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The impact of fixed links on population development, housing and the labour market: The case of Norway

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ABSTRACT

This study compares 11 fixed link projects in Norway, linking islands to the mainland. The fixed links substantially increase the accessibility between the islands and the mainland. Thus, interaction between the islands and the mainland increases. Large infrastructure improvements may not only affect the transport patterns but also the population and companies in the connected areas. We apply a difference-in-difference method to analyse the impacts from the increased accessibility. The findings indicate growth in housing prices, population, commuting and employment on the islands. The growth rates of these variables depend on the case characteristics. Urban cases appear to promote larger growth on the island. The contribution of this paper to the literature is that while there have been several studies that have involved single projects, a comparison of several cases that combines assessments of housing and labour markets is still rare in the literature.

1. Introduction

Transport projects strive to improve economic and social conditions. Network improvements increase accessibility, as travel time and distance to surrounding areas decrease. According to Vickerman (1998), network improvements may promote regional development and cohesion as more jobs are within commuting distance. Reductions in travel time promote new opportunities for people, as communities become more integrated. Hence, the labour market widens and becomes more optimised (Louw et al., 2013). This finding provides the potential for more interactions between areas. The impact on society from transport investments, such as population development and labour market changes, has previously been recognised in the literature (Baldacchino, 2007; Banister and Berechman, 2001; Bråthen, 2001; Bråthen and Hervik, 1997; Coppola et al., 2013; Geurs and van Wee, 2004; Knowles, 2006; Wu et al., 2017). These impacts on society are of crucial importance when assessing the long-term effects of transport investments.

Wegener (2004) divides the urban change process of transport projects into four categories by how fast the changes occur. Goods transport and travel patterns may change immediately. The change in the number of people living and/or working in an area is a rapid process. The development of workplaces, such as factories and office buildings, and residential buildings changes slowly. The transport network and zoning change at a very slow pace. Banister and Berechman (2001) emphasise the importance of an increase in accessibility at a network scale as a key factor in promoting economic growth. Hence, projects linking two previously disjointed networks promote larger growth than an additional link in an established network. Fixed link projects are suitable examples of such projects.

Fixed link projects are defined as bridges or tunnels replacing a ferry service. Ferry services constitute barriers in the transport network. In contrast to the remainder of the road network, ferry connections are open for traffic only at scheduled arrival times. Thus, ferry connections are characterised by the inconvenience associated with low frequencies and waiting times, particularly outside peak hours. This circumstance provides less flexibility for the travellers who are dependent on the ferry. Furthermore, ferry services may involve capacity restraints, as the number of vehicles on each departure are limited. A fixed link removes these barriers, reducing travel time and substantially increasing capacity. Furthermore, flexibility increases as the fixed link is open 24/7 and is normally less influenced by bad weather conditions than the ferry. These special projects are very interesting to analyse due to the clearly defined affected area, as they involve islands that acquire a connection to the mainland.

The impact on fixed links has previously been studied in a number of papers. Díez Gutiérrez et al. (2015) analysed two Norwegian ferry replacement projects joining smaller towns/settlements to a city with more than 50,000 inhabitants. The connected areas experienced an

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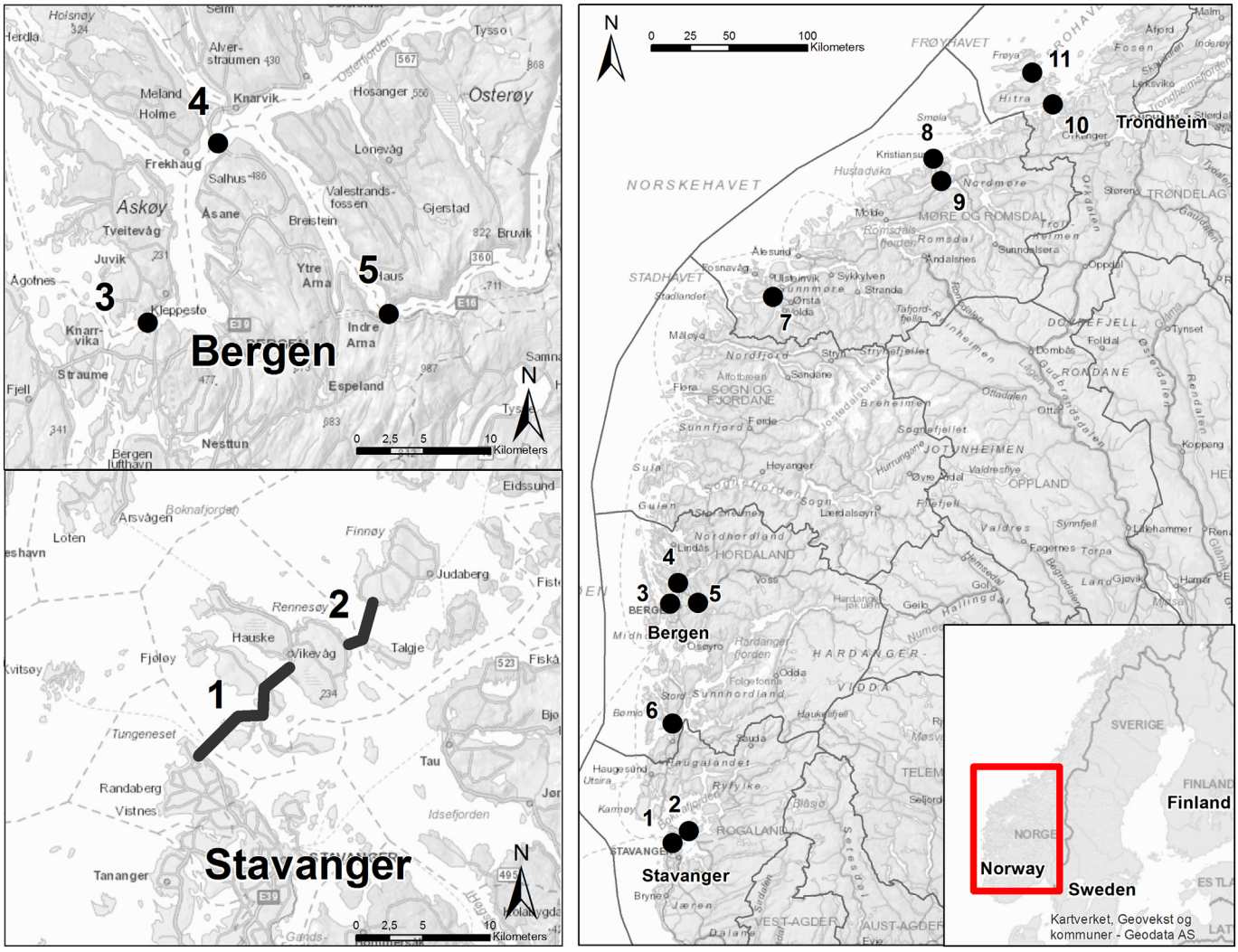

Fig. 1. Location of the cases in this study. The excerpts to the left show the projects around the cities of Bergen and Stavanger. County borders are also highlighted. Numbers in the maps according to Table 1.

Table 1
Case characteristics. Population figures refer to the population at the time of the opening of the fixed link. Travel time is calculated between the closest towns on the mainland and the island, including the estimated waiting time for the ferry.

No.	Name	Year of opening/toll removal	Population in opening year		Travel time between island and closest town on the mainland		Ferry ticket	Toll fee on fixed link
			On the island	Of the closest town on mainland (name of town)	Before opening	After opening		
1	Rennfast	1992/2006	2600	135,500 (Stavanger)	150 min	25 min	€16.40	€15.50
2	Finnfast	2009	2800	190,000 (Stavanger)	90 min	50 min	€8.54	€23.30/17.80
3	Askøybrua	1992/2006	18,500	191,000 (Bergen)	30 min	15 min	€9.20	€6.40
4	Nordhord-landsbrua	1994/2005	21,400	195,000 (Bergen)	40 min	30 min	€7.80	€7.20
5	Osterøybrua	1997/2015	7000	200,000 (Bergen)	96 min	42 min	€7.00	€7.00
6	Trekant-sambandet	2001/2013	10,800	11,000 (Stord)	60 min	30 min	€8.54	€11.20
7	Eiksund-sambandet	2008/2014	22,500	5500 (Volda)	50 min	30 min	€7.00	€8.54
8	Krifast	1992/2012	22,500	20,600 (Molde)	145 min	78 min	€4.40	€8.70
9	Atlanterhavs-tunnelen	2009	5400	17,000 (Kristiansund)	45 min	20 min	€10.90	€10.30
10	Hitratunnelen	1994/2010	4200	6000 (Orkanger)	152 min	88 min	€8.50	€5.30
11	Frøya-tunnelen	2000/2010	4100	6000 (Orkanger)	212 min	116 min	€18.40	€5.30