market for Northern lights. Compared to Norwegian

tourists, international inbound tourists prolong the season and many destinations have sought to utilize the opportunities of the winter season. Northern lights appear promising concepts in the further development of Norwegian tourism (Heimtun, Jóhannesson, & Tuulentie, 2014). It is hard to tell whether cruise tourism provides a solution, as the cruise lines to a larger extent are exploring the winter season. For now, cruise tourism to Norway is still a peak season phenomenon, but its incursions into winter tourism is a positive development.

Seasonality is more of a challenge in rural areas, as tourism firms in the larger cities have alternative market segments to rely on in the off season. A shorter season complicates stable production, increasing the probability of business failure (Falk & Hagsten, 2018). It is therefore a concern that urbanization will be detrimental to tourism businesses in rural areas. Tourism businesses are not limited to hotels, restaurants, and activities, but to some extent also include grocery stores and other retail, financial services, gas stations, and a wider variety of accommodation such as bed and breakfast. In addition to business travelers, segments such as the Visiting Friends and Relatives (VFR) constitute important demand in the off season (Backer, 2012). Reduced year-around travel activity of these non-tourist segments induced by increased urbanization may jeopardize the wider supply of the tourism product available in the major tourism season.

Tourism products are characterized by their variety of complementing goods and services, and even more distinctively by their perishable nature of consumption: Services not consumed are foregone, and consumption is geographically localized. With regards to inputs, tourism is labor intensive and, except from management, relies strongly on a migratory workforce (Lundmark, 2006). The migratory workforce is driven by a variety of motivations, including lifestyle (Iversen & Jacobsen, 2016). The mobility of workers offers advantages to tourism firms with respect to increased flexibility, which helps to alleviate the challenges of a seasonal demand. But a migrant workforce also provides a smaller consistent labor pool, which in turn may result in an upward pressure on labor costs. The migratory nature of the workforce also makes it challenging to develop skills, experience, and training.

Moreover, major production is often geographically concentrated at tourist attractions. According to Innovation Norway (2021), while Norwegian tourism manifests its credibility of attracting tourists by natural attractions, it fails to meet expectations with regards to cultural attractions such as art, history and local food. Norway holds world renowned artists like Grieg, Munch, and Ibsen as well as top culinary chefs and prime food ingredients. There is a potential to further incorporate art and gastronomy in the travel experience, as emphasized in the national tourism strategy (ibid.). Tourists' preferences differ, and even the same tourist's preferences may change from day to day.

Moreover, Larsen, Wolff, Doran, & Øgaard (2019) show that tourists want a combination of the familiar and unfamiliar in their tourist experiences. In the end, tourists' preferences are not easily compartmentalized into neat tourist segments, but are more complex and difficult to disentangle (Øgaard, Doran, Larsen, & Wolff, 2019). Therefore, as a tourist destination Norway runs the risk of missing out on market potential by operating with narrow and traditional understanding of the different tourist segments.

Tourists demand a composite of products and services, which implies that localized provision of accommodation, food, transportation, and other services is needed. Destinations also become more competitive if they can provide a greater variety of tourism product substitutes. For example, by offering different types and locations of hotels, motels, camping sites and other accommodation, a destination appears more attractive to different tourist segments (Canina, Enz, & Harrison, 2005). This can lead to self-reinforcing processes for destination development in the sense that it becomes more attractive for firms with a greater variety of service offerings to locate there, which again provides positive feedback effects for tourism demand (Arthur, 1996). How localization affects the supply and demand sides is still less studied in service industries like tourism than in manufacturing (Majewska, 2015).

A feature of many rural tourist destinations is that the variation in tourist services supplied is limited in each market, and more thinly populated

areas are prone to specializing in few activities (Novelli, Schmitz, & Spencer, 2006). To be viable, many tourist businesses depend on a larger market base than that of the inbound visitors. The local population is often required to be of a certain size to serve as a sufficient market base to create profitable businesses. In rural areas, suppliers of the tourism products that are complements are often so spread out geographically that in practice it is difficult to consider them complementary products at all, since the cost of going from one to the other outweighs the use or experience value of the service. People therefore rarely do more than stopovers in many of these rural places rather than stayover.

The provision of services is obviously important for the performance of a destination. Tourism supply is characterized by large numbers of micro, small, and medium sized firms, operating in markets with relatively low entry costs. Due the considerable share of sunk cost in hotel building constructions, even for hotels the exit of one operator is often replaced by the entry of another. Small businesses with their entrepreneurial and labor-intensive production require little resources and experience to adapt to the market (Szivas, 2001). However, they also face the challenges associated with rapidly changing demand and may suffer from large exit rates.

Tourism consists of a large spectrum of heterogeneous business activities that compete, but also cooperate indirectly. In bigger destinations, larger pools of labor are generated in such an ecosystem, and innovations and

knowledge diffuse more easily (Shaw & Williams, 2009). There are also negative effects in a destination which businesses may suffer from, such as congestion and reduced profit margins due to competition, that may increase the probability of firm failure (Oklevik et al., 2019). A more thorough investigation is needed on how businesses interact with similar, competing firms, as well as dissimilar, complementary firms. A closer investigation of the determinants of business failure will provide a better understanding of how market characteristics affects performance and survival in a business ecosystem.

The introduction section provided a discussion of several main issues in Norwegian tourism. The next section will provide an overview of the relevant theoretical topics to this thesis, including the theory of agglomeration and geographical spillover. Section 3 provides a description of data and methods. Section 4 identifies the most important contributions, as well as limitations and proposed areas of future research.

1.1 Research aims and contributions

The aim of this thesis is to investigate the role agglomeration of firms plays in tourism business profitability in a small coastal country like Norway. Cruise has become prominent in Norwegian tourism and may

provide benefits to rural communities. Tourism is highly localized, and benefits may also spill over to neighboring areas. A tourism region constitutes a larger geographical network with crossing agglomeration structures as well as pertaining geographic spillovers (Majewska, 2015). So far, spatial effects have been largely overlooked in the tourism literature (Yang Yang & Fik, 2014). Particular interest will be devoted to externalities of agglomeration, with an attempt to distinguish such effects on the supply and demand sides, and to assess the performance of tourism firms in more and less agglomerated areas.

As such, the thesis aims to answer the following three research questions:

1) How does agglomeration of cruises' ports-of-call influence demand of local hotels, restaurants, and cafés?
2) How are Norwegian tourism agglomerations affected by seasonal demand variations?
3) How does tourism firm diversity at a destination influence firm survival?

2 Theoretical framework

2.1 Study setting

Tourism has been an increasingly important sector to Norway, now employing 7.1 percent of workers in the onshore economy as of 2018. The HORECA sector (hotels, restaurants, cafés, and similar) employs nearly half of the tourism workforce, see Figure 3, even in a wider tourism sector perspective also including buses, taxis, street cars, railway, ships, and ferries. Moreover, tourism in general employs a vast number of people, particularly in Oslo, where 50 000 people – in a municipality with approximately 670 000 inhabitants – work in the tourism sector. Northern Norway is the region with the highest share of employees in tourism, see Figure 4.

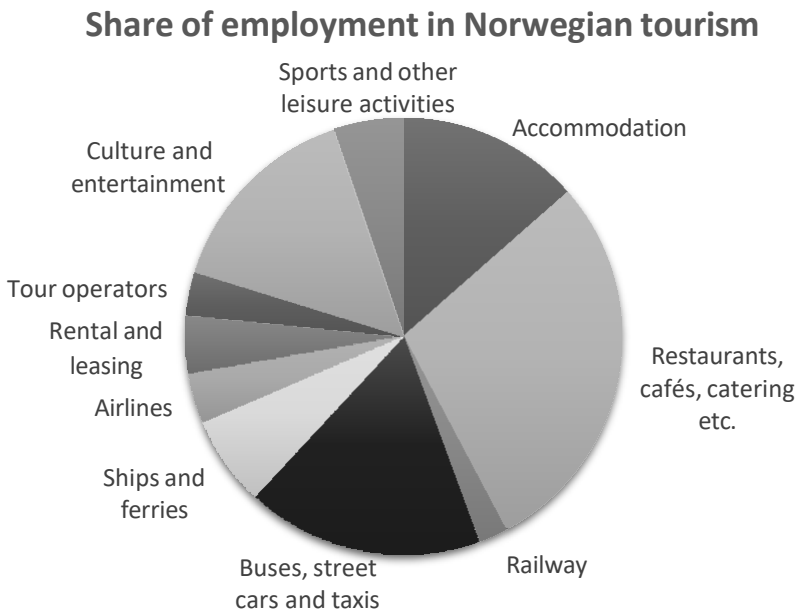

Figure 3: Share of employment in Norwegian tourism as of 2018, by sector. Source: Statistics Norway.

The composition of domestic and foreign inbound tourists differs greatly from region to region. The largest share of foreign tourists in 2018 is found in the Western part, with a 65% share, while Oslo and Akershus counties recorded a 47% share, the second largest. The remaining Eastern parts, together with Northern, Southern and Mid-Norway, on the other hand, have Norwegians as a large majority of inbound tourists (Innovation Norway, 2018b). The age composition also differs considerably across Norwegian regions, and the pattern is quite similar for domestic and foreign inbound tourists: While the Western and Southern parts attract an approximate 80% share of tourists under 56

years of age, the share is approximately 60% for tourists to Northern and Mid-Norway (ibid.). The large volumes of domestic tourists are from the larger Oslo area (in Eastern Norway), and shorter trips to Southern and Western Norway are more convenient for families.

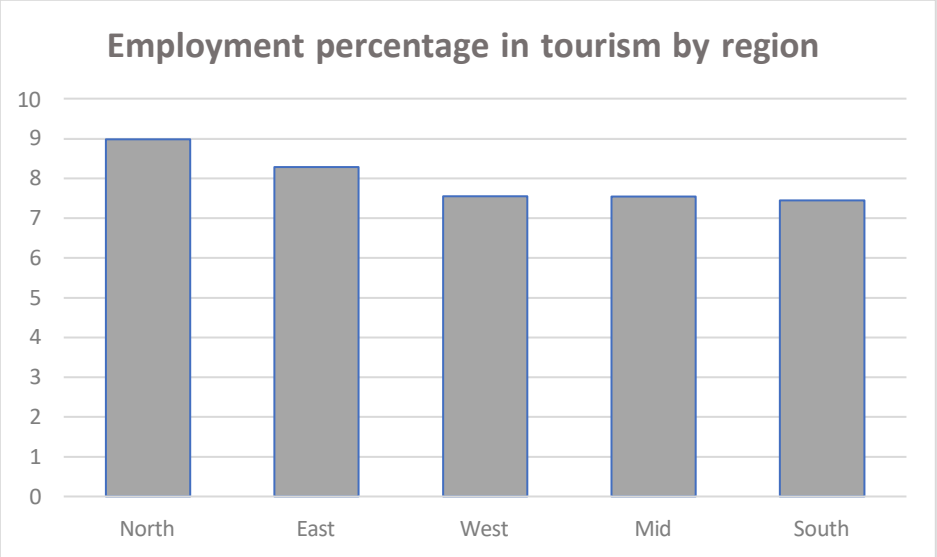

Figure 4. Tourism's percentage share of employees as of 2018, by region. Source: Statistics Norway.

The sector contributes significantly in terms of production as well, with a share of GDP of 4%. It also generates a total of NOK 4.4 billion (appr. EUR 450 million) in tax revenues to Norwegian municipalities, in addition to 15 billion to the county and national administrative levels (Menon, 2018). Nominal revenues in tourism have increased from about 85 million in 2004 to 192 million in 2017. Events and experiences, as well as transport have increased the most during this period, while tour

operators and accommodation have experienced rather modest increases (ibid.). Tourists contribute significantly to other non-tourist businesses, such as retail, as well; the spending on retail actually exceeds the spending on events and experiences (Innovation Norway, 2018b).

The major markets for Norwegian tourism are, in terms of guest nights in 2018, from highest to lowest: Germany, Sweden, USA, Denmark, UK, China (incl. Hong Kong and Taiwan), the Netherlands, and France. Tourists from China, Canada, USA, Switzerland, Austria, Australia, and the UK represent the highest economic spending each day ranged from highest to lowest (Innovation Norway, 2018a). According to a report by Ipsos Marketing, the characteristics of Norway aligns well with *adventures and natural beauty* as travel motive among major market segments (Strømseth & Naert, 2017). Norway also fits well in the perceived fulfillment of *escape* as a travel motive. On the other hand, Norway as a destination is perceived as fulfilling travel motives such as *social immersion* poorly, and more so in fulfilling the *sharing and caring* travel motive, which refers more to spending time with the ones the tourist travels with. The latter refers to being part of a group that the tourist identifies with, emphasizing togetherness (ibid.).

Norway competes mainly on the product attribute of nature, a highly competitive market. Norway ranked 20 on the 2019 Travel and Tourism competitiveness index, with a high overall score on competitiveness parameters: Strengths of the Norwegian tourism business environment

include ICT, safety, but also labor market conditions (World Economic Forum, 2019). The country scores weaker on ground, port, and tourism service infrastructure. Norway scores poorly on price competitiveness (ibid.), which aligns well with the view of Norway as a relatively expensive destination.

2.2 External effects of tourism agglomerations

The conceptualization of clusters began with Marshall's (1890) work on business clusters, which he referred to as agglomerations. He noted that firms that located closer, enjoyed the exploitation of external effects, either through heightened demand or through supply side externalities. Specifically, labor productivity in a sector in an area increases with the level of employment in that sector. Such agglomeration effects on the supply side occur in three ways: through specialized suppliers, labor market pooling, or through the spillover of knowledge (ibid.). Porter's (1998) work on agglomeration received renewed interest in the topic in the 1990's, also from governments and firm managers, likely because of its appealing focus on competitiveness (Martin & Sunley, 2003).

In addition to Marshall's localization economies, agglomeration economies also arise from cost efficiencies in production; a larger firm

may benefit from increasing returns to scale (Krugman, 1991). Economies of scale constitute distinct agglomeration economies because a single large firm exploiting scale efficiencies induces a larger local employment of inputs (ibid.). A third source of agglomeration economies is what Jacobs (1969) referred to as unrelated variety, where firms in *different* sectors interact and benefit from agglomeration through influx of ideas and other knowledge in new sectors. These externalities, referred to as Jacobian externalities, are closely related to the formation of cities, as they occur when different business sectors affect each other in terms of input sharing, knowledge spillovers etc. However, cities are also endowed with a variety of other beneficial institutions, such as government organizations and universities. A distinction therefore has to be made between Jacobian externalities, that arise from innovative forces that arise from influx of new ideas in new sectors, and urbanization externalities, which arise from large markets in densely populated areas and proximity to other, beneficial organizations (Frenken, Oort, & Verburg, 2007).

Diseconomies of agglomeration are also possible, such as congestion and loss of profits from localized competition. Adverse selection may also arise from asymmetric information (Shaver & Flyer, 2000), as larger and more resource-rich firms have weaker incentives to collocate with more resource-poor firms, because they are more likely to suffer from knowledge spillover.

Labor market pooling is an important element of agglomeration economies. A larger pool of labor provides better conditions for businesses to find relevant and competent labor, as well as to lower search costs. A larger supply of labor also puts downward pressure on wages in a competitive market, which increases labor productivity. A larger labor market also increases opportunities for workers, who will have an easier time finding alternative relevant jobs in the nearby proximity. However, another mechanism is also more present when companies locate closer to each other – the one of *poaching*. Although professional secrecy prevents workers from sharing information when moving between jobs, it is highly realistic that they carry with them information about products, working practices, information on marketing positioning etc., that cannot be distinguished from labor market flows (Combes & Duranton, 2006). Agglomeration of competing companies increases the likelihood that workers find alternative employers, and productive and experienced workers are encouraged by rivaling companies through higher wages (ibid.).

Moreover, the benefits from unrelated variety also arise from the agglomeration's ability to sustain asymmetric shocks. A labor pool in an area consisting of diverse industries provides at least partial substitution of job opportunities. While not offering as strong substitutability as in localization economies, the area still offers opportunities to workers who loses jobs in economic downturns. In particular, the benefits of unrelated

variety lie in the diversified risk from differences across firms (Frenken et al., 2007). When one firm fails, other firms in the same sector also fail – either localized in the same area or elsewhere. However, when a variety of firms exists, an idle worker is more successful finding a new job in the same area, as skills are to some extent substitutable across businesses. Rational workers are aware of this, and more attracted ex ante to areas of unrelated variety.

The industrial organization literature has mainly focused on mass production of goods that are to be shipped to consumers elsewhere. As explained earlier, Marshall (1890) described agglomerations as the clustering of firms, with particular emphasis on related industrial activities. He argued that some unique physical condition is the main reason for the formation of an agglomeration. This condition, such as access to raw materials, universities or specialized climate, is exogenous to the firms, i.e., it is not altered by the number of firms in the agglomeration (McCann & Folta, 2009). In tourism, however, such a condition is not always a necessity as agglomeration effects can sustain a viable development of tourism districts (Yang Yang & Fik, 2014).

The tourism product is a service which is perishable in nature and consumed at the place of production. The tourism sector consists of a large share of small sized firms, which mandates sound relationships with the rest of the local economy (Erkus-Öztürk, 2009; Yong Yang, 2016). Labor is of particular interest in enhancement of productivity due

to the labor intensive and tacit nature of tourism production (Park, Yaduma, Lockwood, & Williams, 2016). Productivity is enhanced in local environments that facilitate learning through exchange of knowledge (Y. R. Kim, Williams, Park, & Chen, 2021). Tourism workers depend on sound personal communication to exchange ideas and knowledge (Yong Yang, 2016), and other forms of social capital may also prove important, such as the resource sharing documented by Kalnins and Chung (2006) on the supply side in branches of the accommodation sector. Production depends, namely, on structured and highly localized delivery of complementary goods, with accommodation, food, activities, and transport as core constituent elements. Compared to other industries, structured production is important (Michael, 2003) and complementarity is as essential as the possession of market shares. Tourism entrepreneurs interact assiduously with each other in local communities to form a seamless tourism product. Interpersonal skills, language and extroversion are components of the social capital required to facilitate efficient production of a specialized regional tourism product.

The localized and perishable nature of tourism implies that a firm's surroundings affects its survival to a larger degree than for other firms (Falk & Hagsten, 2018). A relatively large share of young firms constitute the sector, indicating easy entrance and an environment for startups (Kaniovski, Peneder, & Smeral, 2008). Due to low barriers to

entry as well as easy access to inputs such as unskilled labor, the tourism industry is likely more competitive than other industries (Singal, 2015). Stronger competition increases productivity due to higher technical efficiency and pressure to innovate. Larger firms also enjoy a larger resource base and exploit scale efficiencies. Higher market concentration of large and small companies may lead to more stable market conditions and longevity (Kaniovski et al., 2008), but competition may also lead to strong deterioration of profits that can reduce longevity. Some subsectors of the industry, particularly accommodation, may also experience substantial barriers to exit because of large, fixed costs from capital investments (Singal, 2015).

The localized production of tourism services also spills also over to neighboring regions. The spillover of tourism flows occurs both the supply and demand sides, the latter being elaborated more on later. Spillover may take the form of market access, joint promotion, negative events as well as in the spillover of productivity (Yang Yang & Wong, 2012). Productivity spills over to neighboring regions in several ways. On the organization level, firms tend to imitate the products, services, and practices of firms in higher-productivity regions. This forms a demonstration spillover as firms learn from their peers, more or less consciously. Another source of productivity spillover is competition; neighboring regions tend to have similar attractions and therefore aim at attracting relatively homogenous visitor groups (ibid.). As a result, firms

attempt to gain competitive advantages under competitive pressure across neighboring regions. Not least, labor entails important productivity as workers bring their knowledge and experience on production and work practices to new regions. The movement of labor may also induce productivity convergences between neighboring regions (Y. R. Kim et al., 2021). Labor is likely to move from high-productivity regions to neighboring regions, taking with them their high skill and competence (Yang Yang & Wong, 2012). Urban agglomerations are particularly effective in strengthening workers' skill level (Glaeser & Maré, 2001).

Market access is likely to spill over from a region with a large market share to adjacent regions, as the neighbors are likely to gain access to the same market and often possess similar tourist attractions (Yang Yang & Wong, 2012). Adjacent regions may therefore benefit from positive external effects exerted through market access spillover that reduces the need for promotion. A different, but related spillover effect is through joint promotion, on the other hand, as benefits are available from collaboration between tourism organizations that seek to promote the destination (ibid.).

With inseparable geography of production and consumption, firms have incentives to agglomerate with respect to much of the entire value chain. While larger firms may be eager to bundle several products into one, it is more likely in smaller destinations that several small firms produce it

(Michael, 2003). Diagonal clustering refers to the colocalization of complementary firms that are different from each other, but still add value to each other's activities by bundling into a single product (Poon, 1994). Diagonal clustering refers to exploitation of economies of scope by increasing the breadth of products, thus increasing the value for other firms in the cluster. Diagonal clustering strengthens competition between firms across clusters, rather than between firms in the same cluster, making it more competitive. It is the interplay between different firms that make up the bundle of the tourism product that represents the competitive advantage.

Externality effects on the demand arise from the attractiveness of proximate location that richens the range of heterogenous substitutes that the customer can choose from (Canina et al., 2005). They are more pronounced when the consumer must physically examine the product before selection, and they reduce the customer's search costs (McCann & Folta, 2009; Stahl, 1982). Therefore, firms benefit from demand side externalities only by sharing the location that richens the product range. Demand side externalities are prominent in service industries like food and accommodation because they are highly localized; the location itself is inseparable from the consumption of the service provided (Canina et al., 2005). The tourist examines the various options before selection, either physically or in advance based on somewhat limited prior knowledge. Although the importance of the search cost argument has

been questioned in recent years, with the introduction of transparency-enhancing online booking sites (Falk & Hagsten, 2018), validity of localization economies should be attributed to a wider variety of heterogenous substitutes; many of the composite products are usually not ordered in advance. This very much the case for food and transport, but even in accommodation, as the tourist has a *de facto* option to alter the booking, perhaps at a certain cost.

Firms also have an incentive to differentiate the product spectrum to raise the agglomeration's attractiveness. The literature has shown that both differentiation and conformity can improve performance (M. Kim, Roehl, & Lee, 2020). A literature on results of conformity introduced the term *Principle of Minimum Differentiation*, in which conformity in location as well as in other product attributes leads to profit maximization (Hotelling, 1929). On the other hand, Canina, Enz et al. (2005) argue that a differentiation spillover exists between firms whose geographical location becomes more attractive to others when a firm invests in differentiation. The benefits of agglomeration are asymmetrically distributed as, for example, upscale hotels are more likely to invest in quality-enhancing attributes, while lower-scale hotels not investing enjoy higher demand than they would otherwise (Canina et al., 2005). Albeit less researched, the same is arguably the case for other tourism businesses, such as restaurants, whose market carries demand

side externalities and similarly depend strongly on reputation and position on the luxury scale.

As noted earlier, the competitiveness of an agglomeration is determined by each single firm's competitiveness against intra-market firms in competing agglomerations. Competition may very well act to remove any profits that in isolation represents attractive rentability, and it is likely that an individual firm is better off in relieving its aggressiveness towards other intra-agglomeration, intra-market firms, or even to differentiate. In accommodation, product differentiation in only one quality dimension has been found to increase performance as well as performance risk (M. Kim et al., 2020). Firms that act rationally are aware of such a mechanism and may even tacitly modify its product(s) to increase agglomeration diversity. The increased product heterogeneity reduces the customer's search costs, and the customer can be more confident *ex ante* to find the product that best meets his or her needs.

Externalities on the demand side has in recent years been distinguished in multidestination travel that adds value to the travel experience by visiting multiple diverse attractions in a larger area (Yang Yang, Fik, & Zhang, 2017). Such effects are the indirect or unintentional effects a destination exerts on tourism flows to adjacent regions (Yang Yang & Wong, 2012). Visitors are eager, though restricted by their constraints, to maximize utility of their trip by visiting multiple destinations, either in the local area or *en-route* (Lue, Crompton, & Fesenmaier, 1993).

Tourism flows spill over to destinations in neighboring regions, encompassing positive external effects from demand of tourists.

The extent of multidestination travel likely varies across segments, as visitors traveling by car, for example, are usually more flexible with regards to both time and space than cruise tourists. Cruisers, classified by Lue, Crompton, & Fesenmaier (1993) as tourists seeking multiple benefits from a single destination may still be eager to experience more of local cultures of the destination than they do because of the constraints they face (Hung & Petrick, 2010). Cruise tourists may represent considerable spillover of demand to onshore firms, as they are prone to enjoying the greater heterogeneity that local restaurants and cafés represent. Word-of-mouth effects might be considerable, by the same token.

The emergence of low-cost carriers and increased popularity of city tourism are important trends in tourism (Davison & Ryley, 2010). Combined with higher real wages and more flexible work hours of modern work life, this has probably made shorter and more frequent holidays feasible (Falk & Hagsten, 2018). Market segments such as weekend tourists and travelers interested in various cultural niches act to sustain a certain level of demand in cities, which is particularly helpful in the off season. Urban destinations are less prone to seasonal variations as they are comprised of a greater diversity of attractions that meet a wider range of travel goals.

Seasonality is more prominent in rural than in urban areas (Coshall, Charleswoth, & Page, 2015), but is profound to tourism firms in most destinations. There is no widely accepted definition of seasonality in tourism (Koenig-Lewis & Bischoff, 2005). Seasonal patterns are caused by weather, institutional arrangements such as holidays, and by tourists' income and lifestyles (Nadal, Font, & Rosselló, 2004). Seasonality is an issue to tourism firms because of the challenges it represents in utilizing capacity (T. Baum, 1999). For the accommodation sector, the reduction in demand in the off season and accompanying revenue loss results in problems of covering input costs. Different tourism firms are affected differently by seasonality, but all firms in a tourism agglomeration should understand the impact of seasonality on any complementary firm (Kuokkanen & Bouchon, 2021).

Most branches in the tourism sector are labor intensive (Surugiu, Surugiu, Dinca, & Frent, 2012), not least the hotel, restaurant, and café (HORECA) sector. In addition to expanding the season, the hotel sector mainly copes with reduced demand through staff reductions. As noted, tourism labor is relatively mobile and driven by a variety of motivations. Albeit tourism firms may not have problems acquiring qualified labor, a migrant workforce has further implications on a destination's offerings in their role as residents, through the lack of their demand for the same goods and services in the off season.

On the other hand, the off season also gives the opportunity for a seasonally crowded destination to recover (Hartmann, 1986), and smaller family-owned businesses finally have a vacation opportunity. The off season also gives the opportunity to invest resources in modifications of buildings that have very low alternative value at the time. From the tourist's perspective, the low season may entail conditions for visitation that are even preferred to conditions in the peak season (Kastenholz & Almeida, 2008).

When demand falls in the off season, accommodation revenue also falls. A price fall driven by an almost vanishing demand may dramatically drive down revenue per available room. Accommodation, as well as other HORECA sector firms have invested in capacity that entails operational costs and lowering output prices drastically may not generate profits. Hotel rooms represent high opportunity costs due to lost demand and inefficient use of capacity (Alemayehu & Kumbhakar, 2021).

Pricing policies also exert external effects on other intra-agglomeration, inter-sectoral tourism firms. What appears a sound pricing policy at the firm level, may be suboptimal in an agglomeration performance perspective. Revenue per available room may fall in the off season due to lower room price or lower occupancy rate, or both. Although hotels and other accommodation may be indifferent between price drops and quantity drops – provided they are unable to discriminate on price, in which case they are probably not – other tourism firms may not be

indifferent, because pricing affects the number of sold rooms, and consequently the number of inbound tourists to that destination in the off season. The hotel thus exerts agglomeration economies to other local, complementary firms in the form of external effects that are not internalized through firm optimization.

Indifference is rather rare in business, admittedly, and slips into opportunities that are more appropriately analyzed by behavioral game theoretic approaches, such as the destination Revenue Management (RM) recently developed conceptually by Kuokkanen and Bouchon (2021). In destination RM, the customer can choose between joint packages in advance with pertaining discount – with revenue sharing among stakeholders – and an individual purchase of goods and services (ibid.). Destination RM goes some way in internalizing external effects of demand in complementarity and may also remedy seasonally varying demand through clever package design. Although connection is no strict necessity for the exploitation of localization externalities, organization may introduce norms – with pertaining sanctions – that act to more put a correct market price on such benefits or costs. On one hand, destination RM further reduces the need for physical inspection prior to purchase, and therefore the importance of demand side externalities. On the other hand, a destination RM organization also *imposes* external economies on local non-member firms that cannot be neglected. A destination RM analysis is beyond the scope of this thesis, but the respondence of hotels

and other accommodation to reduced demand by a reduction in realized price or output level, is still worthy of a closer assessment as it reveals how tourism resources are utilized in the off season.

3 Methods and data description

Accommodation and accounting data obtained from Statistics Norway and the Brønnøysund Register Centre constituted the main data source for the project. These include numbers on revenue from various tourism subsectors as classified by NACE codes from 2004 onwards, reported to official authorities. The data are structured longitudinally. Due to confidentiality issues, data are not available if there are less than three companies in a municipality in the year in question. Data on population and municipal area in square kilometers are also from Statistics Norway.

Throughout the thesis a range of econometric approaches and data input was applied. In paper 1, a spatial econometric model was applied to investigate demand spillover. A shapefile obtained from the Norwegian Mapping Authority contained the geographical data on Norwegian municipalities. The data were arranged longitudinally in term of municipality-years, and a demand function estimated the effect on demand of cruise tourism, as well as of other agglomeration variables comprised of the number of hotels, as well as restaurants and cafés, respectively.

Paper 2 uses data from January 2007 to December 2018. They are monthly data on hotel guest nights, obtained from Statistikknett.no, a website run by Regio AS providing ready-for-use statistics in tourism

based on official statistics from Statistics Norway. Due to confidentiality issues, municipalities with partial records of observations for some parts of the year were excluded, and missing values were replaced by predicted values, obtained from a maximum likelihood prediction procedure. The paper applies pooled, fixed, and random effects panel models of the effect of seasonal variations on revenue and revenue per available room of Norwegian hotels.

The final paper differs from the other two in the application of a non- and semi-parametric approach; a Cox proportional hazards model is applied to investigate how locational and firm characteristics influence firms' survival. The associated Kaplan-Meier is a nonparametric estimator commonly used to visualize the probability of survival beyond a specific point in time. The study applies a hazards model to a dataset of 52,433 observations in the years from 2004 to 2013, spanning a large range of tourism subsectors, including accommodation, transportation, food and beverages, travel agencies as well as amusement, museums, and other cultural activities. The data are organized longitudinally according to firm-years, and the aim of the study is to investigate how the decision to close operations is affected by diversity, competition, and other agglomeration effects.

4 Concluding remarks

4.1 Summary of papers

The aim of this thesis has been to investigate agglomeration effects in the Norwegian tourism sector, with emphasis on profitability of demand side agglomerations. The topics covered are many of those particularly relevant to the Norwegian context, including demand effects of offshore on onshore tourism, as well as how the performance of tourism firms is affected by agglomerative traits in destinations with substantially different characteristics from the summer to the winter seasons.

Paper 1 investigates the demand effects of cruise tourism on onshore hotels and restaurants. Cruise tourism can have effects on onshore demand through several channels. First, cruise tourism may entail important word-of-mouth effects that acts to increase demand at the destination. On the other hand, cruise lines have made efforts in recent years to make cruises more affordable to wider market segments, in effect making the product more competitive as an alternative to onshore travel. By applying a spatial econometric model, we assess whether cruise tourism acts to increase or decrease the demand of onshore hotel, restaurant, and café (HORECA) firms. We control for the number of hotels and number of restaurants, respectively, to distinguish the effect

of HORECA capacity from its cruise demand. We find that cruise has a modest, albeit significant and positive effect on demand of hotels, restaurants, and cafés at the destination. Furthermore, the results reveal a positive association between demand and the number of both hotels and restaurants, respectively, which supports the notion that a larger scale of operations has positive demand effects in this sector.

In paper 2, we address urbanization trends and tourism seasonality. Increased urbanization is an international trend believed to continue into the foreseeable future. While urban areas are less prone to falling demand in the off season, rural areas struggle with lower demand, leading to low utilization of tourism resources. Using a dataset on hotel and other accommodation at the municipal level from 2007 to 2018, we study the relationship between urbanization and seasonality, as well as the impact of seasonality on revenue and on revenue per available room. We find that the tourism seasonality growth rate is negatively related to population growth. Furthermore, we find that both revenue and revenue per available room is negatively associated with higher seasonality, but also, interestingly, that municipalities with dedicated winter tourism do not, on average, suffer from any revenue effects from seasonality. The effect of winter tourism is slightly stronger for revenue than for revenue per available room. By splitting revenue, we find that reduced occupancy rate constitutes the reduction in revenue that results from increased seasonality, rather than lower realized room prices, which suggests that

the major problem of seasonality is underutilization of tourism resources in the accommodation sector.

Paper 3 investigates the effects of agglomeration on survival. The interest is to study whether and how the decision to close operations is affected by a firm's environment: how diversity, competition, and other agglomeration effects associate with closure. The firms cover a variety of 34 different NACE codes, spanning categories such as passenger transportation, food and beverages, accommodation, travel agencies and tour operators as well as museums, amusement, and other cultural activities. Each of the 52,433 observations cover accounting data for one firm in a single year. The paper signifies several agglomeration effects in tourism; on the supply side, increased competition strongly increases the probability of exit from that destination. On the demand side, a larger variety of tourism firms is positively associated with the probability of survival. The level of detail encompassed in the variety measure signifies not only the importance of complementarity, but also of heterogeneity in substitutes in the provision of tourism.

4.2 Theoretical contributions

The thesis has shed light on agglomeration in the Norwegian tourism sector. More specifically, it shows the relationship between

complementary as well as competing firms in a tourism agglomeration on their performance, and it would therefore be interesting to derive generalizable findings that can not only enlighten academics, but also provide useful findings for business and policymakers. In the following, the most prominent contributions are presented; first the ones that are more theoretical, and then the policy implications.

Important theoretical contributions include the following:

i. An econometric model provides a novel approach to estimate demand spillover of cruise to the HORECA sector. Although they do not greatly alter results, explicit spatial approaches provide improved explanatory power in the analysis of HORECA agglomerations.
ii. Cruise passengers represent modest, but positive overall contributions to onshore demand of HORECA firms.
iii. Various intra-sector agglomerations may have different effects on tourism demand spillover and should be disentangled and analyzed accordingly. In the cruise tourism context, the capacity of both hotels and restaurants/cafés does impact demand spillover positively.
iv. Seasonal variations are detrimental to hotel revenue and revenue per available room. However, skiing destinations hardly experience any negative revenue effects of seasonally dependent demand. Strictly speaking, that does not mean that

skiing destinations experience low seasonal variations, but that they experience little revenue effects from it.

v. Tourism firms of same type in a destination compete fiercely. Overall, in tourism, intra-market, intra-agglomeration firms increase the probability of exit from that market through competition. This suggests that firms are not too oriented towards product differentiation, which could increase agglomeration competitiveness through demand side external effects.

vi. Diversity of tourism firms as measured by the representations of different NACE codes in a destination yields positive effects on survival of tourism firms in a destination.

4.3 Policy and business implications

Implications to business and policymakers are the following:

i. Cruise contributes modestly to onshore HORECA demand on average. Specifically, the capacity of both the hotel and the restaurant and café sectors, respectively, associate positively and significantly with cruise demand.

ii. Seasonally dependent demand is much more of a concern at destinations with a lower population. Volume effects rather than prices explain the reduction in revenue. Hotel firms should consider greater alterations of price in the off season, with an attempt to correspondingly utilize capacity unless it greatly hurts the accounting records, also because it is likely to provide increased demand to other firms at the destination.

iii. While seasonally varying demand has provided little but dismay in tourism, and more so in rural areas – which is evident in our findings as well – we also find that skiing tourism acts surprisingly efficient as a remedy to seasonal variations in *revenue* of hospitality firms. We believe that destinations with climate and topography to allow so, should invest in skiing and related activities and amenities if they are harmed by seasonally varying demand.

iv. Policies should be directed at increasing the provision of diverse tourism services, as greater diversity of tourism firms reduces the probability of firm failure. Moreover, although we provide less evidence using a fine-grained or sophisticated measure of product similarity, I believe that increasing the product spectrum increases agglomeration competitiveness. The results indicate that tourism firms, on average, compete fiercely enough to strongly increase bankruptcy probability. Product differentiation is a savvy

way of relieving competition and, in addition, of making the destination more attractive.

4.4 Limitations and prospects of future research

The thesis has numerous weaknesses. In empirical studies of agglomeration, it is difficult to identify the factual sources of localization economies. Following the reasoning in Paper 1, as mentioned earlier, any asymmetries in demand spillover between hotels on one side, and restaurants on the other, would be interesting to identify. Moreover, we do not distinguish between hotels and other categories of accommodation. Although accommodation is fairly homogenous in the Norwegian context, it would be of interest to disentangle spillover effects in different kinds of firms, since it would assess the effect of heterogeneity in substitutable services.

One way of overcoming seasonal variations in demand in areas of overcrowding is by redistributing it spatially (Koenig-Lewis & Bischoff, 2005), in addition to temporally, for example by stimulating multidestination travel. In areas where attractions are geographically vast, such as in Fjord Norway, strategies should strengthen focus on the demand side; on infrastructure and nurturing formal and informal cooperation between complementary firms. Researchers should direct

focus on spatial models for the analysis of multidestination travel in order to soundly capture geographical spillovers.

Some researchers' ongoing effort in developing concepts of destination revenue management appears promising because it is a way of not only internalizing external economies on the demand side, but also appears a clever optimization of revenue in tourism. More generally, it can be applied to other industries that are strongly localized on the demand side, as well. The approaches may or may not be game theoretic, but such an approach aligns well with the notion that stakeholders have vast opportunities to organize to the best of the alliance in extracting benefits from demand side externalities. Although localized benefits on the demand side need not strictly be organized at all, the power of the locality may render game participation inevitable, and behavioral game theoretic approaches may be appropriate.

5 References

Alemayehu, F. K., & Kumbhakar, S. C. (2021). Excess capacity, production technology and technical inefficiency in hospitaliy sector. *Tourism Management, 82*.

Arthur, W. B. (1996). Increasing returns and the new world of business. *Harvard Business Review, 74*(4), 100-111.

Backer, E. (2012). VFR travel: It *is* underestimated. *Tourism Management, 33*.

Baum, T. (1999). Seasonality in tourism: Understanding the challenges: Introduction. *Tourism Economics, 5*(1), 5-8.

Björk, P., Prebensen, N., Räikkönen, J., & Sundbo, J. (2021). 20 years of tourism experience research: a review and future research agenda. *Scandinavian Journal of Hospitality and Toursim, 21*(1), 26-36.

Bjørnland, H. C., & Thorsrud, L. A. (2015). Boom or gloom? Examining the Dutch disease in two-speed economies. *The Economic Journal, 126*(598), 2219-2256.

Canina, L., Enz, C. A., & Harrison, J. S. (2005). Agglomeration effects and strategic orientations: Evidence from the U.S. lodging industry. *Academy of Management journal, 48*(4), 565-581.

Combes, P.-P., & Duranton, G. (2006). Labour pooling, labour poaching and spatial clustering. *Regional Science and Urban Economics, 36*, 1-28.

Coshall, J., Charleswoth, R., & Page, S. J. (2015). Seasonality of overseas tourism demand in Scotland: A regional analysis. *Regional Studies, 49*(10), 1503-1620.

Davison, L., & Ryley, T. (2010). Tourism destination preferences of low-cost airline users in the East Midlands. *Journal of Transport Geography, 18*, 458-465.

Erkus-Öztürk, H. (2009). The role of cluster types and firm size in designing the level of network relations: The experience of the Antalya tourism region. *Tourism Management, 30*(4), 589-597.

Falk, M., & Hagsten, E. (2018). Influence of local environment on exit of accommodation establishments. *Tourism Management, 68*, 401-411.

Falk, M., Tveteraas, S. L., & Xie, J. (2021). 20 years of Nordic tourism economics research: a review and future research agenda. *Scandinavian Journal of Hospitality and Toursim, 21*(1), 78-90.

Frenken, K., Oort, F. V., & Verburg, T. (2007). Related variety, unrelated variety and regional economic growth. *Regional Studies, 41*(5), 685-697.

Furunes, T., & Mykletun, R. J. (2012). Frozen adventure at risk? A 7-year follow-up study of Norwegian glacier tourism.

Scandinavian Journal of Hospitality and Toursim, 12(4), 324-348.

Glaeser, E. L., & Maré, D. C. (2001). Cities and skills. *Journal of Labor Economics, 19*(2), 316-342.

Grillitsch, M., & Sotarauta, M. (2020). Trinity of change agency, regional development paths and opportunity spaces. *Progress in Human Geography, 44*(4), 704-723.

Hartmann, R. (1986). Tourism, seasonality and social change. *Lesure Studies, 6*(1), 25-33.

Heimtun, B., Jóhannesson, G. Þ., & Tuulentie, S. (2014). *Northern lights tourism in Iceland, Norway and Finland*. Retrieved from

Hotelling, H. (1929). Stability in competition. *The Economic Journal, 39*(153), 41-57.

Hung, K., & Petrick, J. F. (2010). Developing a measurement scale for constraints to cruising. *Annals of Tourism Research, 37*(1), 206-228.

Innovation Norway. (2018a). Key figures for Norwegian travel and tourism 2018.

Innovation Norway. (2018b). The Tourism Survey.

Innovation Norway. (2021). Nasjonal reiselivsstrategi 2030 [Norwegian].

Iversen, I., & Jacobsen, J. K. S. (2016). Migrant tourism entrepreneurs in rural Norway. *Scandinavian Journal of Hospitality and Toursim, 16*(4).

Jacobs, J. (1969). *The economy of cities*. New York: Vintage.

Kalnins, A., & Chung, W. (2006). Social capital, geography, and survival: Gujarati immigrant entrepreneurs in the US lodging industry. *Management Science, 52*, 233-247.

Kaniovski, S., Peneder, M., & Smeral, E. (2008). Determinants of survival in the Austrian accommodation sector. *Tourism Economics, 14*(3), 527-543.

Kastenholz, E., & Almeida, A. L. d. (2008). Seasonality in rural tourism - the case of North Portugal. *Tourism Review, 63*(2), 5-15.

Kim, M., Roehl, W., & Lee, S. K. (2020). Different from or similar to neighbors? An investigation of hotels' strategic distances. *Tourism Management, 76*.

Kim, Y. R., Williams, A. M., Park, S., & Chen, J. L. (2021). Spatial spillovers of agglomeration economies and productivity in the tourism industry: The case of the UK *Tourism Management, 82*.

Koenig-Lewis, N., & Bischoff, E. E. (2005). Seasonality research: The state of the art. *International Journal of Tourism Research, 7*, 201-219.

Krugman, P. (1991). Increasing returns and economic geography. *The Journal of Political Economy, 99*(3), 483-499.

Kuokkanen, H., & Bouchon, F. (2021). When team play matters: Building revenue management in tourism destinations. *Tourism Economics, 27*(2), 379-397.

Larsen, S., & Wolff, K. (2016). Exploring assumptions about cruise tourists' visits to ports. *Tourism Management Perspectives, 17*, 44-49.

Larsen, S., & Wolff, K. (2019). In defence of the domestic tourist - a comparison of domestic and international tourists' revisitintentions, word-of-mouth propensity, satisfaction and expenditures. *Scandinavian Journal of Hospitality and Toursim, 19*(4-5), 422-428.

Larsen, S., Wolff, K., Doran, R., & Øgaard, T. (2019). What makes tourist experiences interesting. *Frontiers in Psychology, 10*.

Lue, C.-C., Crompton, J. L., & Fesenmaier, D. R. (1993). Conceptualization of multidestination pleasure trips. *Annals of Tourism Research, 20*, 289-301.

Lundmark, L. (2006). Mobility, migration and seasonal tourism employment: Evidence from Swedish mountain municipalities. *Scandinavian Journal of Hospitality and Toursim, 6*(3), 197-213.

Majewska, J. (2015). Inter-regional agglomeration effects in tourism in Poland. *Tourism Geographies, 17*(3), 408-436.

Marshall, A. (1890). *Principles of economics* (1th ed.). London: Macmillan.

Martin, R., & Sunley, P. (2003). Deconstructing clusters: Chaotic concept or policy panacea? . *Journal of Economic Geography, 3*, 5-35.

McCann, B. T., & Folta, T. B. (2009). Demand- and supply-side agglomerations: Distinguishing between fundamentally different manifestations of geographic concentration. *Journal of Management Studies, 46*(3), 362-392.

Mehmetoglu, M. (2007). Typologising nature-based tourists by activity - Theoretical and practical applications. *Scandinavian Journal of Hospitality and Toursim, 28*, 651-660.

Menon. (2018). *Reiselivsnæringens verdi*. Retrieved from

Michael, E. J. (2003). Tourism micro-clusters. *Tourism Economics, 9*(2), 133-135.

Nadal, J. R., Font, A. R., & Rosselló, A. S. (2004). The economic determinants of seasonal patterns. *Annals of Tourism Research, 31*(3), 697-711.

Novelli, M., Schmitz, B., & Spencer, T. (2006). Networks, clusters and innovation in tourism: A UK experience. *Tourism Management, 27*, 1141-1152.

Oklevik, O., Gössling, S., Hall, C. M., Jacobsen, J. K. S., Grøtte, I. P., & McCabe, S. (2019). Overtourism, optimisation and destination performance indicators: a case study of activities in Fjord Norway. *Journal of Sustainable Tourism, 27*(12), 1804-1824.

Park, S., Yaduma, N., Lockwood, A. J., & Williams, A. M. (2016). Demand fluctuations, labour flexibility and productivity. *Annals of Tourism Research, 59*, 93-112.

Poon, A. (1994). *Tourism, technology and competitive strategies*. Wallingford: CAB International.

Porter, M. E. (1998). Clusters and the new economics of competition. *Harvard Business Review, 76*(6), 77-90.

Shaver, J. M., & Flyer, F. (2000). Agglomeration economies, firm heterogeneity, and foreign direct investments in the United States. *Strategic Management Journal, 21*, 1175-1193.

Shaw, G., & Williams, A. (2009). Knowledge transfer and management in tourism organizations: An emerging research agenda. *Tourism Management, 30*, 325-335.

Sikveland, M., Xie, J., & Zhang, D. (2022). Determinants of capital structure in the hospitality industry: Impact of clustering and seasonality on debt and liquidity. *International Journal of Hospitality Management, 102*.

Singal, M. (2015). How is the hospitality and tourism industry different? An empirical test of some structural characteristics. *International Journal of Hospitality Management, 47*, 116-119.

Skrede, O., & Tveteraas, S. L. (2019). Cruise spillovers to hotels and restaurants. *Tourism Economics, 25*(8), 1286-1301.

Sletvold, O. (1993). *Reiseliv i historien: Noen hovedtrekk fra reiselivets historie*. Alta: Finnmark Regional College, Department of tourism [Norwegian].

Smith, A., & Strand, I. v. K. (2011). Oslo's new Opera House: Cultural flagship, regeneration tool or destination icon? *European urban and regional studies, 18*(1), 93-110.

Stahl, K. (1982). Differentiated products, consumer search, and locational oligopoly. *The Journal of Industrial Economics, 31*(1/2), 97-113.

Strømseth, K., & Naert, S. (2017). *Activating the Norway brand. A global report on holiday needs and segments for Innovation Norway*. Retrieved from

Surugiu, C., Surugiu, M.-R., Dinca, A.-I., & Frent, C. (2012). Labour productivity and investments as determinants of wages: A pool data analysis of the Romanian hotel and restaurant sector. *Tourism Economics, 18*(1), 219-242.

Szivas, E. (2001). Entrance into tourism entrepreneurship: A UK case study. *Tourism and Hospitality Research, 3*(2), 163-172.

Tveteraas, S. L., & Xie, J. (2022). The effects of COVID-19 on tourism in Nordic countries. In *Globalization, Political Economy, Business and Society in Pandemic Times* (Vol. 36, pp. 109-126): Emerald Publishing Limited.

World Economic Forum. (2019). *The Travel & Tourism Competitiveness Report*. Retrieved from Geneva:

Xie, J., & Tveterås, S. (2020). Economic decline and the birth of a tourist nation. *Scandinavian Journal of Hospitality and Toursim, 20*(1), 49-67.

Yang, Y. (2016). Agglomeration density and labor productivity in China's tourism industry. *International Journal of Tourism Research, 18*, 434-446.

Yang, Y., & Fik, T. (2014). Spatial effects in regional tourism growth. *Annals of Tourism Research, 46*, 144-162.

Yang, Y., Fik, T. J., & Zhang, H.-l. (2017). Designing a tourism spillover index based on multidestination travel: A two-stage distance-based modeling approach. *Journal of Travel Research, 56*(3), 317-333.

Yang, Y., & Wong, K. K. F. (2012). A spatial econometric approach to model spillover effects in tourism flows. *Journal of Travel Research, 51*(6), 768-778.

Zhang, D., & Xie, J. (2021). Influence of tourism seasonality and financial ratios on hotels' exit risk. *Journal of Hospitality & Tourism Research*.

Øgaard, T., Doran, R., Larsen, S., & Wolff, K. (2019). Complexity and simplification in understanding travel preferences among tourists. *Frontiers in Psychology*.

Paper I

Cruise spillovers to hotels and restaurants

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Cruise spillovers to hotels and restaurants

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Abstract
The rapid growth of cruise tourism has spurred a debate on about spillover effects on other sectors in the port destination. In this study, we investigate the effect of cruise tourism on the demand for hotels, restaurants and cafés. We estimate a demand function for this sector applying a spatial autocorrelation regression model using panel data from Norway. The results show positive, albeit modest, demand spillover effects of cruise tourism to these onshore businesses. Policy implications and limitations of the study are discussed.

Keywords
cruise tourism, demand spillovers, HORECA sector, panel data, spatial effects

Introduction

The global growth of cruise tourism has raised a debate about how economic benefits are distributed between port destinations and cruise operators (Brida et al., 2012b; Larsen et al., 2013; MacNeill and Wozniak, 2018; Wood, 2000). A common criticism is that cruise passengers spend most of their money on-board and that only pennies trickle down to the ports when cruise passengers buy the likes of souvenirs and refreshments (Larsen et al., 2013). A counterargument is that cruises generate spending on onshore tours and experiences, procurement of different services and products from onshore suppliers in addition to multiplier effects generated from all cruise-related activities (Pratt and Blake, 2009). Such economic demand spillovers from cruise to land can be viewed as agglomeration effects. If the agglomeration effects are positive, this ought to dampen the cruise critics' arguments since it implies that the cruise lines contribute to the local tourism

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industry. Following this line of reasoning, the main research question in our study is on the *pecuniary* externalities of cruise agglomeration, measured as demand-side spillover effects on land-based tourism businesses.

Specifically, we investigate the agglomeration effects of cruises on demand for the hotel, restaurant and café (HORECA)[1] sector in the port destinations. To represent these sectors, we use revenue of HORECAs, which can be impacted by cruises in different ways. There could be a leakage of tourists from hotels to cruises due to substitution effects. For example, Sandvik et al. (2015) find a negative association between the number of Germans who visit Norway by cruise and the number of Germans' guest nights in Norwegian hotels. This might indicate tourism leakage. On the other hand, cruise tourists can choose to return as stay over tourists and generate word-of-mouth (WoM) effects. If tourists buy food and beverages onshore, restaurants and cafés can receive positive revenue effects of cruise tourists.

We address cruises' economic impact from a different angle than previous studies. Specifically, we estimate whether the agglomeration of cruises' ports-of-call influences real revenue generated in local HORECAs. To analyse this question, we estimate demand for the HORECA sector using a panel data at the municipal level in Norway from 2004 to 2013. By comparing demand of HORECAs in coastal municipalities that receive cruise tourists while controlling for demand in other municipalities, coastal and landlocked, we can identify the average spillover effect of cruises on real sales revenue (i.e. demand). When estimating demand, there may be important spatial effects across HORECA businesses in adjacent municipalities that need to be taken into consideration (Yang and Wong, 2012). This will be accounted for by using models that allow for different types of spatial dependence.

In the next section, we review earlier research relevant for the objective of our study. The third section gives a short background of the case study – cruise tourism in Norway. In the fourth section, methodology, data and results are presented, and in the two final sections, we discuss the results and provide a conclusion.

Literature review

In this section, we give an overview of economic impact studies of the cruise industry and other related cruise studies relevant for our research question. Furthermore, we discuss more specifically the channels that cruises influence demand of HORECA services. In addition, we review the studies of spatial agglomeration effects in tourism.

Economic impact of cruises

The growth in international cruise tourism implies that destinations increasingly offshore key tourism services such as accommodation, entertainment and food provision. It is probably the cruise industry's capacity to increase the supply side and make cruises affordable that has led to the remarkable increase in passenger numbers (Petrick, 2005; Vogel, 2011). This raises important questions about the long-term impact on a destination's onshore tourism industry. The question of economic impact of cruise lines has been investigated in many studies (Braun et al., 2002; Brida and Zapata, 2010a, 2010b; Chang et al., 2016; Chase and Alon, 2002; Dwyer et al., 2004; Dwyer and Forsyth, 1996; Gouveia and Eusébio, 2018; MacNeill and Wozniak, 2018; Marušić et al., 2008; McKee and Chase, 2003; Pratt and Blake, 2009; Vayá et al., 2018). However, the different and sometimes conflicting findings in the literature imply the question remains relevant.

For example, studies that find the highest positive economic impact of cruises are normally in destinations that also function as homeports for the cruise lines (Braun et al., 2002; Vayá et al., 2018). In these ports, ground operators provide food, beverages and other services to the cruises creating additional economic activity. In addition, many cruise passengers will stay over in local hotels before embarkation and after disembarkation. In contrast, hotel managers in cruises' transit ports tend to be lukewarm towards cruise tourists as they are perceived to generate little additional revenue for the hotels (Castillo-Manzano et al., 2015). Brida et al. (2012b: 164) concluded that the economic impact of cruise tourism on transit port destinations is 'rather negligible'. Low economic impact can be a result of outsourcing key tourism services like accommodation and food leaving few sources to generate revenue from cruise passengers' for land-based tourism businesses.

Not all studies are as negative to cruises' economic contribution, though. For example, specific case studies show local residents and tourism managers who are mostly positive to cruise tourism (Brida et al., 2014; Castillo-Manzano et al., 2015; Del Chiappa and Abbate, 2016; Gibson and Bentley, 2007). There are also several economic impact studies that show positive effects of cruises (Braun et al., 2002; Dwyer and Forsyth, 1996; Pratt and Blake, 2009; Vayá et al., 2018). This shows one has to be careful to generalize results and has to identify the specific circumstances that lead to diverging findings.

Cruise spillovers to HORECA sector

As Chen et al. (2016a) pointed out, extracting economic benefits from cruise passengers relies partly on becoming part of cruise lines' own platform. However, unlike those products that get packaged and sold on-board like guided tours, excursions and visits to museums, the HORECA sector must rely on their location and offerings to attract passing cruise tourists (De Cantis et al., 2016; Jaakson, 2004).

Estimated daily expenditure levels on food and beverages in port destinations range from US$1.55 to 13.00 in Douglas and Douglas (2004), US$5.12 in Brida et al. (2012a), around US$3.00 in Larsen et al. (2013), and US$18.30 in Penco and Di Vaio (2014). The estimates from the oldest studies probably should be adjusted upwards for inflation, but the bottom line is that spending per passenger on food and beverages tends to be below that of land tourists and might be too low to create noticeable lift in demand (Larsen et al., 2013). This can be explained by relatively short time onshore and high opportunity costs for food and beverage expenditures; all-inclusive cruises provide food for free on-board (and sometimes even brings food and beverages onshore for its cruise passengers) (Larsen and Wolff, 2016). Nonetheless, the sheer numbers of cruise passengers who visit a port destination might create ripple effects for local restaurants and cafés.

Cruises' ripple effects are likely to be of a different kind for the demand of hotel accommodation. With the exception of home ports and turning ports where passengers embark and disembark, cruise tourists are unlikely to accommodate in local hotels. However, there are two channels through which cruises can influence hotel guest nights. First, cruises may entice tourists to visit a destination by sea instead of as land tourists. This creates a negative leakage effect of hotel guests to cruises (McKee and Chase, 2003). Such an effect would decrease demand for local hotels when cruise lines' presence increase.

On the other hand, cruise tourists can create positive WoM effects attracting new visitors to a destination. The cruise tourists themselves might also choose to return as land tourists. In their study, Larsen and Wolff (2016) dismiss the idea that cruise tourists return as land tours and find

that the WoM propensity are the same between cruise and land tourists. In another study, Brida et al. (2012b) find that a small share of first-time cruisers has positive intentions of returning as land tourists. In summary, the magnitude and sign of these ripple effects on hotel demand remains an empirical question.

Agglomeration economies in tourism

Agglomeration effects in tourism are receiving increasing attention, among others, with a focus on locational aspects such as spillovers between regions and cities (Lazzeretti and Capone, 2009; Yang, 2012a; Yang and Fik, 2014; Yang and Wong, 2012; Yang et al., 2017) and based on market supply characteristics within an area (Balaguer and Pernias, 2013; Marco-Lajara et al., 2014, 2016; Michael, 2003; Wei, 2017). Spillover effects in tourism can arise in several ways. For instance, there can be externalities arising through transfer of know-how, increased pool of qualified labour, joint promotion, positive demand effects, competition effects, innovation effects and so on (Yang, 2012a; Yang and Wong, 2012). In this study, we expand on the idea of spillover effects, but this time focusing on demand-side spillovers from sea to land-based-tourism.

In line with the discussion in the preceding section 'Cruise spillovers to HORECA sector', it would appear that the most important benefactors of cruise tourism are onshore transport operators and providers of experiences for cruise tourists; these onshore tourist operators form part of the cruises' 'business ecosystem' in contrast to most hotels and restaurants whose business models normally are not intertwined with the cruises'. Nevertheless, hotels and restaurants are among the largest sectors within the tourism complex and, as discussed above, cruise activity can lead to demand effects on these sectors. Knowing how demand in the HORECA sector is influenced by cruise tourism is important input for formulating cruise-related strategies and policies at the port destination.

Coastal Norway and cruise tourism

Norway is a developed economy that despite being an expensive destination scores high on tourism competitiveness (Gooroochurn and Sugiyarto, 2005). Its attractiveness is predominantly related to nature and culture; in 2004 the Norwegian fjords were included in the UNESCO World Heritage List and named the best unspoiled travel destination in both 2004 and 2009 by National Geographic's Traveler Magazine (Hawkins et al., 2009). These salient factors aligned with the attributes of the cruise product (sailing directly to the fjords) help to explain the rapid growth in cruise passengers visiting Norway (Figure 1). Simultaneously, international cruise lines have been well positioned to insulate cruise tourists against the high price level in Norway. This is important since according to Xie and Tveteraas (2018) Norway was one of the world's most expensive countries during the data period.

Figure 1 also shows the development of hotel guest nights. Norway has a sufficiently large hotel capacity to host growth in tourist visitation and a well-developed international air connectivity that is key to facilitate visits to a fringe destination like Norway (Tveteras and Roll, 2013). The more uneven trend in hotel demand compared to cruise can be attributed to fluctuations in the local currency Norwegian krone (NOK) (Aalen et al., 2018; Xie and Tveteraas, 2018); unlike cruise tourists, land tourists are not insulated against high prices in Norway making them sensitive to exchange rate changes.

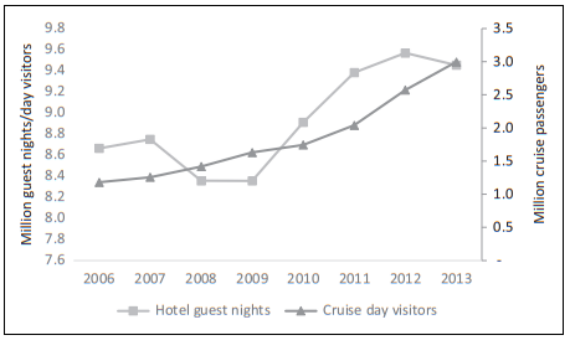

Figure 1. Million hotel guest nights and cruise day visitors in Norway (Statistics Norway; Cruise Norway).

A few hoteliers on the Western rim of Norway where the bulk of cruises sail have openly criticized Norwegian tourism policy. They claim lack of regulation and taxation of cruise lines has led to revenue leakage. The key economic arguments underlying this criticism are that destinations lose out on tourism revenue. Visitors who otherwise would have visited Norway as land tourists might substitute for cruise because it is less expensive, lowering their economic impact (Larsen et al., 2013). A second related argument is that the cruise lines freeride on public goods because they pay little taxes or fees to access the fjords and other natural and cultural attractions.

The cruise industry counters this criticism by pointing out that cruises bring much more tourists than would otherwise choose to visit Norway. This is undoubtedly true because of the travel cost argument discussed above and because cruises reach out to different segments of tourists (Chen et al., 2016b). Cruises also pay fees in every ports of call to the port authorities. Finally, one could argue that cruises contribute to make ground operators more professional in the service delivery. When tourist operators have to deal with demanding cruise lines and their cost and service quality requirements, this can increase cost efficiency and value of the local tourism product. This final argument is less relevant for HORECA sector investigated in this article, however; as we discussed above, the HORECA sector is not part of the cruises' platform or 'ecosystem'.

Table 1 gives a breakdown of cruises' ports of calls, showing the 10 largest cruise destinations in Norway as measured by the number of ports of call in 2013, as well as the population as of 1st of January, that year. The top four destinations Bergen, Geiranger, Stavanger and Flåm are all part of what is dubbed Fjord Norway that includes the fjords in the Western part of Norway. Several large Norwegian cities are important cruise ports, but they represent a small share of the total number of cruise ports along the coast; 34 Norwegian ports had a total of 2187 calls during 2013, most of them small towns. Cruise ships paid the small towns of Geiranger and Flåm 199 and 170 visits, respectively, while less busy ports included Olden with 93 ports of call and Hellesylt with 117. All these ports are located in the westernmost part of the country.

Although less busy, the ports in the North also experienced significant numbers of calls, including Honningsvåg with 98 visits and Tromsø with its 103. As illustrated in the right-hand map in Figure 2, cruise tourism is present in the entire Western and Northern coastal areas, including the

Table 1. The municipalities with the largest number of ports of call of cruises and the corresponding population in municipality (Statistics Norway; Cruise Norway).

Port	Municipality	County	Munic. population 2013	Cruise calls 2013
Bergen	Bergen	Hordaland	260,916	311
Geiranger	Stranda	Møre og Romsdal	4610	199
Stavanger	Stavanger	Rogaland	127,551	196
Flåm	Aurland	Sogn og Fjordane	1714	170
Oslo	Oslo	Oslo	617,070	158
Ålesund	Ålesund	Møre og Romsdal	45,033	121
Hellesylt	Stranda	Møre og Romsdal	4610	117
Tromsø	Tromsø	Troms	70,358	103
Honningsvåg	Nordkapp	Finnmark	3205	98
Olden	Stryn	Sogn og Fjordane	7105	93

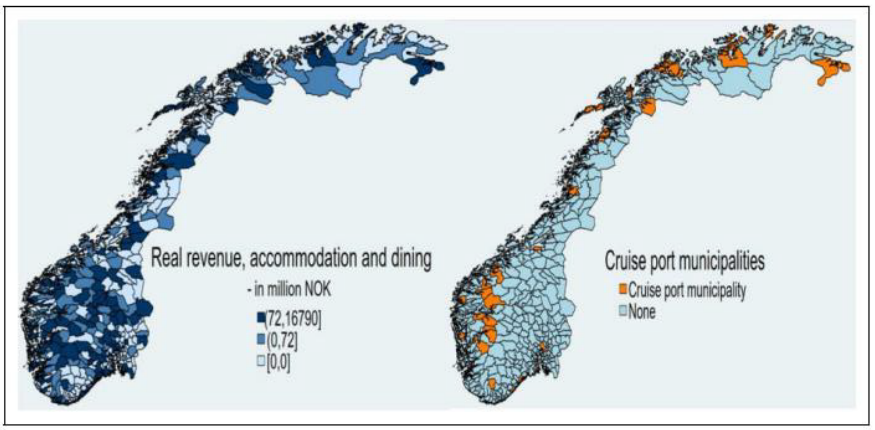

Figure 2. Aggregate HORECA revenues (left hand) and cruise port municipalities in dark (right hand).

two ports in the Lofoten archipelago.[2] The left-hand map in Figure 2 shows the aggregate revenue of all hotels and other accommodation, as well as restaurants, cafes and other dining companies in Norwegian municipalities in 2013. The 178 excluded municipalities are marked in white, while the rest are marked in varying gradations of grey.

Although cruise tourism has grown strongly in recent years, the cruise season is still rather short, lasting only from May to September. This may limit the effect on onshore businesses and, at least, makes the impact highly seasonal. Besides cruise tourists, the hot spots in fjord Norway are also crowded by tourists arriving by car or bus during the summer months, and these tourist groups may extend the season beyond that of the cruises. The more traditional accommodation companies, such as traditional fjord hotels, enjoy high demand, at least in the summer months, but are exposed to strong seasonal variations.

Analysis

Methodological approach

Agglomeration effects in industries are often analysed from a supply-side perspective, but in the case of spillover effects from cruises to onshore businesses, it makes sense to treat them as demand-side externalities. The pecuniary externalities of cruises are linked to sales revenue effects in the HORECA sector. More specifically, the spillovers are linked to the volume component of sales revenue, the demand: measured by the number of clients in HORECA and how much they spend. Consequently, we estimate demand equations to identify spillover effects from cruises to land-based tourism businesses.

To this end, it is an advantage to allow for spatial correlations since tourism demand tends to be spatially interdependent (Yang, 2012b; Yang and Wong, 2012). Spatial dependence arises because tourism demand is not randomly distributed across municipalities but tends to cluster in areas of popular tourist attractions. We expect some degree of clustering across neighbouring geographical entities. For example, this could be in the vicinity of cruise ports.

Inbound tourism flows generate demand for complementary services that are spatially dependent, such as accommodation, tourist experiences and transportation services, as well as tourist attractions in that area. Spatial econometric models have the distinct characteristic of allowing for heterogeneity across geographical entities. A recent study applies spatial models to tourism to further incorporate the effects of geographical differences (Yang and Fik, 2014).

In this study, we allow for different types of spatial interdependencies in the models and test which are the most appropriate for the data at hand. The models include a spatial Durbin panel data model (SDM) that can take the form as

$$y_t = \rho M y_t + X_t\beta + MX_t\gamma + \mu + \epsilon_t \tag{1}$$

where the first term allows for spatial correlation in the dependent variable. The third term, γ, indicates spatial correlation in each independent variable, x_t. The spatially lagged terms of the independent variables thus capture the characteristics of the neighbouring regions. Furthermore, panel effects take the form of μ for each municipality with the assumption of independent and identically distributed effects, $N(0, \sigma^2)$ in the random-effects model. ϵ_t is the error term, assumed Independent and identically distributed (i.i.d.), $N(0, \sigma^2)$. A constrained form of the Durbin model is the spatial autoregressive (SAR) model

$$y_t = \rho M y_t + X_t\beta + \mu + \epsilon_t \tag{2}$$

in vector form, where only the dependent variable is spatially lagged. M is the spatial weighting matrix. While this specification allows for spatial effects of X_t through neighbouring y_t, it does not allow correlation between neighbouring independent variables. Alternatively, a spatial autocorrelation (SAC) model expresses the SAR and a spatial error as

$$y_t = \rho M y_t + X_t\beta + \mu + v_t \tag{3}$$

$$v_t = \lambda M v_t + \epsilon_t \tag{4}$$

which allows for spatial correlation in the error term, in addition to spatially correlated y_t. A Lagrange multiplier test is applied to determine the appropriate spatial model to fit the data.

The set of dependent and independent variables is assigned geographically to the centroid of each municipality. This means we assume that travel patterns and distances between businesses on average can be approximated by the distance between centroids between geographical entities.

Spatial effects can be captured by various measures of weighting matrices, including distance-based matrices, nearest-neighbour matrices and inverse-distance matrices (Elhorst, 2010). The choice of weighting matrix is seldom reasoned by principles in economic theory (Leenders, 2002). In this study, a binary contiguity matrix is applied rather than a distance measure to capture agglomeration effects. The matrix input for each respective entity combination is set equal to 1 if two municipalities are contiguous neighbours, and 0 otherwise, and the matrix is normalized so that the largest eigenvalue equals 1. A contiguity matrix is preferred to distance-based matrices and nearest-neighbour matrices in this case because of the relatively strong decentralization of the municipal level in Norway. Also, the geographical size of municipalities varies greatly from Western Norway to the Northernmost parts of the country, which questions whether at least a nearest-neighbour matrix is a reasonable assumption for the large municipalities in the North, as spatial correlations are less prominent.

We formulate the demand function as

$$\ln q_{i,t} = \propto + \beta_1 \ln \mathrm{xrt}_t + \beta_2 \ln \mathrm{gdp}_t + \beta_3 \ln \mathrm{popden}_{i,t} + \beta_4 \ln \mathrm{air}_i + \beta_5 \ln \mathrm{cruise}_{i,t} + \beta_6 \ln \mathrm{hotel}_{i,t} + \beta_7 \ln \mathrm{rest}\ \&\ \mathrm{café}_{it} + \sum_{s=1}^{S-1} c_{D,i} + \sum_{t=1}^{T-1} d_{D,i} + \epsilon \quad (5)$$

where the demanded quantity $q_{i,t}$ is measured as aggregate real revenue in the HORECA sector. Demanded quantity is calculated as the real revenue in the sector in municipality i at year t, by dividing aggregate revenue in the sector by a price index for accommodations, restaurants and cafés. The exchange rate xrt is a proxy for price since it is the source of the largest year-to-year variations in the price of tourism services in Norway for international demand (Aalen et al., 2018). The exchange rate is also important for domestic demand, for example, because a strengthening of the local currency makes it relatively more attractive to travel abroad, thereby reducing demand in the domestic HORECA sector (Xie and Tveteraas, 2018). The exchange rate factor is taken into account by measuring the NOK against a weighted basket of nominal exchange rates. The basket consists of the currencies from the 10 largest origin countries of tourists to Norway. Each of the 10 currencies is weighted depending on the relative size of inbound tourism flow to Norway from the origin country. Income is captured by domestic Gross domestic product (GDP), which is the most important market for the HORECA sector (e.g. around 70% of guest nights at hotels are domestic). Population density, $\mathrm{popden}_{i,t}$, controls for market size by measuring municipality population per square kilometre. The effect on tourism revenue in municipalities that have air connectivity is captured by the number of arriving flights, air_i.

The main agglomeration variable of interest is $\mathrm{cruise}_{i,t}$ that measures the annual number of cruise calls in each municipality. The cruise variable is a measure of the regional volume of tourists and business associated with cruises. Agglomeration is also partly taken into account by controlling for the number of hotels, $\mathrm{hotel}_{i,t}$, and the number of restaurants and cafés, $\mathrm{rest\&café}_{i,t}$. These are the frequencies of companies listed as NACE code 55 (hotels) and NACE code 56 (restaurants and cafés) in each municipality, i, in year t.[3] The reason for the inclusion of these two agglomeration variables is that cruise spillover effects depend on capacity in the HORECA sector; for example, in the extreme case that a municipality has no HORECAs, then any potential demand spillover effects will be censored and observed to be zero. On the other hand, a greater amount of HORECAs will allow for larger spillover demand effects to be registered.

Table 2. Descriptive statistics.

Variable	Mean	Standard deviation	Min	Max
q (MNOK)	308	1190	4.86	16,800
xrt	0.978	0.061	0.905	1.078
gdp	513 501	65,575	388,070	605,408
hotel	12	10	3	116
rest. and café	40	148	3	2192
cruise	9	31	1	322
pop. density	72	196	0.32	1900
air	3043	16,768	0	224,819

The regressions are run as fixed- and random-effects models, applying the maximum likelihood (ML) estimator. An advantage of the ML estimator over alternative Instrumental variable/generalized method of moments (IV/GMM) estimators is that the latter rely on the instrumenting of independent variables, thereby excluding their spatial explanatory power. A Hausman test is carried out to assess whether a fixed- or random-effects model better fits the data. To the extent that statistical inference is based on a random sample of a larger population, a fixed-effects model is more appropriate when the area under study is of adjacent regions in unbroken study areas (Elhorst, 2010). In our case, less than half of the Norwegian municipalities are included in the sample, which in isolation would argue that the random-effects model is more appropriate. However, the Hausman test is still relevant and will influence our choice of preferred model.

Data description

As mentioned earlier, the tourism revenue data collected from the Statistics Norway contain accounting data of businesses extracted from NACE codes 55 (hotels) and 56 (restaurants and cafés). The data cover the period from 2004 to 2013 and exclude municipalities with less than three companies in either one of the NACE codes due to confidentiality issues.

Statistics on municipal population and area are also obtained from Statistics Norway. The number of cruise calls at ports was collected from Cruise Norway, while the information on locations of airports was obtained from Avinor. All data at the municipal level are organized as panel data, expressing annual observations per municipality. Since some municipalities were excluded due to the confidentially issues of tourism businesses' accounting figures, the balancing of panels required by spatial models led to exclusion of more municipalities, leaving 193 municipalities in the final data set for analysis. This probably creates a selection bias, because small municipalities in rural areas make up the majority of the excluded ones. Table 2 shows key descriptive statistics of the included variables discussed in relation to the specification of the demand model in equation (2). The variables are here shown in levels but are logarithmically transformed for the econometric model.

The spatial data set is based on a shapefile built on geographical data obtained from the Norwegian Mapping Authority. The shapefile contains coordinates on geographical centres, or centroids, for all Norwegian municipalities, as well as all coordinates that make up each border or, in Geographical information system (GIS) terminology, polygon of each municipality. The spatial data were prepared using Stata 15's mapping packages. Revenue, population and other panel

Table 3. Panel data and SAC regression models of HORECA revenue.

Dep: ln real revenue in millions NOK	1: Non-spatial fixed effects	2: Spatial lag (SAR) model, ML random effects	3: SAC model, ML random effects	4: Spatial lag (SAR) model, ML fixed effects	5: SAC model, ML fixed effects
rho (spatial lag dep. var.)	–	0.011*** (0.002)	0.003 (0.002)	0.297*** (0.042)	−0.594*** (0.078)
ln xrt	0.451*** (0.071)	0.41** (0.21)	0.41** (0.21)	0.38*** (0.067)	0.432*** (0.090)
ln gdp	0.118*** (0.034)	−0.01 (0.10)	−0.01 (0.10)	0.12*** (0.032)	0.313*** (0.047)
ln pop density	0.730*** (0.148)	0.09*** (0.01)	0.09*** (0.01)	0.618*** (0.139)	0.411*** (0.147)
ln air	0.040 (0.081)	0.01*** (0.00)	0.01*** (0.00)	0.043 (0.076)	0.032 (0.069)
ln cruise	0.047*** (0.016)	0.03*** (0.01)	0.03*** (0.01)	0.046*** (0.015)	0.043*** (0.014)
ln hotel	0.205*** (0.023)	0.56*** (0.02)	0.56*** (0.02)	0.199*** (0.022)	0.0178*** (0.020)
ln restaurant and café	0.148*** (0.022)	0.77*** (0.02)	0.77*** (0.02)	0.143*** (0.021)	0.129*** (0.020)
lambda (spatial lag, error)	–	–	–	–	0.739*** (0.044)
R^2 overall/R^2	0.41	0.84	0.85	0.62	0.25

Note: SAC: spatial autocorrelation; HORECA: hotel, restaurant and café; SAR: spatial autoregressive; ML: maximum likelihood.
*Significance level at 10%.
**Significance level at 5%.
***Significance level at 1%.

variables were assigned to the centroids of each municipality, while proximity between municipalities was measured by any shared border.

Results

Table 3 shows the regression results of the estimated demand models of HORECAs at the municipality level in Norway. In the table, model 1 to the far left is a standard OLS fixed-effects model, while the remaining panel data models with ML estimators include SAC effects. Specifically, the reported spatial models are SAR and SAC models.

We start by reviewing the results from the OLS fixed-effects model, which provides baseline comparison for the spatial models. The first reported coefficient is the elasticity of the exchange rate variable xrt. Since xrt is the price of the tourists' currency in the local currency NOK, any increase implies that it becomes relatively cheaper to visit Norway. This also makes it dearer for domestic residents to travel abroad. So the positive elasticity of xrt is as expected. Likewise there is a positive association between income (gdp) and demand, although the magnitude is small. The reason why demand appears to be highly income inelastic is likely caused by the differences in aggregation level of data: gdp is a national income measure, while the data on HORECA revenues are municipal. Thus, the gdp measure is not equipped to capture regional differences in income development across the country, but only broad average effects of changes in the Norwegian economy on the municipal HORECA sector demand. This can explain the modest impact of gdp variable.

The next variable popdens, however, is at the municipal level and therefore better suited to capture regional differences in the market size. The popdens elasticity is higher compared to both

ports). Moreover, since cruise packages normally are all-inclusive passengers have incentives to reduce food expenditures in port destinations (Vogel, 2011; Wood, 2000).

Another relevant point is that the HORECA sector revenue data are annual while the cruise season mainly runs from May to September.[5] This may explain why the demand spillover effect of cruises on local tourism business is modest when evaluated against annual real revenues. The impact of cruises on HORECA demand in the peak season might be considerable, but becomes diluted when the remaining months of the years are taken into account. The lack of monthly revenue data, however, means that we can only speculate about such aggregation effects.

Nonetheless, the results show that cruise passengers spend money onshore on food and beverages. For passenger visiting a port destination, there are obviously opportunity costs of returning on-board to the cruise ship, say, for eating lunch. With limited time in the port (e.g. 6–8 h), a temporary return to the ship eats a big chunk of the time budget available to do sightseeing and other onshore activities. Furthermore, visiting local restaurants and cafés might be part of the tourism experience, providing a break from the other activities while giving a glimpse of local food traditions. The finding that cruise passengers spend money on food and beverages is in line with the survey studies of cruise passengers' expenditures reviewed earlier in this study (Brida et al., 2012a; Douglas and Douglas, 2004; Larsen et al., 2013; Penco and Di Vaio, 2014).

These findings raise relevant policy questions for the formulation of tourist destinations' marketing strategies. The results can be used to argue that the cruise industry have a positive, albeit modest year round, impact on the destination HORECA sector.

Another perspective on the relatively low elasticity is that impact depends on volume. By growing the number of cruise calls to a sufficiently large number, there will be positive impact on the local economy. The halo effect stretches beyond the HORECA sector as cruise tourists buy souvenirs and other products and, importantly, embark on organized tours, sightseeing and other tourist experiences. Thus, it becomes a question for destinations to attract the right volume and ensure that negative externalities associated with cruises do not outweigh their economic contribution.

Conclusion

In this study, we investigated how international cruise tourism in Norway affects the demand of one of the largest land-based tourism sectors, the HORECA sector. This is the first econometric study to estimate cruise demand spillover to this sector specifically. An advantage of the econometric approach is that the results are general since all Norwegian cruise ports are included in the data set. Moreover, although survey studies can provide more detailed and fine-grained results than ours, the advantage of using secondary data sources is not having to rely on the accuracy of self-reported consumption by cruise tourists (Larsen et al., 2013). A minor contribution is that we take into account spatial effects in the tourism demand model. In our application, this approach did not greatly impact the key estimates compared to the OLS fixed-effects panel data model, however.

The findings align with results from other economic impact studies investigating cruise destinations that are not cruises' own home ports (Brida and Zapata, 2010a, 2010b; Larsen et al., 2013; MacNeill and Wozniak, 2018; McKee and Chase, 2003). In particular, the evidence of positive spillover effects on other parts of the land-based economy appears to be modest. This result is likely influenced by cruise lines' business model, which aims that the largest share of cruise spending is on-board (Vogel, 2011).

A limitation of this study is that we do not distinguish among the characteristics of hotel firms or other establishments in the HORECA sector. For example, it might be that the makeup of the hotel industry affects the demand spillover effects that accrue from cruises. In the Norwegian context, the effect of firm heterogeneity is presumably modest. There are few typical resort hotels in Norway as most hotels have the business segment as an important part of its guest clientele. Moreover, the standard of the hotels normally falls in the 3- to 4-star quality range.

A data limitation that we discussed above is that the revenue in the HORECA sector is accrued over a year, while the bulk of cruises' ports of call takes place during the summer months, so there is not a one-to-one mapping time wise. Another complicating factor can be that popular cruise destinations also are popular destinations for other types of day tourists. Since data on day tourist volumes are unavailable, the estimated models may confound expenditures of land tourists with cruise tourists biasing the cruise impact upwards. There is no easy solution for this issue, but access to revenue data that corresponded exactly to the cruise season would reduce such a potential bias. This is an idea for a future research to follow up.

Another idea for future research would be to decompose cruise effects to investigate if there are asymmetric effects on hotels, on the one hand, and restaurants and cafés, on the other hand, since they offer distinct services. In particular, the potential revenue leakage related to hotel demand is an interesting empirical question. This could also be extended to include other sectors outside of HORECA that also benefit from cruise passengers' expenditure. Because, even if the HORECA sector is among the largest tourism sectors, cruises are likely to have stronger demand spillovers on sectors offering tours and other experiences tailored specifically for cruise tourists. Further disentangling cruise impact remains a question for future research.

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Supplemental material

Supplemental material for this article is available online.

Notes

1. The CA in HORECA often refers to catering although the usage of the CA abbreviation also sometimes refer to cafés depending on place and context. In this study, we use this latter meaning.
2. The maps were generated in Stata 15 based on spatial information files obtained from the Norwegian Mapping Authority.
3. NACE is the European standard for business classification. NACE codes with 55 as the first two digits contain all hotels and other accommodation, while restaurants, cafés and similar food companies are labelled using NACE code 56 as the first two digits.
4. The LM tests for spatial errors fail to reject the null with a p value of 0.27, while the LM lag test is significant at the 1% level. Likewise, the LM robust tests show the same pattern with p value of 0.85 for the

spatial error test and p value of 0.00 for the LM lag test. These results support that spatial effects are in variables rather than in the errors.

5. Although there are winter cruises to Northern Norway for tourists who wish to experience the Northern lights, these are relatively few compared to the total cruise volume.

References

Aalen P, Iversen EK and Jakobse EW (2018) Exchange rate fluctuations and demand for hotel accommodation: panel data evidence from Norway. *Scandinavian Journal of Hospitality and Tourism* 19(2): 1–16. DOI: 10.1080/15022250.2018.1482566.

Balaguer J and Pernias JC (2013) Relationship between spatial agglomeration and hotel prices. Evidence from business and tourism consumers. *Tourism Management* 36: 391–400.

Braun BM, Xander JA and White KR (2002) The impact of the cruise industry on a region's economy: a case study of port canaveral, Florida. *Tourism Economics* 8(3): 281–288. DOI: 10.5367/000000002101298124.

Brida JG and Zapata S (2010a) Cruise tourism: Economic, socio-cultural and environmental impacts. *International Journal of Leisure and Tourism Marketing* 1(3): 205–226. DOI: 10.1504/IJLTM.2010.029585.

Brida JG and Zapata S (2010b) Economic impacts of cruise tourism: the case of Costa Rica. *Anatolia* 21(2): 322–338. DOI: 10.1080/13032917.2010.9687106.

Brida JG, Bukstein D, Garrido N, et al. (2012a) Cruise passengers' expenditure in the Caribbean port of call of Cartagena de Indias: a cross-section data analysis. *Tourism Economics* 18(2): 431–447. DOI: 10.5367/te.2012.0115.

Brida JG, Pulina M, Riaño E, et al. (2012b) Cruise visitors' intention to return as land tourists and to recommend a visited destination. *Anatolia* 23(3): 395–412. DOI: 10.1080/13032917.2012.712873.

Brida JG, Chiappa GD, Meleddu M, et al. (2014) A comparison of residents' perceptions in two cruise ports in the mediterranean sea. *International Journal of Tourism Research* 16(2): 180–190. DOI: 10.1002/jtr.1915.

Castillo-Manzano JI, Lopez-Valpuesta L and Alanís FJ (2015) Tourism managers' view of the economic impact of cruise traffic: the case of southern Spain. *Current Issues in Tourism* 18(7): 701–705. DOI: 10.1080/13683500.2014.907776.

Chang Y-T, Park H, Liu S-M, et al. (2016) Economic impact of cruise industry using regional input–output analysis: a case study of Incheon. *Maritime Policy and Management* 43(1): 1–18. DOI: 10.1080/03088839.2015.1086837.

Chase G and Alon I (2002) Evaluating the economic impact of cruise tourism: a case study of Barbados. *An International Journal of Tourism and Hospitality Research* 13(1): 5–18.

Chen J, Lijesen M and Nijkamp P (2016a) Cruise tourism as quasi-two-sided market concept: an exploration of Asian markets. *Journal of Tourism and Hospitality* 5(218): 2167–0269.1000218.

Chen JM, Neuts B, Nijkamp P, et al. (2016b) Demand determinants of cruise tourists in competitive markets: motivation, preference and intention. *Tourism Economics* 22(2): 227–253.

De Cantis S, Ferrante M, Kahani A, et al. (2016) Cruise passengers' behavior at the destination: investigation using GPS technology. *Tourism Management* 52: 133–150. DOI: 10.1016/j.tourman.2015.06.018.

Del Chiappa G and Abbate T (2016) Island cruise tourism development: a resident's perspective in the context of Italy. *Current Issues in Tourism* 19(13): 1372–1385. DOI: 10.1080/13683500.2013.854751.

Douglas N and Douglas N (2004) Cruise ship passenger spending patterns in Pacific island ports. *International Journal of Tourism Research* 6(4): 251–261. DOI: 10.1002/jtr.486.

Dwyer L, Douglas N and Livaic Z (2004) Estimating the economic contribution of a cruise ship visit. *Tourism in Marine Environments* 1(1): 5–16.

Dwyer L and Forsyth P (1996) Economic impacts of cruise tourism in Australia. *Journal of Tourism Studies* 7: 36–45.

Elhorst JP (2010) Applied spatial econometrics: raising the bar. *Spatial Economic Analysis* 5(1): 9–28.

Gibson P and Bentley M (2007) A study of impacts—cruise tourism and the South West of England. *Journal of Travel & Tourism Marketing* 20(3-4): 63–77.

Gooroochurn N and Sugiyarto G (2005) Competitiveness indicators in the travel and tourism industry. *Tourism Economics* 11(1): 25–43. DOI: 10.5367/0000000053297130.

Gouveia AXS and Eusébio C (2018) Assessing the direct economic value of cruise tourism in a port of call: the case of Funchal on the island of Madeira. *Tourism and Hospitality Research*. DOI: 10.1177/1467358418768666..

Hawkins DE, Chang B and Warnes K (2009) A comparison of the national geographic stewardship scorecard ratings by experts and stakeholders for selected world heritage destinations. *Journal of Sustainable Tourism* 17(1): 71–90. DOI: 10.1080/09669580802209944.

Jaakson R (2004) BEYOND THE TOURIST BUBBLE? Cruiseship passengers in port. *Annals of Tourism Research* 31(1): 44–60. DOI: 10.1016/j.annals.2003.08.003.

Larsen S and Wolff K (2016) Exploring assumptions about cruise tourists' visits to ports. *Tourism Management Perspectives* 17: 44–49. DOI: 10.1016/j.tmp.2015.12.001.

Larsen S, Wolff K, Marnburg E, et al. (2013) Belly full, purse closed: cruise line passengers' expenditures. *Tourism Management Perspectives* 6(0): 142–148. DOI: 10.1016/j.tmp.2013.02.002.

Lazzeretti L and Capone F (2009) Spatial spillovers and employment dynamics in local tourist systems in Italy (1991-2001). *European Planning Studies* 17(11): 1665–1683.

Leenders R (2002) Modeling social influence through network autocorrelation: constructing the weight matrix. *Social networks* 24(1): 21–47.

MacNeill T and Wozniak D (2018) The economic, social, and environmental impacts of cruise tourism. *Tourism Management* 66: 387–404.

Marco-Lajara B, Claver-Cortés E and Úbeda-García M (2014) Business agglomeration in tourist districts and hotel performance. *International Journal of Contemporary Hospitality Management* 26(8): 1312–1340.

Marco-Lajara B, Claver-Cortés E, Úbeda-García M, et al. (2016). A dynamic analysis of the agglomeration and performance relationship. *Journal of Business Research* 69: 1874–1879.

Marušić Z, Horak S and Tomljenović R (2008) The socioeconomic impacts of cruise tourism: a case study of Croatian destinations. *Tourism in Marine Environments* 5(2-3): 131–144.

McKee DL and Chase GL (2003) The economic impact of cruise tourism on Jamaica. *Journal of Tourism Studies* 14(2): 16.

Michael EJ (2003) Tourism micro-clusters. *Tourism Economics* 9(2): 133–145.

Penco L and Di Vaio A (2014) Monetary and non-monetary value creation in cruise port destinations: an empirical assessment. *Maritime Policy and Management* 41(5): 501–513.

Petrick JF (2005) Segmenting cruise passengers with price sensitivity. *Tourism Management* 26(5): 753–762.

Pratt S and Blake A (2009) The economic impact of Hawaii's cruise industry. *Tourism Analysis* 14(3): 337–351.

Sandvik K, Enger A and Iversen EK (2015) Developing scenarios for the Norwegian travel industry 2025. *Journal of Tourism Futures* 1(1): 6–18. DOI: 10.1108/JTF-12-2014-0018.

Tveteras S and Roll KH (2013) Non-stop flights and tourist arrivals. *Tourism Economics* 20(1): 5–20.

Vayá E, Garcia JR, Murillo J, et al. (2018) Economic impact of cruise activity: the case of Barcelona. *Journal of Travel and Tourism Marketing* 35(4): 479–492. DOI: 10.1080/10548408.2017.1363683.

Vogel MP (2011) Monopolies at sea: the role of onboard sales for the cruise industry's growth and profitability. In: Matias Á, Nijkamp P and Sarmento M (eds) *Tourism Economics*. Berlin: Springer, pp. 211–229.

Wei M (2017) Spatial distribution and the agglomeration performance of high-star hotels. *Tourism Analysis* 22(1): 31–43.

Wood RE (2000) Caribbean cruise tourism: globalization at sea. *Annals of Tourism Research* 27(2): 345–370. DOI: 10.1016/S0160-7383(99)00073-0.

Xie J and Tveteraas S (2018) The oil price collapse and the birth of a tourist nation. *UiS Working Papers in Economics and Finance*.

Yang Y (2012a) Agglomeration density and tourism development in China: an empirical research based on dynamic panel data method. *Tourism Management* 33: 1347–1359.

Yang Y (2012b) Agglomeration density and tourism development in China: an empirical research based on dynamic panel data method. 33: 1347–1359.
Yang Y and Fik T (2014) Spatial effects in regional tourism growth. *Annals of Tourism Research* 46: 144–162.
Yang Y, Fik TJ and Zhang H-l (2017) Designing a tourism spillover index based on multidestination travel: a two-stage distance-based modeling approach. *Journal of Travel Research* 56(3): 317–333.
Yang Y and Wong KKF (2012) A spatial econometric approach to model spillover effects in tourism flows. *Journal of Travel Research* 51(6): 768–778.

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Paper II

Urbanization and seasonality of tourism businesses

Urbanization and Seasonality of Tourism Businesses

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Abstract

This study investigates links between urbanization trends and tourism seasonality. The analysis uses hospitality data the municipal level in Norway from 2007 to 2018. The empirical findings show that the length of the hospitality accommodation season will increase in growing urban and contract in areas with a waning population size, which typically are rural areas. Moreover, the results show that increasing seasonal fluctuations in municipalities reduces both total hotel room revenue and revenue per available room. The revenue reductions are driven by volume effects and not by price effects. Finally, Norwegian hospitality firms situated in municipalities with alpine skiing appear to receive a revenue compensation for a shorter season through a higher RevPAR. This result suggests that unique tourist attractions and experiences can compensate for the drawbacks of shorter seasons through visitors' higher willingness to pay.

Keywords: Tourism seasonality, urbanization, hospitality revenue, panel data models, alpine skiing, Norway

1. Introduction

Amid the COVID-19 pandemic, tourism seasonality takes on new meaning as traditional travel patterns are upended. How travel patterns will look like after the vaccination schemes start to be effective is still unknown. Some travel will revert to similar patterns prior to the pandemic, while other travel will take on completely new forms (Pham, Dwyer, Su et al., 2021; Zhang, Song, Wen et al., 2021). However, as the pandemic plays out its gamut of upheavals on societies, it overshadows another, less dramatic, but unabating change that affects long-term seasonal patterns - and has done so for some time - namely, urbanization.

The global migration trend from rural to urban areas, documented in studies like Melchiorri, Florczyk, Freire et al. (2018), is bound to have a profound impact on tourism seasonality patterns. Figure 1 shows UN's projections of urbanization until 2050. Population growth in rural areas is expected to stagnate and even become negative, while the growth in urban areas is expected to rise with undiminished strength. These precarious prospects for peripheral tourist destinations make it important to analyze the impact of urbanization on the tourism season and tourism businesses' earnings, particularly in view of UN's projections for global migration to urban areas.

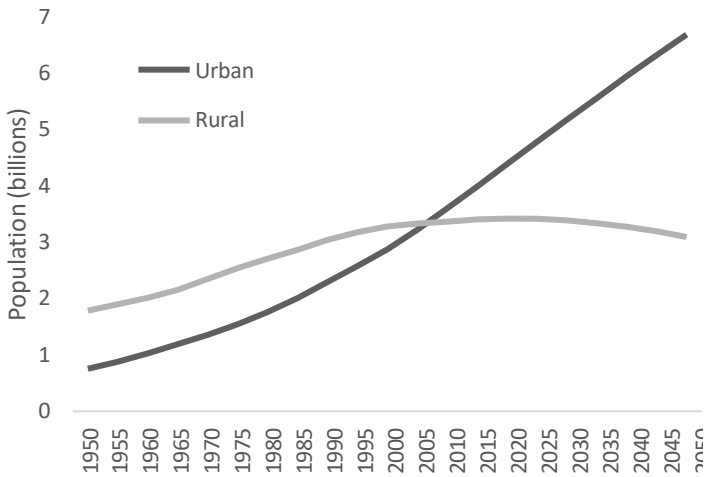

Figure 1. Global urbanization projections (United Nations, 2018)

For the periphery, urbanization jeopardizes many tourism businesses through a contraction of tourism demand and of the tourist season. Increased seasonality of tourism demand makes it more difficult to use capacity and resources efficiently, reducing profits (Baum, 1999; Butler, 1994; Zhang, Xie and Sikveland, 2020). For an industry already associated with low profit margins (Porter, 2008), increasing seasonality can aggravate the economic conditions for tourism operators. The effects are not only tangible for profitability, but also for staying afloat. As a result, the effect of a diminishing population in the destination combined with a contraction of the tourist season can be the difference between make or break for tourism businesses.

To study the impact of urbanization on seasonality in rural versus urban areas, this study investigates seasonality and earnings in hospitality businesses at the municipal level in Norway from 2007 to 2018. The main objective of this study is to investigate how seasonality and tourism performance is affected in the periphery and growing urban areas by urbanization. Since Norway is thinly populated, there are relatively many data points to analyze the magnitude and effects of seasonality on the periphery.

In the next section, we present relevant literature on seasonality and tourism performance, as well as on urbanization drivers and tourist development. Section 3 presents seasonality measure and the regression models for tourist performance. Section 4 gives an overview of the data and tourism seasonality patterns in Norway. Section 5 presents the results on the linkages between seasonality, urbanization, and tourism business performance. Finally, follows a discussion of the results and a conclusion.

2. Literature Review

Seasonality patterns are created by annual holidays, seasonal weather patterns, but also by socioeconomic factors like tourists' income and relative prices between destination and origin (Nadal, Font and Rossello, 2004; Turrion-Prats and Duro, 2018). Saito and Romão (2018) found that higher population density in Spanish regions reduced seasonality. Coshall, Charlesworth and Page (2015) investigated spatial

distribution of overseas tourism seasonality in Scotland and found that rural areas tended to be associated with higher seasonality while urban areas with lower seasonality. They also observed that the seasonality appeared relatively stable over time, since tourism vacation patterns have become entrenched. Observations of persistence in demand patterns have also been recognized by others, such as Lundtorp, Rassing and Wanhill (1999) and Garin-Muñoz (2009).

A few studies have estimated seasonality's impact on tourism businesses' earnings. For example, studies found that revenue per available room in Milan hotels followed weakly and seasonal demand patterns (Sainaghi, 2010; Sainaghi, Mauri and d'Angella, 2019). It comes as no surprise that earnings follow fluctuations in demand. Using data from Norway, Zhang, Xie and Sikveland (2020) show that higher seasonality reduces hotel firms' revenues and profitability. Moreover, Falk and Hagsten (2018) and Xie and Zhang (2020) found that compression of the tourism season increased the risk for tourism businesses to exit from the industry.

The negative impacts of seasonality are not limited to profits and business survival. Seasonal demand variations make destinations more reliant on migratory labor in the high season (Krakover, 2000). Family-owned and small tourism businesses use staff reductions as a coping strategy to manage the low season (Getz and Nilsson, 2004; Pegg, Patterson and Gariddo, 2012).

For tourism in growing urban areas, a positive effect of urbanization is an increased density of services (Kolko, 2010). Growth in service agglomeration and international travel connectivity make cities and urban areas attractive for large corporations (Bel and Fageda, 2008; Davis and Henderson, 2008). Thus, an important driver of urbanization is the benefits associated with agglomeration of white-collar work, which also results in higher travel intensity in cities. Rural areas receive the other end of the stick: negative population growth, change in the demographics towards an older population and fewer services and businesses.

In peripheral areas, tourism is one of few growing industries that offers new job opportunities. For example, Li, Chen, Li et al. (2016) shows that tourism development contributed to an economic convergence between regions in China. Similar economic convergence results have been found in Europe (Proença and Soukiazis, 2008; Soukiazis and Proença, 2008). Other studies point out the importance of tourism more specifically for rural areas (Coshall, Charlesworth and Page, 2015; Koenig-Lewis and Bischoff 2010).

For tourism businesses, the consumption by locals complements the seasonal inbound tourism demand, particularly in utilizing capacity based on heterogeneous business activities (Koenig-Lewis and Bischoff, 2010). Furthermore, the local population contributes considerably to demand by visits to friends and relatives and acts as a pull factor more generally (Backer, 2012; Zhang, Li and Wu, 2019).

Thus, the relative importance of tourism as an economic activity in rural areas may reflect that rural areas have fewer types of economic activities. For the same reason, tourism businesses in rural areas compared urban areas are likely to be more dependent on the seasonal component of demand. The next sections discuss the data and how the study analyzes to what degree population determines the seasonal profile of demand for tourist businesses.

3. Empirical Approach

To analyze the effect of urbanization on seasonality and tourist performance in peripheral areas, this study uses municipal-level data from the Norwegian hospitality sector. The first part of the analysis investigates links between seasonality and population. The second part of the analysis estimates the impact of seasonality on total revenue and on revenue per available room (RevPAR) in the hospitality sector.

Various measures have been proposed to quantify seasonality (see e.g. Baum and Lundtorp (ed.), 2001). In this study we use the frequently used Gini coefficient for a municipality *j* in year *y*, in our case can be expressed as

$$Gini_{j,t} = \frac{2\sum_{m=1}^{12}(x_m - y_m)}{12}$$

for ordering fraction of guest nights relative to the total number throughout the year. The number of fractions $m = 12$ is equal to the number of months in the year. x_m is the rank of the fractions, and y_m

denotes the cumulated fractions of the Lorentz curve. Next, we discuss the empirical strategy on how the Gini seasonality measurement is used to analyze effects of urbanization on tourism performance in the periphery.

Next, the empirical model specifications to capture how tourism performance is influenced by seasonality is captured in equation 1. The model has total hospitality revenue in municipality as dependent variable and is expressed as:

$$\ln revenue_{i,t} = \alpha + \beta_1 \ln gini_{i,t} + \beta_2 \ln population_{i,t} + \beta_3 \ln area_i + \beta_4 alpine_i + \beta_5 \ln gini_{i,t} * alpine_i + \sum_{s=1}^{S-1} r_{D,i} + \sum_{t=1}^{T-1} d_{D,i} + \varepsilon \quad (1)$$

α is a constant term. The effect of seasonal variations on hotel revenue, $\ln revenue_{i,t}$, is measured by the Gini measure $\ln gini_{i,t}$. $\ln population_{i,t}$ is municipal population in municipality i in year t. $\ln area_i$ measures the land area of the municipality, while $alpine_i$ captures the effect of any skiing hill present in the municipality, as explained earlier. By interacting the effect of seasonality and presence of a skiing hill jointly, $\ln gini_{i,t} * alpine_i$ captures any asymmetries between skiing destinations and non-skiing destinations in how seasonality affects revenue. The two summation terms are region and

year dummies, respectively, and the final is an error term, assumed independent and identically distributed.

As an alternative formulation to equation 1, revenue is exchanged for the average revenue per available room, $\ln revpar_{i,t}$, as the dependent variable. This allows us to analyze not only overall revenue, but how seasonality and population influence earnings per sold room.

4. Data and Variables

We conduct a panel data analysis for the years from 2007 to 2018. The data source, Statistikknett.no., provide monthly data for tourism businesses.[3] The varying availability of municipality hospitality data is due to censoring issues. For instance, in 2018 the sample consisted of 66 out of the around 420 Norwegian municipalities in total. For municipalities that have partial records of observations for some months of the years, we predict missing values of monthly guest nights. For example, this can be municipalities that have three hotels running in the summer season, but where some hotels close for the winter and thus are censored for the remainder of the year. The predicted values for the remainder of the year we estimate by a panel data model from January 2007 to December 2018 using a maximum likelihood estimation method. For making the predictions, we regressed on

[3] Statistikknett.no is a website providing ready-for-use statistics in tourism, based on official statistics from Statistics Norway. The site is run by the company Regio AS.

regional panels for guest nights, which were then used to predict missing values for municipalities with partial observations,

$$GuestNights_{i,m} = \alpha + \beta_1 hotel_{i,m} + \beta_2 (hotel_{i,m} \cdot s_D) + \beta_3 u_{D,i} + \varepsilon_{i,m} \quad , \qquad (2)$$

where $hotel_{i,m}$ expresses the number of hotels in municipality i in month m. α is a constant term. The variable s_D is a time (month) dummy, and by its interaction with $hotel_{i,m}$, β_2 expresses each hotel's contribution to guest nights each month. The coefficient β_3 captures the municipal effect by the dummy, $u_{D,i}$. ε_i is an error term assumed to be independent and identically distributed.

To analyze association between seasonality and population size in a municipality, we estimate the linear trend between them using the last year in the dataset 2018. We also investigate the relationship between change in municipality population and Gini from 2007 to 2018. Note that the average and median population size of Norwegian municipalities in 2018 were 12 549 and 4 672. As a result, the population measurement gives a good indication of where the urban centers are. For example, in 2018 the population in the two largest municipalities Bergen and Oslo were 279 792 and 673 469.[4]

Performance variables include total revenue for hotels and similar accommodation, as well as revenue per available room, both

[4] Note that an alternative measure of urbanization, urban share, that captures the share of municipal population living in urban areas was also employed. However, due to multicollinarity issues, the urban share variable was excluded.

obtained from Statistikknett.no. Revenue is aggregated at the municipal level, conditional on whether there are at least three hotels or similar accommodation in the municipality. The minimum requirement of number of businesses is due to confidentiality issues, and for the same reason the sample is limited to the 66 municipalities. The second variable, revenue per available room is averaged across all months each year to obtain a yearly performance measure. These are yearly accounting numbers reported to official authorities.

Data on municipal population and geographical area from 2007 to 2018 have been obtained from Statistics Norway. The geographical size of each municipality is measured by *land* area in square kilometers; this implies that area of lakes is excluded from the calculations. Since winter activities like skiing is popular in Norway influencing the seasonal tourism pattern, we also included a variable to capture this activity. A dummy variable captures alpine skiing opportunities by taking the value one if there is a skiing hill with operating ski lift in the municipality.[5] Every model specification includes year dummies to capture annual variations common across the municipalities. Specifically, year dummies capture non-linear trends and shocks. Region dummies are also included to control for any

[5] Skiing gondolas are located in just a few places in Norway, and are therefore not included. However, gondolas are usually located in large skiing locations where conventional ski lifts are also present.

region-specific fixed effects. Table 1 provides summary measures for the independent variables.

Table 1. Descriptive statistics

	Mean	*Standard dev.*	*Min*	*Max*
Gini	0.191	0.097	0.041	0.629
Population	37 390	79 417	902	673 469
Area, sq. km	889.7	867.7	23	4206
Alpine	0.56	0.50	0	1

The Gini coefficient is calculated from the summed guest nights per month, ranked for each municipality according to magnitude. Hotels and other accommodation constitute the businesses, as earlier. The Lorenz curve is comprised by each month of number of guest nights, ranked from lowest to highest throughout each year, thus signifying increased level of seasonal variation by increased distance from the 45 degree line.

Figure 2 depicts the geographic variation in tourism seasonality. The grey area are the excluded municipalities with less than three hotels, while the colored municipalities are the municipalities included

for 2018, the final year in the data set. The color scale denotes the varying Gini levels for the municipalities in question, with a movement to warmer colors indicating larger seasonal variations. There is a tendency towards larger seasonal variations for inland rural municipalities, while coastal municipalities, particularly in urban areas, enjoy a lower degree of seasonality.

Comparison with Figure 3 indicates the tendency that urban areas are less prone to seasonal variations: The Oslo urban area in the Southwest and the Trondheim area in Mid-Norway are more blueish. The Bergen area in the Southwest appears exceptional in this respect. Figure 3 also captures how Norway is thinly populated. The grey areas are municipalities with less than three hotels, so they are bound to be sparsely populated. However, even for the included municipalities few appear in the darker shades of blue that indicates urban agglomeration. Hence, the number of municipalities that can be on the losing side of the urbanization trend is large.

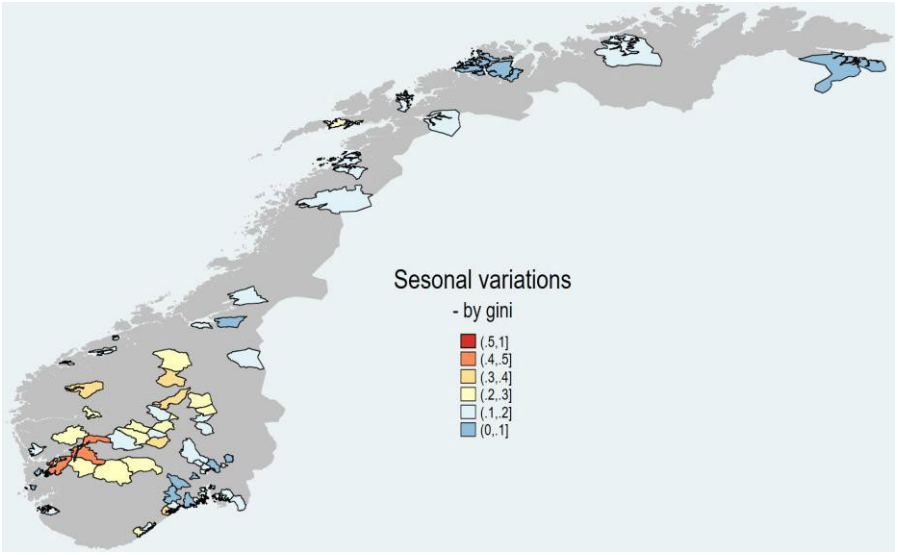

Figure 2. Seasonality as measured as by Gini index using monthly variations in total number guest nights at hospitality firms at the municipal level in 2018.

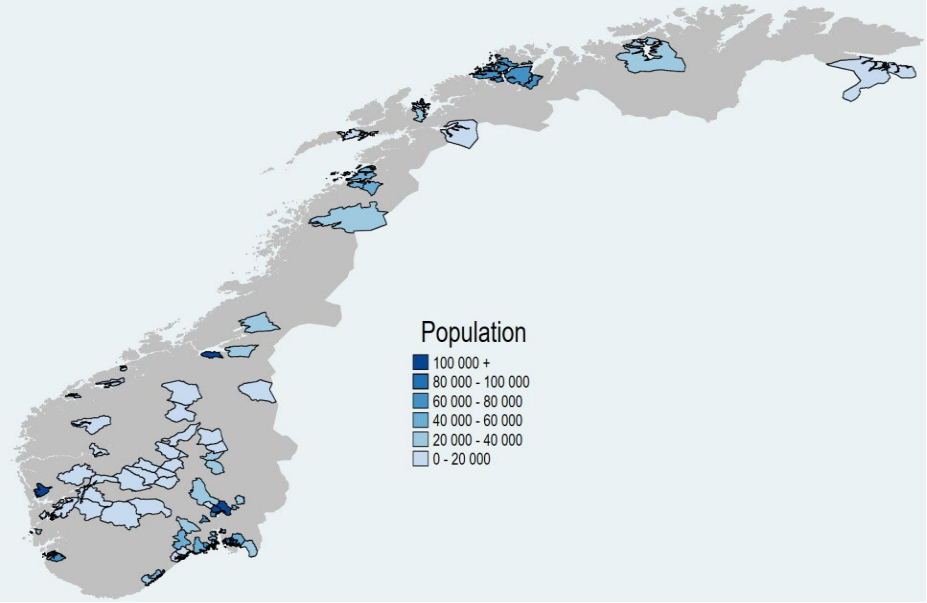

Figure 3. Population by municipality in 2018 (Statistics Norway).

Figure 4 shows the average monthly distribution of guest nights by month. The figure splits the municipalities into three groups: 1) municipalities with more than 20K inhabitants (urban), 2) municipalities less than 20K (Rural other) excluding those with operating ski-lifts, and 3) municipalities with less than 20K but with at least one operating ski lift (Alpine). In the sample the urban, rural other, and rural alpine consists of 39, 15, and 34 municipalities each. As noted, the distribution does not represent the total population of municipalities in Norway since the sample has censored most of the smallest municipalities.

Figure 4 shows that on average seasonal patterns are larger for the smaller municipalities, i.e., municipalities with less than 20K inhabitants. Among the rural municipalities with ski-lifts the winter season is discernable from the March peak. However, the averaging across municipalities dampens the seasonality patterns. For example, in the municipalities with most pronounced winter tourism peaks, February and March months account for 17% and 16% percent of all guest nights, considerable higher than the average of the 35 rural alpine municipalities that for February and March are 8% and 10%. Consequently, the variations across municipalities in seasonal patterns is more pronounced than the average of the three groups indicate in the figure. Also, note that the seasonal patterns in Figure 4 are not weighted averages. This means that, for example, the seasonal pattern of Oslo with 613 K inhabitants is weighted equally in the urban group as the pattern of Kristiansund with 23 K.

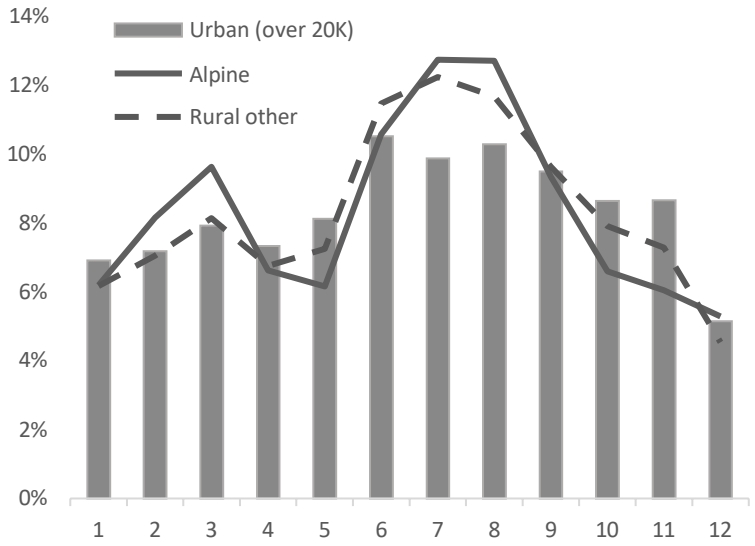

Figure 4. Distribution of guest night by monthly shares by months, January-December. The "Alpine" and "Rural Other" groups are municipality with lower than 20K population and where the former also have skiing alpine operations.

5. Results

5.1 The Relationship between Urbanization and Seasonality

Figure 5 distinguishes population size and seasonality by municipality. Moving from left-to-right in the figure the size of the municipal population decreases, while the seasonal Gini coefficient tends to grow. The inverse relationship is shown by the linear seasonal trend in the

figure, which even more clearly illustrates that seasonality trends upwards when population decreases. This is a first exhibit of the link between urbanization, as measured by population size, and tourists' seasonal demand pattern.

Figure 5. Average Population and Gini Coefficient from 2007 to 2018 by municipality sorted from largest (from left) to smallest population.

The next exhibit investigates the dynamic relationship between urbanization and seasonality. If municipalities with smaller populations, on average, are associated with more contracted seasonal pattern than municipalities with larger populations, then population growth over time should have a similar effect on dampening seasonality. That is, seasonality should tend to decrease if population

size grows, and vice versa. The negative relation is captured in the box-plot in Figure 6, which shows that the tourism seasonality growth rate from 2008 to 2018 (i.e., the Gini coefficient) is negatively related to the population growth rate. The downward-sloping regression line attest to this inverse relationship.

The reason why seasonality has increased is likely due to improved price competitiveness that has boosted more seasonal tourism demand in Norway (Xie and Tveteraas, 2020). The exhibits in Figure 5 and 6 both support the hypothesis that urbanization decreases tourism seasonality in growing cities and increases tourism seasonality in the periphery where population is decreasing.

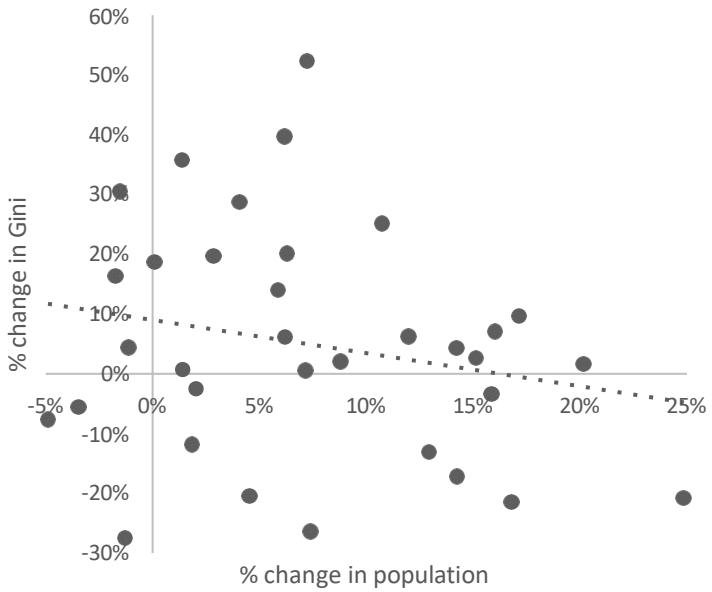

Figure 6. Box-plot of percentage population growth and percentage change in Gini from 2008 to 2018 by municipality.

5.2 Relationship between Tourism Seasonality and Performance

Tables 2 and 3 below show the model results of the estimated regression of how performance is affected by seasonality. Table 2 shows the estimates from the regression of logarithm of revenue against the listed covariates. The first three columns provide the results of a baseline model using three different estimation techniques, pooled OLS, fixed effects (FE), and random effects (RE) panel regressions. Due to the double-log model formulations the estimated coefficients are elasticities. As expected, the estimated coefficients for the Gini elasticities are negative in all three models. This means that, on average, higher seasonality is associated with lower revenues in the hospitality sector. The estimated elasticities are statistically significant at the 1% level for all three models and vary in magnitude between -0.27 and -0.38. The magnitude of the elasticities means that a 10% increase in the Gini seasonality coefficient reduces hotel room revenues with around 3%.

The chi^2 test statistic equals 18.56 for the Hausman test, indicating a p-value well below 5% and thus a preference for the fixed effects model. In general, the Hausman test will gravitate towards the fixed effects model when the discrepancy in the estimated coefficients

in the two models become larger. While the estimated Gini elasticities are highly similar, the population elasticities are not, which likely explains the preference for FE.

The positive sign of the population coefficient also conforms to prior beliefs, as we expect a strong association between demand for accommodation and size of the local population (e.g., Zhang, Xie and Sikveland, 2020). The magnitude of the population elasticities varies relatively more among the three models from around 0.6 in the pooled OLS and RE models to 1.7 in the FE model. Population is also highly significant in the three models. Following the indications of the Hausman test, we should lean more towards the results from the FE model, which estimates the largest effect of population size.

In contrast to population, the geographic size of the municipalities is not significant. The purpose of including the area variable is to capture dispersion of the population; normally, inhabitants in a municipality live more densely as the population increases and as the geographic size of municipalities decreases. In this way, the geographic size may give additional information about urbanization. However, the estimated coefficients for municipalities' area are either positive or negative depending on the choice of model. In addition to this non-robustness of estimates size, the lack of statistical significance of estimated coefficients signals that the area of municipalities is of less relevance for hospitality revenue.

Model specifications (4) to (6) explicitly control for that some municipalities have winter tourism. Winter tourism takes place in mountain areas in Norway that receive tourists who come for skiing. As explained earlier, the *alpine* dummy variable identifies all those municipalities that have skiing areas with installed ski lifts. The alpine dummy variable is significant at the one percent level and indicates that there is a strong positive effect on hotel accommodation revenues of being a winter destination.

The interaction effect between the Gini and alpine variables are also highly significant in the three models and moderates the effect of seasonality for winter tourism destinations. In the models (4)-(6), the magnitude of Gini seasonality coefficient becomes larger, around -0.6. This indicates that revenues decrease around 6% when the Gini coefficient increases with 10%. It is also interesting to note that estimated coefficient of the interaction term is around the same magnitude as the Gini coefficient, around 0.5 to 0.6, but with a positive sign. This indicates that municipalities with dedicated winter tourism hardly experience any of the negative revenue effects from seasonality, which hospitality firms in other municipalities suffer from.

The population coefficients are significant and similar to the baseline models, as expected, while geographic area is significant in the pooled regression, but not in the FE and RE models. The alpine variable is strongly significant in both the pooled and the random effects specifications, indicating that alpine skiing hills are a positive

driver for revenues. The chi^2 statistic in the Hausman test is 20.44, indicating by its strong significance again a preference for the fixed effects model.

Table 2. Regression analysis of revenue

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Dep: ln_rev	*Pooled*	*FE*	*RE*	*Pooled*	*FE*	*RE*
Ind. variables						
ln Gini	-	-	-	-	-	-
	0.270***	0.381***	0.379***	0.612***	0.587***	0.592***
	(0.080)	(0.056)	(0.055)	(0.105)	(0.072)	(0.071)
ln population	0.555***	1.650***	0.605***	0.573***	1.676***	0.641***
	(0.031)	(0.336)	(0.069)	(0.030)	(0.332)	(0.068)
ln area	0.030	-0.600	0.0409	-	-1.259	-0.061
				0.094***		
	(0.030)	(4.202)	(0.082)	(0.032)	(4.153)	(0.085)
Alpine	-	-	-	1.559***	-	1.312***
				(0.242)		(0.260)
*ln Gini*alpine*	-	-	-	0.600***	0.496***	0.500***
				(0.128)	(0.110)	(0.106)
Year dummies	YES	YES	YES	YES	YES	YES
Constant	12.04***	5.008	10.96***	11.80***	8.989	10.65***
	(0.424)	(26.19)	(1.113)	(0.429)	(25.88)	(1.083)

Observations	885	885	885	885	885	885
R-squared	0.518	0.462	0.512	0.558	0.353	0.549
Hausman, chi2	-	18.56***		-	20.44***	
Number of groups		99	99		99	99

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Besides evaluating effects of seasonality on total revenue, it is also of interest to investigate how the revenue per available room (RevPAR) is affected by seasonal fluctuations. Table 3 shows the results of seasonality on RevPAR. Similar to the regressions in Table 2, pooled OLS, fixed effects and random effects models are estimated to investigate the impact of seasonality on earnings. The baseline models (1)-(3) all indicate a significant negative effect of seasonality on revenue per available room (*ln_revpar*). The effect ranges around -0.25 to -0.37 percent decrease for every 1 percent increase in RevPAR. This result means that in addition to lower total revenues in municipalities with larger seasonal fluctuations (ref. results from Table 2), the average earnings per hotel room is also lower.

Population positively influences average revenues per room in all but the fixed effects estimation. However, the population elasticity is much lower for RevPAR compared to total revenue. The geographic

area is only significant in the pooled OLS estimation. The regression investigating the effect of skiing hill proximity, estimations (4)-(6), indicate also here a strong effect of seasonality, with larger coefficients of the Gini measure. In models (4)-(6), estimated coefficients for both population and geographic area are significant in the pooled and RE models, but not in the FE model. For the pooled and RE model, the negative sign of area is as expected, since a larger area presumably reduces population density (and therefore urbanization) and influences RevPAR negatively.

Like the estimated models in Table 2, the impact of seasonality changes when controlling for alpine skiing hills. Specifically, the magnitude of the Gini coefficient increases (with a negative sign) so that its negative impact on RevPAR becomes larger. In the fixed effect model, which is preferred according to the Hausman test, an increase in the Gini of 1% reduces RevPAR of around 0.5%. Again, the interaction variable between Gini and alpine for winter destinations largely cancels out this negative effect. Moreover, in the fixed effect model the only variable that contributes to explain differences in RevPAR across the municipalities are the two variables linked to the Gini coefficient.

Table 3. Regression analysis of revenue per available room (REVPAR)

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Dep: ln	*Pooled*	*FE*	*RE*	*Pooled*	*FE*	*RE*

revpar						
Ind. variables						
ln Gini	-0.250***	-0.374***	-0.326***	-0.346***	-0.525***	-0.462***
	(0.0296)	(0.047)	(0.039)	(0.040)	(0.060)	(0.052)
ln population	0.096***	0.0628	0.0815***	0.102***	0.0837	0.096***
	(0.012)	(0.278)	(0.022)	(0.012)	(0.276)	(0.022)
ln area	-0.032***	4.630	-0.033	-0.055***	4.150	-0.061**
	(0.011)	(3.478)	(0.024)	(0.012)	(3.449)	(0.026)
Alpine	-	-	-	0.390***	-	0.589***
				(0.092)		(0.141)
*ln Gini*alpine*	-	-	-	0.169***	0.359***	0.283***
				(0.049)	(0.092)	(0.072)
Year dummies	YES	YES	YES	YES	YES	YES
Constant	4.992***	-24.28	4.955***	4.888***	-21.41	4.737***
	(0.157)	(21.67)	(0.328)	(0.164)	(21.49)	(0.334)
Observations	884	884	884	884	884	884
R-squared	0.465	0.073	0.458	0.479	0.073	0.472
Hausman, chi2	-	26.17***		-	27.91***	
Number of groups		99	99		99	99

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

6. Discussion

The UN urbanization projections in Figure 1 show that migration to cities is expected to continue with undiminished strength in coming decades. Globally, the annual compounded population growth rates from 1950 to 2020 were 2.3% in urban areas and 0.9% in rural areas. From 2020 to 2050 the UN projections imply that those corresponding growth rates will be 1.4% for urban areas and -0.3% for rural areas. Unequal economic opportunities for people are a key driver behind the urbanization trend; Ravallion, Chen and Sangraula (2007) found that people in developing countries who migrate from rural to urban areas, on average, improve their economic conditions.

From the perspective of tourism businesses, the shift in economic activity from rural to urban areas have at least two important implications. First, the total demand for tourist services will increase in growing urban areas and reduce, accordingly, in contracting rural areas. Demand for tourist services such as accommodation, restaurants, and cafés depend on population and economic activity in their respective locations. If people and businesses migrate out of a municipality, demand in that area will contract.

Second, the local population and businesses in a destination create tourist demand throughout the year, driven by leisure purposes,

business-related travel and meeting activities. In contracting rural areas, year-around demand for tourist-related services will therefore reduce. Consequently, the seasonal component of tourist demand will increase. In growing urban areas, seasonal length expands. A relevant question is then how changes in seasonality patterns will impact tourism businesses.

The results from the regression analyses show that seasonality is detrimental for both total hotel revenue and RevPAR. The findings imply that urbanization is good for tourism businesses in expanding urban areas, as it generates more yearlong demand, and bad for the rural communities where the population is thinning. Across municipalities in 2018, the correlation between the Gini seasonality coefficient, on one hand, and the mean occupancy rate and room price, on the other, are -0.7 and 0.0 respectively. The correlation coefficients imply that increased seasonality is negatively associated with occupancy rate but has no association with the mean room price. In other words, higher seasonality appears to reduce capacity utilization, but does not influence the average prices hotels obtain when selling rooms.

The results confirm what Baum (1999) and others have observed, namely, that main ill of seasonality is underutilization of available tourism resources. Alemayehu and Kumbhakar (2021) show that the opportunity cost of empty rooms in hotels is high both because of lost revenue and inefficient use of the available capacity. We can

only assume that the negative effects when capacity is underused extends to many other types of tourism businesses.

Reduction in hotels' RevPAR is telling as it implies lower profit margins for a sector already associated with narrow margins (Porter, 2008; Zhang, Xie and Sikveland, 2020). Falk, Tveteraas and Xie (2020) show that operational margins for accommodation businesses in Norway is considerably lower than in other economic sectors. Thus, a further pressure on the narrow margins by seasonality is likely to increase the rate of exits from the sector (Falk and Hagsten, 2018, Xie and Zhang, 2020).

Tourism businesses situated in peripheral areas with declining population must prepare to face a contraction of the tourism season. This development goes against tourism marketers' wish for longer seasons. As Lundtorp, Rassing and Wanhill (1999) wrote: "For all cold water resorts in peripheral areas, it is the 'dream' of the marketing department to expand the season but very few have succeeded." Investigating Bornholm island outside of Denmark, they concluded that the opportunities of peripheral areas to extend the tourist season appears unrealistic.

Peripheral areas in Norway face similar seasonality challenges. For example, international cruises make many ports of call in Norwegian fjords to rural areas (Skrede and Tveteraas, 2019). However, as with most leisure tourism demand, cruise tourism is mainly a summer activity with limited prospects to extend the season.

The same is the case for domestic leisure tourism that concentrates around public holidays and the summer season. Figure 4 shows that the peak season for rural regions in Norway is June through August. This underlines that these more thinly populated areas are dominated by seasonal activities associated with holidays and leisure activities. In that respect, Lundtorp, Rassing and Wanhill (1999)'s observation about limited possibility to extend the season also apply for rural coastal areas in Norway. Nonetheless, there are counter examples where the tourist industry has been able to extend the season such as Northern Norway. The opportunity for a longer season rests largely on the unique experiences associated with Northern lights (White, Morgan, Pritchard et al., 2019).

As this study purports, a unique experience that tourists appreciate is alpine skiing. In the case of Norway, accommodation revenues for winter ski tourism are little affected by a relatively short seasonal demand. For tourist revenue, it appears that the popularity of skiing compensates for a relatively short season through skiers' high willingness to pay for tourist services like accommodation. Saito and Romão (2018) attained similar results for Spain, by showing that peak demand explains differences across regions in hospitality productivity. They concluded that the most effective way of improving productivity was by improving a region's attractiveness. Maybe instead of having expectations of extending the season, which following Lundtorp, Rassing and Wanhill (1999) can be unrealistic, other approaches can be

more fruitful: Strategic investments in experiences and tourist attractions can increase tourists' willingness to pay, compensating for disadvantages associated with a shorter season.

Using Norway as a case study, examples of strategic investment in tourism infrastructure are several. Investments could make access to mountaintops with views of the fjords easier, like better roads or gondola lifts. Or investments could target more of basic amenities such as public toilets that makes it easier to enjoy and experience natural attractions. Profitability in the periphery also hinges on avoiding overinvestments in tourist infrastructure, since overcapacity will tend to drive down prices. An example of overinvestments is presented in Falk and Tveteraas (2019). They found that ski-lift investments in South Tyrol in North Italy led to cannibalization among ski-lift operators. The same can easily happen in the supply of accommodation and food services in a small place. Thus, operators and investors in small destinations need to talk together and find good solutions collectively to avoid investments that can be detrimental and unsustainable.

The periphery has unique natural and historical attractions. To create sustainable economic growth implies that those same resources are carefully managed, but also enhanced (e.g., through use of technology; Coghlan and Carter, 2020). Moreover, to understand the specific value drivers of tourist attractions destination managers can for example use digitally generated user content to investigate tourists' perceptions (e.g., Bigne, Fuentes-Medina and Morini-Marrero, 2020). It

also makes sense to apply some type of policy or management framework like that of Ostrom's common pool resource management. This framework forces destination managers to consider that many stakeholders collectively depend on those same resources.

Logically speaking, having to 'sell' a natural or cultural touristic resource while being constrained by a short season, in sum, do point towards some scheme of value-based tourist development strategies. This argument is aligned with recommendations for Oklevik, Gössling, Hall et al. (2019) who writes that: "… destinations should seek to better understand their markets, including length of stay, spending, and/or activity intention, to identify profitable markets. Ultimately, such knowledge may help addressing overtourism conflicts while building tourism systems that are more economically, socially, and environmentally resilient." For many peripheral destinations that experience a negative population growth the chief struggle is less likely to be overtourism. Rather, the challenge is to create attractions that generate tourist demand during high seasons sufficient to counter negative migration trends from the local communities.

7. Conclusion

Urbanization is a global force that is reshaping seasonality patterns. Tourist industries depend on where people live and are affected by the migration from rural to urban areas. In growing cities, tourist businesses can capitalize on new year-around market opportunities. For

declining rural areas, however, the outflow of people contracts the tourist season and means that several businesses will be forced to close the shop. In fact, tourist industries in declining rural areas receive a double whammy from the urbanization trend: Not only does it change the distribution of demand making the season shorter, but the overall tourist market size diminishes.

Our results using data from Norway show that hospitality revenue falls with shorter tourist seasons in line with findings in other studies (Zhang, Xie and Sikveland, 2020; Falk and Hagsten, 2018). Moreover, we find that a shorter season for accommodations is associated with municipalities with smaller population. As we have argued, the short explanation for this contraction of tourist season is that the seasonally dependent leisure demand becomes comparatively more important when the size of the destination population reduces. Moreover, the results show that it is not price, but volume effects that explains the lower revenue. In fact, hospitality businesses associated with alpine skiing are compensated for shorter seasons through higher RevPAR. Saito and Romão (2018) found similar links between population density and seasonality as for the hospitality industry. Urbanization therefore appears to be another global trend that affects spatial distribution of tourism seasonality such as climate change (Amelung, Nicholls and Viner, 2007; Gössling, Scott, Hall et al., 2012).

A limitation of our study is data censoring, which means that only 66 out of 422 municipalities (as of 2018) where included in our

study. Nonetheless, the sample still contains many small municipalities. For the same reason, we believe the results in the study are largely representative also for the censored municipalities. Moreover, the included municipalities contain most of the population and tourism businesses in Norway.

A suggestion for future studies is to investigate to what degree the relationships between urbanization and seasonality apply also for other sectors of the tourist industry. Since urbanization is a global trend, logic dictates that the results should be similar elsewhere. However, there are surely interesting nuances and exceptions compared to our findings. Thus, future studies on this topic could offer additional insights that provide tourist destinations and businesses with new strategies on how to cope with negative population growth and increased seasonality. For now, our conclusion is that development of unique tourist attractions and experiences hold the promise to compensate for shorter seasons.

References

Alemayehu FK and Kumbhakar SC (2021) Excess capacity, production technology and technical inefficiency in hospitality sector. *Tourism Management* 82.

Amelung B, Nicholls S and Viner D (2007). Implications of global climate change for tourism flows and seasonality. *Journal of Travel research* 45(3): 285-296.

Backer E (2012) VFR travel: It is underestimated. *Tourism Management* 33(1): 74-79.

Baum T (1999) Seasonality in tourism: Understanding the challenges: Introduction. *Tourism Economics* 5(1): 5-8.

Baum T and Lundtorp S (eds) (2001) *Seasonality in Tourism*. Oxford: Elsevier Science Ltd.

Bel G and Fageda X (2008) Getting there fast: globalization, intercontinental flights and location of headquarters. *Journal of Economic Geography* 8(4): 471-495.

Bigne E, Fuentes-Medina ML and Morini-Marrero S (2020) Memorable tourist experiences versus ordinary tourist experiences analysed through user-generated content. *Journal of Hospitality and Tourism Management* 45: 309-318.

Butler RW (1994) Seasonality in tourism: issues and problems. In: Seaton AV et al., *Tourism: State of the Art*. Chichester: John Wiley and Sons, pp.332-339.

Coghlan A and Carter L (2020) Serious games as interpretive tools in complex natural tourist attractions. *Journal of Hospitality and Tourism Management* 42: 258-265.

Coshall J, Charlesworth R. and Page SJ (2015) Seasonality of overseas tourism demand in Scotland: A regional analysis. *Regional Studies* 49(10): 1603-1620.

Davis JC and Henderson JV (2008) The agglomeration of headquarters. *Regional Science and Urban Economics* 38(5): 445-460.

Falk M and Hagsten E (2018) Influence of local environment on exit of accommodation establishments. *Tourism Management* 68: 401-411.

Falk M, Tveteraas SL and Xie J (2020) 20 Years of Nordic tourism economics research: a review and future research agenda. *Scandinavian Journal of Hospitality and Tourism*: 1-13.

Falk M and Tveteraas SL (2019). Modelling the wider effects of ski lift investments. *Empirical Economics*: 1-16.

Garin-Muñoz T (2009) Tourism in Galicia: Domestic and Foreign Demand. *Tourism Economics* 15(4): 753-769.

Getz D and Nilsson PA (2004) Responses of family businesses to extreme seasonality in demand: the case of Bornholm, Denmark. *Tourism Management* 25(1): 17-30.

Gössling S, Scott D, Hall CM, Ceron JP and Dubois G (2012) Consumer behaviour and demand response of tourists to climate change. *Annals of tourism research* 39(1): 36-58.

Koenig-Lewis N and Bischoff EE (2010) Developing effective strategies for tackling seasonality in the tourism industry. *Tourism and Hospitality Planning & Development* 7(4): 395-413.

Kolko J (2010) Urbanization, agglomeration, and coagglomeration of service industries. In: Glaeser EL (ed) *Agglomeration economics*. University of Chicago Press, pp.151-180.

Krakover S (2000) Partitioning seasonal employment in the hospitality industry. *Tourism Management* 21(5): 461-471.

Li H, Chen J, Li G and Goh C. (2016). Tourism and regional income inequality: Evidence from China. *Annals of Tourism Research* 58: 81-99.

Lundtorp S, Rassing C and Wanhill S (1999) The off-season is "no season": The case of the Danish island of Bornholm. *Tourism Economics* 5(1): 49-68.

Nadal JR, Font AR and Rossello AS (2004). The economic determinants of seasonal patterns. *Annals of Tourism Research* 31(3): 697-711.

Melchiorri M, Florczyk AJ, Freire S, Schiavina M, Pesaresi M and Kemper T (2018) Unveiling 25 years of planetary urbanization with remote sensing: Perspectives from the global human settlement layer. *Remote Sensing* 10(5): 768.

Oklevik O, Gössling S, Hall CM, Steen Jacobsen JK, Grøtte IP and McCabe S (2019) Overtourism, optimisation, and destination

performance indicators: A case study of activities in Fjord Norway. *Journal of Sustainable Tourism* 27(12): 1804-1824.

Pegg S, Patterson I and Gariddo PV (2012) The impact of seasonality on tourism and hospitality operations in the alpine region of New South Wales, Australia. *International Journal of Hospitality Management* 31(3): 659-666.

Pham TD, Dwyer L, Su JJ and Ngo T (2021) COVID-19 impacts of inbound tourism on Australian economy. *Annals of Tourism Research* 88.

Porter ME (2008). The five competitive forces that shape strategy. *Harvard business review* 86(1): 25-40.

Proenca S and Soukiazis E (2008) Tourism as an economic growth factor: A case study for southern European countries. *Tourism Economics* 14(4): 791–806.

Ravallion M, Chen S and Sangraula P (2007) New evidence on the urbanization of global poverty. *Population and development review* 33(4): 667-701.

United Nations, Department of Economic and Social Affairs, Population Division (2018) *World Urbanization Prospects: The 2018 Revision*, custom data acquired via website.

Sainaghi R (2010) Seasonality on hotel performance: The case of Milan. *Anatolia* 21(1): 173–178.

Sainaghi R, Mauri AG and d'Angella F (2019) Decomposing seasonality in an urban destination: The case of Milan. *Current Issues in Tourism* 22(16): 1919–1924.

Saito H and Romão J (2018) Seasonality and regional productivity in the Spanish accommodation sector. *Tourism Management* 69: 180-188.

Skrede O and Tveteraas SL (2019) Cruise spillovers to hotels and restaurants. *Tourism Economics* 25(8): 1286-1301.

Soukiazis E and Proença S (2008) Tourism as an alternative source of regional growth in Portugal: a panel data analysis at NUTS II and III levels. *Portuguese Economic Journal* 7(1): 43-61.

Turrion-Prats J and Duro JA (2018) Tourist seasonality and the role of markets. *Journal of Destination Marketing & Management* 8: 23-31.

White P, Morgan N, Pritchard A and Heimtun B (2019) Framing the land of the Northern Lights. *Annals of Tourism Research* 78.

Xie J and Tveteraas S (2020) Economic decline and the birth of a tourist nation. *Scandinavian Journal of Hospitality and Tourism* 20(1): 49-67.

Xie J and Zhang D (2020) Influence of tourism seasonality and financial ratios on hotels' exit risk. UiT School of Business and Economics Working Papers in Economics (4).

Zhang Y, Li X and Wu T (2019) The impacts of cultural values on bilateral international tourist flows: A panel data gravity model. *Current Issues in Tourism* 22(8): 967-981.

Zhang H, Song H, Wen L and Liu C (2021) Forecasting tourism recovery amid COVID-19. *Annals of Tourism Research* 87

Zhang D, Xie J and Sikveland M (2020) Tourism seasonality and hotel firms' financial performance: evidence from Norway. *Current Issues in Tourism*, DOI: 10.1080/13683500.2020.1857714

Paper III

Agglomeration and survival of tourism firms

Agglomeration and Survival of Tourism Firms

Abstract

Different from the previous studies mostly focus on clustering effect of agglomeration, this study underpins the three sources of agglomeration economies as purported by Capone and Boix (2008), namely internal, location, and urbanization economies. Using a longitudinal data set consisting of a variety of tourist firms in Norway from 2004 to 2013, the study investigated how the locational and firm characteristics influence firms' survival using the Cox proportional hazard model. The study results suggest that agglomeration plays a key role in explaining tourism firms' survival rates. A key finding is that of complementarity and substitutability in tourist services: An increase in the number of firms offering the same service in a destination will increase the risk of exit, while an increase in the variety of tourist services offered in the destination will reduce this risk. These findings align with those in Capone and Boix (2008) about links between the tourism industry and places that are associated not only with natural endowments but also with destinations' social-economic environments.

Keywords: agglomeration, survival analysis, tourism firms, Cox proportional hazards regression model, Norway

Introduction

As tourism was one of the fastest growing industries in the world prior to the Covid-19 pandemic, many tourism studies have focused on how tourism growth can promote the economic growth of the destination places and regional development (Balaguer & Cantavella-Jorda, 2002; Cárdenas-García, Sánchez-Rivero, & Pulido-Fernández, 2015; Neuts, 2020). An argument behind such focus is that many tourism activities and experiences depend on natural and cultural endowments like in a ski resorts and UNESCO World Heritage Site. Consequently, unique location characteristics are sources of comparative advantages for developing a destination. Moreover, when many tourists visit a location, this is a sign that the local tourism production system is well established (Capone & Boix, 2008), which contributes to the growth of other industrial sectors in the region.

Capone and Boix (2008) points out that not only links between the tourism industry and natural endowments matter but also with destinations' social-economic environments. This is especially true for many small destinations without unique natural and cultural endowments. The tourism industries in these destinations are seldom an ecosystem built around well-established tourist attractions. Instead, the tourist production system is highly integrated with those of other economies in the destinations. Moreover, tourism demand is often bigger and more diverse in larger social-economic environments

associated with urban areas than in smaller ones because of a larger business segment. Consequently, the social-economic environment of a destination affects production costs, service variety and quality of tourism firms, which are all factors that influence economic performances and firms' survival rates. For instance, firms within a cluster can have advantages in information and knowledge sharing, access to public goods and skilled labor pools (Porter, 1990). The effect of the social-economic environment is often called the agglomeration effect in the literature (Capone & Boix, 2008; Hoover, 1937; Ohlin, 1933; Porter, 1998).

Following the discussion given by Capone and Boix (2008), Hoover (1937), and Ohlin (1933), the agglomeration effect is from the following three sources: internal economics, localization economics and urbanization economics. Internal economies are produced by a firm dependent on its scale, scope, organization, and knowledge. Localization economies are the external economies introduced by Marshall (e.g., Marshall, 1920). They are external to a firm but internal to the industry, referring to knowledge sharing, skilled labor pool, and specialized suppliers in the industry. Localization economies are close to industry clustering effects discussed by Porter (1990, 1998) that the geographic concentration of firms can benefit from the advantages in information and knowledge sharing, access to public goods, and synergies arising from specialization within the cluster. Urbanization economies refer to the advantages generated by urban size (Hoover,

1937; Ohlin, 1933), diversity (Chinitz, 1961; Jacobs, 1969), and infrastructure (Maparu & Mazumder, 2017). This is discussed further in the literature review section.

In contrast to the literature on how tourism development contributes to a destination's economy, the objective of this paper is to investigate the agglomeration effect of the local social economy on the tourism industry. For example, Segarra-Oña, Miret-Pastor, Peiro-Signes and Verma (2012) found evidence of positive agglomeration effects on tourist firms' profitability associated with tourism clusters in Spain. However, different from previous studies which mostly focus on clustering effect, this study investigates agglomeration effect through all the three dimensions of internal economies, localization economies and urbanization economies. A special attention has been paid to how the tourism sector itself generates agglomeration effects through its industry structure.

The Norwegian tourism industry is used as a case study for the following reasons. First, although Norway is endowed with nature-based attractions like fjords and mountains that generate international tourist demand, the tourist attraction spots are spread out across the entire country and few local destinations have economies dominated by the tourism industry. Instead, the tourism production systems in the destinations are well-established and have largely been developed together with the local economies in small towns and villages. The

Norwegian tourism industry therefore lends itself to the study of agglomeration economies with comparison of industry structure and firm survival across counties. Second, for a practical reason, we got access to the detailed firm-level financial data for the Norwegian tourism firms, making the study feasible. Third, there has been a decade-long debate in Norwegian politics on maintaining small counties against centralizing or urbanization. Since tourism is an important industry in the rural districts of Norway in providing employment and maintaining small counties, our study results can provide empirical evidence to this political debate. Moreover, since most rural counties claim tourism to be one of the economic pillars they aim to develop further, this study can shed light on what is required to successfully achieve such an objective.

A survival model was estimated in the study using the financial data of 9500 officially registered Norwegian tourism-related firms between 2003 and 2013, including firms in the accommodation, transportation, food and beverages, travel agency and tour operators, amusement and recreation activities, museums, and other cultural activities. The findings in the study suggest a positive agglomeration effect of the social-economic environment on the local tourism industry. This paper contributes to the literature by being the first paper to decompose the agglomeration effects of the local social environment into internal economies, local economies, and urban economies. It also

provides critical implications to the tourism industry and society. From the industry aspect, the positive agglomeration effect suggests firm fragmentation in terms of a high number of firms with a small number of employees in the Norwegian tourism industry increases the tourism firms' hazard ratio for failure. From the societal aspect, it supports the statement that emigration from rural communities saps the longevity of many tourism firms' operations in rural areas. The study thus supports the political argument that centralization deteriorates local industries and the overall economy in small counties, which further speeds up the emigration from small counties to cities and makes it difficult to maintain small counties in Norway.

Another key contribution is disentangling localization economies linked to the provision of a particular tourism product and those that arise due to the variety of tourism products supplied. As with earlier studies, the results from this study show that the former type of localization economies has negative effects on firm survival due to strong competition (J. A. C. Baum & Mezias, 1992; Lado-Sestayo, Otero-Gonzáles, Vivel-Búa, & Martorell-Cunill, 2016; Piacentino, Aronica, Giuliani, Mazzitelli, & Cracolici, 2021). However, an increased diversity of tourism products offered in a destination has the positive agglomeration effect, suggesting that variety increases the destination's attractiveness and thus the market size, providing benefits to all the tourism firms in the destination. Firm diversity can be linked to urbanization economies because more populated areas typically will

have a higher diversity of services. However, in rural areas, tourism firm diversity might be critical for positive localization economies.

The rest of the paper is organized in the following way. It begins with a discussion of the research background. Next, we reviewed the literature on the measurement of agglomeration effects and the agglomeration effects in the tourism industry. It is followed by research methods, data, and estimated results in an order like this. The paper ends with a discussion section, including the main findings and implications of the study.

Research background

According to Falk and Hagsten (2018), tourism businesses in rural areas are challenged because of thinner markets and more volatile seasonal demand than urban areas. Demand in the leisure and tourist segments are more seasonal than in the business segment since holiday travels are constrained by institution calendars such as schools or national holidays and climate conditions (Frechtling, 1996; Li, Go, Hung, & Chen, 2018; Xie, 2020). Since the business segment in rural destinations makes up a smaller share of demand facing tourist-related businesses compared to in urban destinations, overall tourism demand in rural areas tends to be more fluctuating. At the same time, population emigration from rural destinations will make an already thin rural tourism market even thinner and demand even more volatile as

population emigration will lead to business community erosion in the rural community. When businesses and firms leave a community due to a falling local population, the scope of the services offered in a rural destination will be reduced. This makes the destination less attractive and consequently lowers tourism demand.

Furthermore, there exists a halo-effect on demand for different tourism products and services. When there is a broader supply of tourism related products and services, it will increase the destination's attractiveness and the demand for tourism services, including accommodation rooms, restaurants, cafés, and transportation. In this way, urbanization will not only lead to a falling population and fewer business activities but also makes a destination less attractive for tourists. Shrinking and volatile demand is expected to affect tourism firms' economic performances and thus their survival (Zhang & Xie, 2021; Zhang, Xie, & Sikveland, 2021).

The seasonal and market size effects that put tourism businesses at a disadvantage have been investigated in earlier studies (Krakover, 2000; Zhang & Xie, 2021; Zhang et al., 2021). Population emigration and reduced business activities can lead to adverse seasonal and market size effects from the demand side. However, they can also cause adverse effects on tourism firms from the production side by reducing knowledge and resource sharing (Williams & Hall, 2000). Centralization caused by migration from rural to urban areas reduces

the scale economies and scope of business sectors, government, and institutions in rural regions. This results in less economic and social activities in those regions, leading to diminishing agglomeration effects on the tourism industry in the destinations.

Literature review

Marshall's work (e.g., Marshall, 1920) on agglomeration economies was predominantly oriented in the studies of related businesses. Based on Marshall's theory, Hoover (1937) and Ohlin (1933) classify agglomeration economies into three sources: internal, localization, and urban economies. As discussed, internal economies are produced by a firm dependent on its own scale, scope, organization, and knowledge (Capone & Boix, 2008). For instance, a larger firm draws benefits from increasing returns in production. Localization economies are internal to the industry but external to a firm, which has several synonyms such as industry agglomeration, industry clustering, and spatial clustering in the literature (Malmberg & Maskell, 2002), gaining most attention in the study of agglomeration.

Malmberg and Maskell (2002)'s review on spatial clustering research provides the following discussions. The emergence of localized clusters of similar and related activities has its roots backwards in history. The further development of the cluster shows a

deepening division of labor between local firms, the formation of local culture and supporting infrastructures and institutions to the proliferating industry. It also includes phases of consolidation that some big firms tend to lead the industry development at some stages. Before the 2000's, the benefits of clustering were focused on cost reduction. A firm located close to other similar and related firms can share the costs of establishing the required infrastructure and other collective resources, reduce inter-firm transaction and shipment costs, and get specialized skills from a local labor market. After the 2000's, as knowledge became an important input factor, the focus has turned to knowledge spillover. Clustering facilitates knowledge sharing and stimulates knowledge adaptation, learning, and innovation.

Urbanization economies, as discussed by Capone and Boix (2008), refer to the advantages generated by urban size (Hoover, 1937; Ohlin, 1933), diversity (Chinitz, 1961; Jacobs, 1969) and infrastructure (Maparu & Mazumder, 2017). They occur when different business sectors and institutions, such as government organizations and universities, affect each other in input sharing, knowledge spillovers and risk reduction (Frenken et al., 2007). Risk reduction is the agglomeration's ability to sustain asymmetric shocks. A city consisting of diverse industries has a labor pool that provides at least partial substitution of job opportunities. When business in one sector fails, people have less of a problem finding a new job in other sectors.

Agglomeration effects are not always positive. Negative effects, also called diseconomies of agglomeration are possible, such as congestion, rising input prices, profit deterioration from the increased localized competition, and adverse selection arising from asymmetric information (McCann & Folta, 2009).

Research on agglomeration greatly focuses on localization economies. There are considerable empirical studies on the clustering effects in various industries, like maritime industries (Knarvik & Steen, 1999; Tveteras, 2002). For the tourism industry, the empirical results of agglomeration effects on hotel firms are ambiguous. Both economies and diseconomies of agglomeration were found. Agglomeration of hotel firms in a destination reduces their room prices and revenue due to severe competition (Lado-Sestayo et al., 2016; Marco-Lajara, Claver-Cortés, & Úbeda-Garcia, 2014). However, there is also evidence of cost reductions due to cost and resource sharing between firms (Marco-Lajara, Claver-Cortéz, Úbeda-García, & Zaragoza-Saéz, 2016). In the Norwegian context, Sikveland, Xie, & Zhang (2022) find that the clustering of hospitality firms in a region enhances firm reliance on short-term debt, suggesting that severe competition drains cash for which short-term debt serves as a substitute. Overall, the evidence seems to lend strong support to that the detrimental effects of competition in market demand outweighs cost benefits of localization economies.

The existing literature either studies the effect of industrial or spatial clustering on economic performance (e.g., Sikveland et al., 2022) or factors influencing firm survival in hotel and tourism. These factors include origination innovations (T. Baum & Ingram, 1998), firm size and market growth (Gémar, Moniche, & Morales, 2016; Kaniovski et al., 2008), previous experience and location of entrepreneurs (Brouder & Eriksson, 2013; Gemar, Soler, & Guzman-Parra, 2019), and seasonality and financial ratios (Falk & Hagsten, 2018; Zhang & Xie, 2021). However, to our best knowledge, there is lacking research on how the different types of agglomeration economies influence tourism firms' survival. As discussed, the measurement of agglomeration effects in the broad literature, not only in the tourism literature, is largely limited to localization economies. Tourist destinations are an ecosystem of various types of products and services, and the effect of that breadth thus should be accounted for. This study differs from the previous literature by investigating measures of the agglomeration effects on tourism firms' survival from all key dimensions defined by agglomeration economics theory, which includes internal, localization, and urban economies.

Methods

We applied a survival analysis approach to reach the research goal in the study. The survival analysis comprises two functions named the

survival function and the hazard function. The survival function estimates the expected duration of time before termination. In the health sector this can be the death of a patient. In economics, it is typically related to a firm going out of business or the termination of trading partner relationships. In general, the survival function can be specified as

$$S(t) = Pr\ (T \geq t) \qquad (1)$$

where $S(t)$ is the probability of a firm survival not shorter than t, in other words, the probability that there is no failure prior to time t.

From the survival function (1), we derive the hazard rate, an estimate of the instantaneous rate at which a firm goes bankrupt after *t* years, conditional on that it has survived until *t*. The hazard function is given by

$$h(t) = lim_{\Delta t \to \infty} \frac{P(t \leq T \leq t+\Delta t | T \geq t)}{\Delta t} = \frac{F(t+\Delta t) - F(t)}{\Delta t S(t)} = \frac{f(t)}{S(t)} \qquad (2)$$

where *F(t)* and *f(t)* denote the cumulative distribution function (CDF) and the probability density function (PDF) of a firm going bankrupt by duration t, respectively.

The hazard rate is conditional on a set of covariates that affects its rate. If a covariate increases the hazard rate, it also means it has a negative effect on duration. Among different models, the Cox proportional hazard model (Besedes & Prusa, 2006; Cox, 1992; Nitsch, 2009) is the most widely used approach to evaluate the impact of the covariates on hazard rates. The Cox model is given as:

$$h(X) = h_0(t)exp(X\beta) \qquad (3)$$

One advantage of the Cox model is that even if the baseline hazard $h_0(t)$ is not specified, the model's results will closely approximate the results for the correct parametric model. Another advantage is that one can obtain the estimated betas, representing the true βs (i.e., the parametric part of the Cox function), without having parameterized the hazard function (i.e., the non-parametric part of the Cox function). The latter also implies that no assumptions about the underlying distribution of the hazard function is required.

In our study, the empirical model specification for Cox model (3) is:

$$log\, h_i = \beta_1 Lpop_i + \beta_2 Air_i + \beta_3 Coast_i + \beta_4 Linitalrevenue_i + \beta_5 Lwage_i + \beta_6 Lno\_employees_i + \beta_7 Lno\_firms_i + \beta_8 Lno\_NACE_i + \sum \gamma_k DNACE_k +$$

$$\sum \delta_k Dprovince_k + \sum \theta_k Dtype_k + U_i \qquad (4)$$

In the equation, there are three groups of explanatory variables to identify the three sources of agglomeration effects: internal economies, localization economies and urbanization economies as we discussed. For the variable specifications, if a variable starts with *L*, it means this variable is in a log form, measuring the effect of percentage change in this variable on the hazard rate. The suffix i means firm i. Keeping these notations, $Lpop_i$ is the log of the population of the county where firm i is located. It measures the effect of one percent change in the population size of the county where firm i is located on the probability of the firm to exit the industry. *Air* is a dummy variable which takes the value one if the county or a neighboring county where the firm is located has an airport with passenger traffic. *Coast* is dummy for firms located in coastal counties. These three variables are general geographic characteristics of the county where firm i is located. They are used to identify the dimension of urban economies in the agglomeration effects.

To measure the internal economies source of agglomeration effect, we have included two firm characteristic variables. They are $Linitalrevenue_i$ for the initial revenue of firm i when it started to operate. A larger initial revenue suggests a large scale. Accordingly,

this variable is to measure the scale effect as a large firm may benefit from scale economies. *Wage* is measured as the average personal cost per worker in a firm. Since wage level is generally higher and wage costs dominate the total production cost of the Norwegian tourism industry, we include this variable to measure a firm's operation efficiency.

In addition, we have three variables to identify the localization economies, also called industry or spatial clustering effects in the literature. These are $Lno\_employees$, the total number of people employed by the tourism-related firms in the county where firm i is located, Lno_firms, the number of firms with the same NACE code at 5-digital level. NACE is the code used to classify firms' businesses. For instance, firms with the first five NACE number 55.101 means they are all hotel companies without restaurants. If firm *i* is a hotel company, *lno_firms* is calculated as the log of the number of hotel companies in the county.

Finally, Lno_NACE is the log of the number of the types of these five digital NACE codes to identify tourism diversity, such as hotel, food and beverage, and travel agency in a county. This variable counts the number of NACE codes represented in a county. Thus, this variable captures the variety of tourist products and services offered in a destination. The descriptive statistics of NACE codes in Table 1 present that in our sample, there are an average of nine different types

of tourism business activities in each county, with the minimum of only one to the maximum of fourteen.

$Lno\_employees$, Lno_firms, and Lno_NACE are employed to capture the potential positive and negative location economies such as knowledge sharing, size of pool of qualified workforce, and level of competition within firms in the tourism industry. The overall effect of Lno_firms is ambiguous depending on the relative sizes of negative and positive effects. However, we expect the result of l$no_employees$ and Lno_NACE to be positive, since a large number of employees and the diversity of tourism activities indicates a large scale of the tourism industry and higher tourism demand in a destination. It helps to lower production costs by sharing the costs of establishing the required infrastructure and other collective resources, reducing inter-firm transaction and shipment costs, and getting specialized skills from a local labor market as we have early discussed in localization economies.

Finally, three different types of dummies are added to the model as control variables to account for heterogeneity in different tourism sectors, regions, and organization forms. They are 32 dummies for different NACE codes, identifying type of business activity a firm operates, 18 regional dummies at a province level, and 13 organizational type dummies (e.g., cooperative, foundation, limited company, liable company, sole proprietorship, etc.).

Data

Every Norwegian-registered firm is required to submit their annual financial reports including firms' balance sheets, income statements, and other firm-specific information to the Norwegian government agency called Brønnøysund Register Center. Our data were provided by this agency and include various types of the tourism firms classified by their NACE codes. The data cover 34 different NACE codes at the 5-digit level, including firms in the following sections: passenger transportation, accommodation, food and beverages, travel agency and tour operators, amusement and recreation activities, museums, and other cultural activities. There are a total of 52,433 observations in the raw data for the period between 2004 to 2013.

Survival period of a firm is measured according to the period when its accounting data is available. That is, when data on a particular firm is not reported on a given year, this is interpreted as the firm has quitted the market. In other words, the firm has either gone bankrupt or the owner, for some reason, has decided not to run the business anymore.

Figure 1 shows the Kaplan-Meier survival curve for tourist firms. The curve shows that around 50% of the firms have seized to operate in four years, suggesting a high exit rate. This is not surprising

as the tourist industry is known to have small profit margins not only in Norway, but also in other Nordic countries (Tveteraas & Xie, 2021). With small profit margins, firms become sensitive to changes in market conditions and input cost, in particular, for wage levels since tourism firms are typically labor intensive. Fluctuations in these economic conditions should be a key factor explaining the relatively short expected operating span of tourist firms in Norway.

The real situation is likely even worse. Since sole proprietorship firms, a type of micro enterprises, are not required to report their accounting data to Brønnøysund Register Center, our sample of firms is, thus, biased towards larger firms. The number of these firms is relatively bigger in the tourism industry than other sectors, particularly in Norway (Tveteraas & Xie, 2021). Nevertheless, even if these micro enterprises are numerous, they account for a relatively modest share of sales revenue. As such the sample included in this study can be used for the purpose of this study.

Norway is a relatively thinly populated country with approximately 5.4 million inhabitants in a total of approximately 430 counties before 2017. As presented in Table 1, the mean population size of counties is small with 13 456 people. The median population is approximately 4700 as of 2014. The capital Oslo is the largest county with almost 700 000 inhabitants. As any map of Norway will reveal, compared to the size of the country, the Norwegian coastline is

extremely long due to the fjords that stretch inside the country. Since Norway is also a mountainous country, people have traditionally settled along the coast. This explains why a large share of the firms in our sample is located along the coast. In the table, it shows seventy seven percent of the counties are located in the coastline and 41% of counties have access to a nearby airport.

Table 1. Descriptive statistics of the data

Variable	**Mean**	**Std. Dev.**	**Min**	**Max**
Revenue (firm), NOK	19 000 000	335 000 000	0	66 200 000 000
Population (county)	13 457	203 871	0	623 966
Air (county)	0.41	0.49	0	1
Coast (county)	0.77	0.42	0	1
Initial revenue, NOK	1 652 074	32 900 000	-221 263	3 330 000 000
Wage level	339 812	3 053 732	-704 285	403 000 000
Employees (county)	4079	6923	0	22 792

Firms (county)	187	332	1	1309
NACE codes (county)	14.23	9.24	1	31

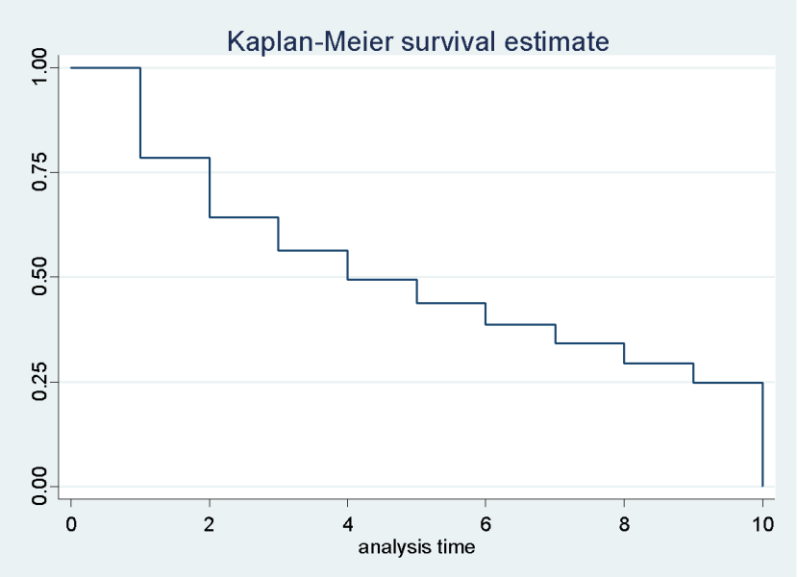

Figure 1. Kaplan-Meier estimates of firm survival.

Results

As suggested by both equation (3) and (4), the exponential of a parameter represents the ratio of the hazard rate to the baseline hazard in response to one unit-change in the corresponding covariate. If an explanatory variable has been specified as a log form, then it measures the response to one percentage change in the variable. In that case, if an estimated parameter (e.g., β_1) of an explanatory variable (e.g., $Lpop_i$) is estimated to be statistically insignificant, the exponential of this parameter then becomes 1. Further, it means the ratio of the hazard rate to the baseline hazard is equal to one, and the variable (e.g., population) has no effect on a firm's survival. Thus, whether a variable affects a firm's survival or not should be compared to value one. If the result of a variable is larger than one, it means the variable enhances a firm's hazard rate, or in other words, negatively affects a firm's survival probability. For a parameter estimate smaller than one, the hazard rate is scaled downwards, reducing the risk of failure (i.e., business closure).

Table 2 shows the estimated results from the Cox regression of survival. The estimated results show that most of the variables are estimated to be statistically significant at a 5% critical level. As all the estimated results are smaller than one except for that of wage and the number of firms, the majority of factors exert positive agglomeration

effects on tourism firms' survival. We discuss the estimated results in the order of urbanization economies, internal economies, and location economies by following the model specification.

For the measurement of urbanization economies, *Lpop* is the logarithm of population. The result of *Lpop* larger than one suggests that the hazard rate for the tourism firm decreases with the size of a country's population. In other words, it is advantageous to be situated in a county with a larger population. Next, *Air* and *Coast* are dummy variables capturing if the destination has access to airport(s) nearby or if the county is situated along the coast, respectively. Norway is one of the world's northernmost countries, its geography is thinly stretched, and a large part of the landscape are mountains, which makes flight a key travel mode for most Norwegians. Therefore, it is expected that a tourism firm's hazard rate reduces with the connectivity and accessibility provided by being located in a county with an airport. As fjords are a major attraction in Norway, being highly popular with the cruise industry (Skrede & Tveteraas, 2019), we have expected firms located along the coast may benefit. However, the estimated result of *Coast* is not statistically different from one, showing that firms located in a coastal country do not benefit from lower hazard rates. The unexpected result might be because 77% of the counties in Norway are situated along the coastline, thus the location advantage is not unique and significant. The result might have resulted differently if data for the

counties that are part of the cruise traffic routes were used instead to capture the "coastal" effect.

Next, we discuss how firm characteristics influence the hazard rates. First is the initial revenue variable that measures scale effects of the firm. As we discussed, if the initial revenue the firm received in the start-up year (or first year of operation) is relatively large, there may be some scale economies that reduces the hazard rate through cost efficiencies. The estimated parameter of around 0.86 supports this notion. Next, a higher wage level increases as expected the hazard rate. This means that firms with a higher wage burden are more likely to shut down. This also makes sense since tourist firms generally represent labor-intensive technologies. Moreover, profitability margins for tourist firms in Norway are low and as such firm survival should be sensitive to differences in labor costs (Falk et al., 2021).

What follows is the set of variables that captures location economies. These are the variables that capture the effects of the tourism industry clustering in the county where a firm is located on the firm's hazard rate. First, it is the total number of people employed in tourism firms in each county (*lno_employees*). We find that the size of the tourism workforce has a positive effect on survival by reducing the hazard rate. This suggests that firms can benefit from having access to a large pool of workers that are some combination of skilled, experienced, or willing to work in tourism. Willingness is important

since tourism businesses often pay a lower wage than many other industries. As such, the wage incentives are modest. Willingness can be linked to both access to migratory workers and to young people starting out on professional careers (Lundmark, 2006). A larger tourist work force can also be a source of positive knowledge spillovers.

Second, the estimated coefficient of *lno_firms* is found to be significantly higher than one at 4.57. *lno_firms* measures the number of firms that operate within the same type of tourism business like the number of hotels, for example. The estimated result of *lno_firms*, therefore, suggests a significant negative effect on a firm's survival by scaling the hazard rate more than four times its base rate. This result suggests that competition between firms drives down the average profitability of firms in the same type of business.

Third, NACE code counts the number of business sectors the tourism firms are represented in a county's tourism ecosystem. The hypothesis is that a greater variety of tourism firms will attract more tourists and therefore enlarge the market for the entire industry. The estimated coefficient supports this hypothesis as the hazard rate reduces substantially with an increase in the 'portfolio' of tourism services. In other words, counties that deliver a wide variety of tourism services increase the average survival probability of tourism firms located in these counties.

Table 2. Results from Cox model

VARIABLES	Cox I
Urban economies	
Lpop	0.719***
	(0.0198)
Air	0.611***
	(0.0341)
Coast	0.994
	(0.0495)
Internal economies	
linitalrevenue	0.857***
	(0.00762)
Lwage	1.054***
	(0.0142)
Localization economies	
Lno_employees	0.647***
	(0.0185)
Lno_firms	4.570***
	(0.252)
Lno_NACE	0.592***
	(0.0424)
Control variables	
DNACE	Yes
Dprovince	Yes

Dtype	Yes
Observations	37,659

Discussion

Agglomeration plays a key role in explaining tourism firms' survival rates as apparent from the estimation result. This observation is supported by the findings that all the three sources of the agglomeration effects, namely internal, location, and urbanization economies are present. These findings align with those in Capone and Boix (2008) about links between the tourism industry and places that are associated not only with natural endowments but also with destinations' social-economic environments. This rings especially true for rural destinations in Norway where differences in the local tourism production system influence survival rates of tourist firms.

Localization economies are found to play a key role for firms' survival probabilities. For instance, competition between firms of the same type (e.g., hotels) appears to be a strong force that limits the longevity of tourism firms. The sixfold increase of the hazard ratio with increases in the number of firms of the same type shows competition exerts a strong effect on survival. Low barriers to entry imply that it is relatively easy for new firms to establish themselves if a market for any

given type of tourism service appears to be profitable. Low barriers to entry increase the risk of firms' risk of failure. This is supported by the evidence of low profitability in tourist firms compared with industry averages (Falk et al., 2021).

On the contrary, the localization effect associated with offering a greater variety of tourist services in the county (*Lno_NACE*), has a positive effect on firms' survival. The diverging effects between establishment of more-of-the-same types of tourist businesses (*Lno_firms*) vs. greater variety in the type of tourist businesses (*Lno_NACE*) suggest that destination managers and local authorities should aim to regulate the former type of establishments and stimulate the expansion of the latter.

In the study of international trade, much research has been devoted to understanding the role of the extensive and intensive margins in export performance (Bernard, Jensen, Redding, & Schott, 2009; Besedeš & Prusa, 2011). According to Berthou and Fontagné (2008), the extensive margin refers to the number of varieties that are exported to each market, and the intensive margin as the average value of exports by variety. For tourism, the results in this paper indicate that market growth at the destination level is first and foremost achieved at the extensive margin, rather than the intensive margin; Visit to a destination increases with a greater variety of service offerings, not more of same. As discussed above, more-of-the-same tourism services

leads to monopolistic competition for market share between firms, which reduces profitability (J. A. C. Baum & Mezias, 1992). The positive localization economies associated with a variety in the types of tourism services remind us that competition not only takes place between firms in a destination, but also between destinations; Offering a greater variety of tourist services to attract new visitors to a destination necessarily imply some competition with other destinations. If the latter perspective is important, then it can be useful to view destinations as ecosystem and intra-destination collaboration between firms becomes important.

Trade theory posits that export orientation skews intra-industry structure towards firms that are more productive and offer higher quality (Baldwin & Harrigan, 2011; Melitz, 2003). In tourism destinations many smaller firms primarily target locals and domestic tourists. However, a destination that aims to attract international visitors likely benefits from having tourist-oriented firms of a certain scale and scope. Integrated firms of a certain size can function as tourism 'locomotives' and have the capacity for building networks of collaboration in the destination economy.

A benefit of collaboration is to dampen the level of intra-destination monopolistic competition and promote a greater variety in types of tourism services that create the synergistic effects across firms in the destination (Piacentino et al., 2021); A wider variety of tourist

service offerings attract more tourists to the benefit of all firms in the destination. This view is also in line with the findings of Capone and Boix (2008) who write that for regional tourist systems "*higher growth rates are associated … with the presence of every phase of the tourist filiere in the local production system.*" Consequently, firm behavior should be guided by a common goal to maximize long-term growth and competitiveness of the tourist destination.

The perspective of seeing a tourist destination as an ecosystem where firms are interdependent is reinforced by the positive localization economies associated with the pool of employees. A long-term growth strategy that increases variety in the types of tourist services offered in a destination creates positive feedback effects. This is because a greater variety not only attracts more visitors to the destination, but presumably also increases employment. The resulting growth in the number of employees creates additional positive agglomeration effects, as reflected by the Cox model.

The urbanization economies show firm survival is positively related to population size and airport connectivity. A destination's opportunity to access markets benefits local tourism firms. Moreover, the size of social-economic environment as reflected by the number of inhabitants provides positive spillover effects of knowledge sharing, innovation activities, and access to public infrastructures. In sparsely populated rural areas, the tourism industry therefore is subject to a

comparative disadvantage. Consequently, the broader societal trend of migration from rural to more centralized areas in Norway worsens the survival condition of the tourism firms in small rural areas.

However, a key takeaway from Capone and Boix (2008) and from this study is that competitiveness not solely depends on the resource endowments in the destination. By creating a tourist production system with attractive offerings destination can more viable tourism firms. In this way, rural destination can overcome some of the disadvantages they initially face. Moreover, if destinations succeed in creating an ecosystem with a certain variety of tourism services, firm resilience can be expected to increase further.

This logic is bolstered by research on economic complexity that lends support to the benefits of variety on economic performance (Balland et al., 2022). Economic complexity results from combining a variety of know-how, technologies, and products. For tourism, a greater integration among firms, destination organizations, and local authorities would likely increase economic complexity and resilience at both the firm and the destination level. Segarra-Oña et al. (2012) use the phrase "cooperating locally to compete globally" to describe the makings of successful tourism clusters. As such, the ability to ferment a collaborative climate in a destination appears important for integration. In this context another relevant concept is agency (Grillitsch & Sotarauta, 2020). The question of what types of agencies are required to

facilitate intra-destination collaboration between firms and related tourism actors is crucial. As such, we suggest that understanding agency and its sources for creating a successful destination ecosystem is a key subject for further research.

Conclusion

This study underpins the importance agglomeration economies in tourism as purported by Capone and Boix (2008). Using a longitudinal data set consisting of a variety of tourist firms in Norway from 2004 to 2013 and associate characteristics of the firms and the county where they are located, the study investigated how these locational and firm characteristics influence survival. The study finds evidence of different types of agglomeration in tourism including internal, location, and urbanization economies. In this way, the study makes theoretical contributions by lending credence to the key roles of the social-environmental factors like the tourism production system for firm resilience.

A key finding is that inter-relationships of tourist services offered in the same county matters for tourist firm's survival: an increase in the number of firms offering the same service in a destination will increase the risk of exit, while an increase in the variety of tourist services offered in the destination will reduce this risk. The

former outcome can be interpreted as the result of a monopolistic competition for market share, while the latter result indicates tourist service variety is a source of market growth at the destination level. Rephrased using concepts from the economics of international trade, the results suggests that market growth in a destination is pushed by the extensive margin, rather than the intensive margin. In sum, these findings support a system view of agglomeration effects in tourism destinations (Capone & Boix, 2008).

The results show survival is positively associated with the population size in the county and access to an airport. Firms located in rural areas are at a disadvantage as they lose out on such urbanization economies. These disadvantages translate into a more seasonal demand, thinner markets, and less variety of services both within and outside the tourism ecosystem. However, a key takeaway from the results in this study is that such locational disadvantages linked to resource endowments in a destination are not insurmountable. Rural destinations can mitigate the disadvantages of being small. Specifically, by fostering a larger diversity of tourist services offered and intra-destination collaboration between firms the rural destination should attract more visitation. These strategies should increase both the complexity and the resilience of the local tourism ecosystem. It follows that a key challenge for local authorities and destination managers is to

distinguish the types of services and firms that can reinforce collaboration and enhance the destination's attractiveness.

References

Alemayehu, F. K., & Kumbhakar, S. C. (2021). Excess capacity, production technology and technical inefficiency in hospitaliy sector. *Tourism Management, 82*.

Arthur, W. B. (1996). Increasing returns and the new world of business. *Harvard Business Review, 74*(4), 100-111.

Backer, E. (2012). VFR travel: It *is* underestimated. *Tourism Management, 33*.

Balaguer, J., & Cantavella-Jorda, M. (2002). Tourism as a long-run economic growth factor: the Spanish case. *Applied Economics, 34*(7), 877-884.

Baldwin, R., & Harrigan, J. (2011). Zeros, quality, and space: Trade theory and trade evidence. *American Economic Journal: Microeconomics, 3*(2), 60-88.

Balland, P.-A., Broekel, T., Diodato, D., Guiliani, E., Hausmann, R., O'Clery, N., & Rigby, D. (2022). The new paradigm of economic complexity. *Research Policy, 51*.

Baum, J. A. C., & Mezias, S. J. (1992). Localized competition and organizational failure in the Manhattan hotel industry, 1898-1990. *Administrative Science Quarterly, 37*(4), 580-604.

Baum, T. (1999). Seasonality in tourism: Understanding the challenges: Introduction. *Tourism Economics, 5*(1), 5-8.

Baum, T., & Ingram, P. (1998). Survival-enhancing learning in the Manhattan hotel industry, 1898-1980. *Management Science, 44*(7), 996-1016.

Bernard, A. B., Jensen, J. B., Redding, S. J., & Schott, P. K. (2009). Trade, product turnover and quality. The margins of US trade. *American Economic Review, 99*(2), 487-493.

Berthou, A., & Fontagné, L. (2008). *The Euro and the intensive and extensive margins of trade: Evidence from French firm level data.* Working paper. CEPII.

Besedes, T., & Prusa, T. J. (2006). Ins, outs, and the duration of trade. *Canadian Journal of Economics, 39*(1), 266-295.

Besedeš, T., & Prusa, T. J. (2011). The role of extensive and intensive margins and export growth. *Journal of Development Economics, 96*, 371-379.

Björk, P., Prebensen, N., Räikkönen, J., & Sundbo, J. (2021). 20 years of tourism experience research: a review and future research agenda. *Scandinavian Journal of Hospitality and Toursim, 21*(1), 26-36.

Bjørnland, H. C., & Thorsrud, L. A. (2015). Boom or gloom? Examining the Dutch disease in two-speed economies. *The Economic Journal, 126*(598), 2219-2256.

Brouder, P., & Eriksson, R. H. (2013). Tourism evolution: on the synergies of tourism studies and evolutionary economic geography. *Annals of Tourism Research, 43*, 370-389.

Canina, L., Enz, C. A., & Harrison, J. S. (2005). Agglomeration effects and strategic orientations: Evidence from the U.S. lodging industry. *Academy of Management journal, 48*(4), 565-581.

Capone, F., & Boix, R. (2008). Sources of growth and competitiveness of local tourist production systems: An application to Italy (1991-2001). *Annals of Regional Science, 42*(1), 209-224.

Cárdenas-García, P. J., Sánchez-Rivero, M., & Pulido-Fernández, J. I. (2015). Does tourism growth influence economic development? *Journal of Travel Research, 54*(2), 206-221.

Chinitz, B. (1961). Contrasts in agglomeration: New York and Pittsburgh. *American Economic Review, 51*(2), 279-289.

Combes, P.-P., & Duranton, G. (2006). Labour pooling, labour poaching and spatial clustering. *Regional Science and Urban Economics, 36*, 1-28.

Coshall, J., Charleswoth, R., & Page, S. J. (2015). Seasonality of overseas tourism demand in Scotland: A regional analysis. *Regional Studies, 49*(10), 1503-1620.

Cox, D. R. (1992). Regression models and life-tables. In *Breakthroughs in statistics* (pp. 527-541): Springer.

Davison, L., & Ryley, T. (2010). Tourism destination preferences of low-cost airline users in the East Midlands. *Journal of Transport Geography, 18*, 458-465.

Erkus-Öztürk, H. (2009). The role of cluster types and firm size in designing the level of network relations: The experience of the Antalya tourism region. *Tourism Management, 30*(4), 589-597.

Falk, M., & Hagsten, E. (2018). Influence of local environment on exit of accommodation establishments. *Tourism Management, 68*, 401-411.

Falk, M., Tveteraas, S. L., & Xie, J. (2021). 20 years of Nordic tourism economics research: a review and future research agenda. *Scandinavian Journal of Hospitality and Toursim, 21*(1), 78-90.

Frechtling, D. C. (1996). *Practical tourism forecasting*: Butterworth-Heinemann Ltd.

Frenken, K., Oort, F. V., & Verburg, T. (2007). Related variety, unrelated variety and regional economic growth. *Regional Studies, 41*(5), 685-697.

Furunes, T., & Mykletun, R. J. (2012). Frozen adventure at risk? A 7-year follow-up study of Norwegian glacier tourism. *Scandinavian Journal of Hospitality and Toursim, 12*(4), 324-348.

Gémar, G., Moniche, L., & Morales, A. J. (2016). Survival analysis of the Spanish hotel industry. *Tourism Management, 54*, 428-438.

Gemar, G., Soler, I. P., & Guzman-Parra, V. F. (2019). Predicting bankruptcy in resort hotels: a survival analysis. *International Journal of Contemporary Hospitality Management, 31*(4), 1546-1566.

Glaeser, E. L., & Maré, D. C. (2001). Cities and skills. *Journal of Labor Economics, 19*(2), 316-342.

Grillitsch, M., & Sotarauta, M. (2020). Trinity of change agency, regional development paths and opportunity spaces. *Progress in Human Geography, 44*(4), 704-723.

Hartmann, R. (1986). Tourism, seasonality and social change. *Lesure Studies, 6*(1), 25-33.

Heimtun, B., Jóhannesson, G. Þ., & Tuulentie, S. (2014). *Northern lights tourism in Iceland, Norway and Finland*. Retrieved from

Hoover, E. M. (1937). *Location theory and the shoe and leather industries*. Cambridge: Harvard University Press.

Hotelling, H. (1929). Stability in competition. *The Economic Journal, 39*(153), 41-57.

Hung, K., & Petrick, J. F. (2010). Developing a measurement scale for constraints to cruising. *Annals of Tourism Research, 37*(1), 206-228.

Innovation Norway. (2018a). Key figures for Norwegian travel and tourism 2018.

Innovation Norway. (2018b). The Tourism Survey.

Innovation Norway. (2021). Nasjonal reiselivsstrategi 2030 [Norwegian].

Iversen, I., & Jacobsen, J. K. S. (2016). Migrant tourism entrepreneurs in rural Norway. *Scandinavian Journal of Hospitality and Toursim, 16*(4).

Jacobs, J. (1969). *The economy of cities*. New York: Vintage.

Kalnins, A., & Chung, W. (2006). Social capital, geography, and survival: Gujarati immigrant entrepreneurs in the US lodging industry. *Management Science, 52*, 233-247.

Kaniovski, S., Peneder, M., & Smeral, E. (2008). Determinants of survival in the Austrian accommodation sector. *Tourism Economics, 14*(3), 527-543.

Kastenholz, E., & Almeida, A. L. d. (2008). Seasonality in rural tourism - the case of North Portugal. *Tourism Review, 63*(2), 5-15.

Kim, M., Roehl, W., & Lee, S. K. (2020). Different from or similar to neighbors? An investigation of hotels' strategic distances. *Tourism Management, 76*.

Kim, Y. R., Williams, A. M., Park, S., & Chen, J. L. (2021). Spatial spillovers of agglomeration economies and productivity in the tourism industry: The case of the UK *Tourism Management, 82*.

Knarvik, K. H. M., & Steen, F. (1999). Self-reinforcing agglomerations? An empirical industry study. *The Scandinavian Journal of Economics, 101*(4), 515-532.

Koenig-Lewis, N., & Bischoff, E. E. (2005). Seasonality research: The state of the art. *International Journal of Tourism Research, 7*, 201-219.

Krakover, S. (2000). Partitioning seasonal employment in the hospitality industry. *Tourism Management, 21*, 461-471.

Krugman, P. (1991). Increasing returns and economic geography. *The Journal of Political Economy, 99*(3), 483-499.

Kuokkanen, H., & Bouchon, F. (2021). When team play matters: Building revenue management in tourism destinations. *Tourism Economics, 27*(2), 379-397.

Lado-Sestayo, R., Otero-Gonzáles, L., Vivel-Búa, M., & Martorell-Cunill, O. (2016). Impact of location on profitability in the Spanish hotel sector. *Tourism Management, 52*, 405-415.

Larsen, S., & Wolff, K. (2016). Exploring assumptions about cruise tourists' visits to ports. *Tourism Management Perspectives, 17*, 44-49.

Larsen, S., & Wolff, K. (2019). In defence of the domestic tourist - a comparison of domestic and international tourists' revisitintentions, word-of-mouth propensity, satisfaction and expenditures. *Scandinavian Journal of Hospitality and Toursim, 19*(4-5), 422-428.

Larsen, S., Wolff, K., Doran, R., & Øgaard, T. (2019). What makes tourist experiences interesting. *Frontiers in Psychology, 10*.

Li, H., Go, C., Hung, K., & Chen, J. L. (2018). Relative climate index and its effect on seasonal tourism demand. *Journal of Travel Research, 57*(2), 178-192.

Lue, C.-C., Crompton, J. L., & Fesenmaier, D. R. (1993). Conceptualization of multidestination pleasure trips. *Annals of Tourism Research, 20*, 289-301.

Lundmark, L. (2006). Mobility, migration and seasonal tourism employment: Evidence from Swedish mountain municipalities. *Scandinavian Journal of Hospitality and Toursim, 6*(3), 197-213.

Majewska, J. (2015). Inter-regional agglomeration effects in tourism in Poland. *Tourism Geographies, 17*(3), 408-436.

Malmberg, A., & Maskell, P. (2002). The elusive concept of localization economies: towards a knowledge-based theory of spatial clustering. *Environment and planning, 34*, 429-449.

Maparu, T. S., & Mazumder, T. N. (2017). Transport infrastructure, economic development and urbanization in India (1990–2011): Is there any causal relationship? *Transportation research part A: policy and practice, 100*, 319-336.

Marco-Lajara, B., Claver-Cortés, E., & Úbeda-Garcia, M. (2014). Business agglomeration in tourist districts and hotel performance. *International Journal of Contemporary Hospitality Management Science, 26*(8), 1312-1340.

Marco-Lajara, B., Claver-Cortéz, E., Úbeda-García, M., & Zaragoza-Saéz, P. d. C. (2016). A dynamic analysis of the agglomeration and performance relationship. *Journal of Business Research, 69*, 1874-1879.

Marshall, A. (1890). *Principles of economics* (1th ed.). London: Macmillan.

Marshall, A. (1920). *Principles of economics* (6th ed.): Library of Economics and Liberty.

Martin, R., & Sunley, P. (2003). Deconstructing clusters: Chaotic concept or policy panacea? . *Journal of Economic Geography, 3*, 5-35.

McCann, B. T., & Folta, T. B. (2009). Demand- and supply-side agglomerations: Distinguishing between fundamentally different manifestations of geographic concentration. *Journal of Management Studies, 46*(3), 362-392.

Mehmetoglu, M. (2007). Typologising nature-based tourists by activity - Theoretical and practical applications. *Scandinavian Journal of Hospitality and Toursim, 28*, 651-660.

Melitz, M. J. (2003). The impact of trade on intra-industry reallocations and aggregate industry productivity. *Econometrica, 71*(6), 1695-1725.

Menon. (2018). *Reiselivsnæringens verdi*. Retrieved from

Michael, E. J. (2003). Tourism micro-clusters. *Tourism Economics, 9*(2), 133-135.

Nadal, J. R., Font, A. R., & Rosselló, A. S. (2004). The economic determinants of seasonal patterns. *Annals of Tourism Research, 31*(3), 697-711.

Neuts, B. (2020). Tourism and urban economic growth: A panel analysis of German cities. *Tourism Economics, 26*(3), 519-527.

Nitsch, V. (2009). Die another day: Duration in German import trade. *Review of World Economics, 145*(1), 133-154.

Novelli, M., Schmitz, B., & Spencer, T. (2006). Networks, clusters and innovation in tourism: A UK experience. *Tourism Management, 27*, 1141-1152.

Ohlin, B. (1933). *Interregional and international trade*. Cambridge, MA.

Oklevik, O., Gössling, S., Hall, C. M., Jacobsen, J. K. S., Grøtte, I. P., & McCabe, S. (2019). Overtourism, optimisation and destination performance indicators: a case study of activities in Fjord Norway. *Journal of Sustainable Tourism, 27*(12), 1804-1824.

Park, S., Yaduma, N., Lockwood, A. J., & Williams, A. M. (2016). Demand fluctuations, labour flexibility and productivity. *Annals of Tourism Research, 59*, 93-112.

Piacentino, D., Aronica, M., Giuliani, D., Mazzitelli, A., & Cracolici, M. F. (2021). The effect of agglomeration economies and geography on the survival of accommodation businesses in Sicily. *Spatial Economic Analysis, 16*(2), 176-193.

Poon, A. (1994). *Tourism, technology and competitive strategies*. Wallingford: CAB International.

Porter, M. (1990). *The competitive advantage of nations*. New York: The Free Press.

Porter, M. (1998). Clusters and the new economics of competition. *Harvard Business Review, 76*(6), 77-90.

Segarra-Oña, M.-d.-V., Miret-Pastor, L. G., Peiro-Signes, A., & Verma, R. (2012). The effects of localization on economic performance: Analysis of Spanish tourism clusters. *European Planning Studies, 20*(8), 1319-1334.

Shaver, J. M., & Flyer, F. (2000). Agglomeration economies, firm heterogeneity, and foreign direct investments in the United States. *Strategic Management Journal, 21*, 1175-1193.

Shaw, G., & Williams, A. (2009). Knowledge transfer and management in tourism organizations: An emerging research agenda. *Tourism Management, 30*, 325-335.

Sikveland, M., Xie, J., & Zhang, D. (2022). Determinants of capital structure in the hospitality industry: Impact of clustering and seasonality on debt and liquidity. *International Journal of Hospitality Management, 102*.

Singal, M. (2015). How is the hospitality and tourism industry different? An empirical test of some structural characteristics. *International Journal of Hospitality Management, 47*, 116-119.

Skrede, O., & Tveteraas, S. L. (2019). Cruise spillovers to hotels and restaurants. *Tourism Economics, 25*(8), 1286-1301.

Sletvold, O. (1993). *Reiseliv i historien: Noen hovedtrekk fra reiselivets historie*. Alta: Finnmark Regional College, Department of tourism [Norwegian].

Smith, A., & Strand, I. v. K. (2011). Oslo's new Opera House: Cultural flagship, regeneration tool or destination icon? *European urban and regional studies, 18*(1), 93-110.

Stahl, K. (1982). Differentiated products, consumer search, and locational oligopoly. *The Journal of Industrial Economics, 31*(1/2), 97-113.

Strømseth, K., & Naert, S. (2017). *Activating the Norway brand. A global report on holiday needs and segments for Innovation Norway*. Retrieved from

Surugiu, C., Surugiu, M.-R., Dinca, A.-I., & Frent, C. (2012). Labour productivity and investments as determinants of wages: A pool data analysis of the Romanian hotel and restaurant sector. *Tourism Economics, 18*(1), 219-242.

Szivas, E. (2001). Entrance into tourism entrepreneurship: A UK case study. *Tourism and Hospitality Research, 3*(2), 163-172.

Tveteras, R. (2002). Industrial agglomeration and production costs in Norwegian salmon aquaculture. *Marine Resource Economics, 17*(1).

Tveteraas, S. L., & Xie, J. (2021). The effects of covid-19 on tourism in Nordic countries. *Globalization, Political Economy, Business and Society in Pandemic Times, 109*.

Tveteraas, S. L., & Xie, J. (2022). The effects of COVID-19 on tourism in Nordic countries. In *Globalization, Political Economy, Business and Society in Pandemic Times* (Vol. 36, pp. 109-126): Emerald Publishing Limited.

Williams, A. M., & Hall, C. M. (2000). Tourism and migration: New relationships between production and consumption. *Tourism Geographies, 2*(1), 5-27. doi:10.1080/146166800363420

World Economic Forum. (2019). *The Travel & Tourism Competitiveness Report*. Retrieved from Geneva:

Xie, J. (2020). The economic determinants of tourism seasonality: A case study of the Norwegian tourism industry. *Cogent Business & Management, 7*(1). doi: 10.1080/23311975.2020.1732111

Xie, J., & Tveterås, S. (2020). Economic decline and the birth of a tourist nation. *Scandinavian Journal of Hospitality and Toursim, 20*(1), 49-67.

Yang, Y. (2016). Agglomeration density and labor productivity in China's tourism industry. *International Journal of Tourism Research, 18*, 434-446.

Yang, Y., & Fik, T. (2014). Spatial effects in regional tourism growth. *Annals of Tourism Research, 46*, 144-162.

Yang, Y., Fik, T. J., & Zhang, H.-l. (2017). Designing a tourism spillover index based on multidestination travel: A two-stage distance-based modeling approach. *Journal of Travel Research, 56*(3), 317-333.

Yang, Y., & Wong, K. K. F. (2012). A spatial econometric approach to model spillover effects in tourism flows. *Journal of Travel Research, 51*(6), 768-778.

Zhang, D., & Xie, J. (2021). Influence of tourism seasonality and financial ratios on hotels' exit risk. *Journal of Hospitality & Tourism Research*.

Zhang, D., Xie, J., & Sikveland, M. (2021). Tourism seasonality and hotel firms' financial performance: evidence from Norway. *Current Issues in Tourism, 24*(21), 3021-3039. doi:10.1080/13683500.2020.1857714

Øgaard, T., Doran, R., Larsen, S., & Wolff, K. (2019). Complexity and simplification in understanding travel preferences among tourists. *Frontiers in Psychology*.