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Do fixed links affect the local labour markets and industries? A case study of three fixed link projects in Norway

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ABSTRACT

The interaction between infrastructure improvement and regional economic growth has been a key question within transport research for decades. The size of these benefits, and if they actually materialize, is still a question for debate. Further knowledge within this field is essential because many countries are in the process of including these additional economic benefits in their cost benefit analyses. There is consensus in the literature that focus should be on ex-post analysis at a firm level for projects that dramatically change accessibility. However, the number of studies following these recommendations is scarce. This paper contributes to fill the gap by analysing indications of potential agglomeration benefits for 19,000 firms affected by three fixed link projects that connect islands to the mainland. We compare them to similar areas that do not get a connection and identify changes in the local labour market and industries. Firstly, a difference in difference method was used to calculate changes, and trend shifts within accompanying variables were detected. Secondly, interviews of affected industries were also carried out to test our hypothesis. Our analysis shows that (1) there is an increase in the number of commuters between the connected islands and the mainland. (2) There is growth in the total number of employees and (3) in the total number of firms in all connected islands. (4) The newly connected islands seem to attract more firms than before. (5) However, we find small changes in firm turnover, suggesting that increased competition offsets the number of new customers a fixed link might provide.

1. Introduction

One main concern with transport policy design is to promote infrastructure projects that contribute to regional cohesion and economic growth. However, the relationship between infrastructure and spatial economic development is complex. In general, the literature suggests that infrastructure investments may lead to regional economic growth if the present transportation system is underdeveloped and there is a potential for development in the industries affected (Vickerman, 1998; Holved and Preston, 2005; Goetz, 2011). Nevertheless, there is little consensus on the exact impacts of these investments (Melo et al., 2009). Moreover, some authors argue that certain investments might lead to increased regional differences rather than cohesion (Vickerman, 1998).

Further knowledge within this field is essential because many countries are in the process of including these additional economic benefits in their cost benefit analyses (Wangsness and Hansen, 2014; Kernohan et al., 2011). One of the main potential benefits is agglomeration. Agglomeration effects are external economies from which firms can benefit through co-location, which endogenously induce localised economic growth (Gleaser et al., 1992; Rosenthal and Strange, 2003). The literature divides agglomeration effects into co-location of similar firms (localisation economies) and co-location with other firms (urbanization economies). Both are expected to impact on firm localisation, productivity and employment. To what degree these changes happen presumably depends on travel time reductions between firms and the degree of market failure in the affected area prior to the transport improvement. According to previous studies, this may trigger productivity increase due to reinforced agglomeration benefits and relocation of firms to the affected area (Venables, 2007; Graham, 2007; Lindfors, 2014). Reducing the proximity between firms via transport investments might give changes in indicators of

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agglomeration effects such as increased number of firms, employment and communication.

Network improvements might expand the labour market and better match the skills of workers with required tasks. This might encourage firm specialisation and attract more qualified workers, which could lead to growth in the number of firms and employees in the affected area. This could especially be the case for firms located close to fixed link projects that replace ferry services, as they experience a significant improvement in accessibility to a larger market on the mainland (Banister and Berechman, 2001). However, these effects might be sector specific (Krugman, 1995) and decay with distance from the infrastructure improvement (Graham et al., 2010). Improved access to a larger market might also mean increased competition, which could be a risk for the firms. Hence, improving accessibility to larger markets might not solely benefit the affected firms.

Fixed link projects are interesting since they often connect isolated areas where potential impacts are easier to detect. They often connect areas with imperfect competition to a more efficient market on the mainland. The presence of imperfect competition from the infrastructure investment, and possible impacts in other markets than the transport market (e.g. labour and housing markets), is argued to be a key criterion for when potential agglomeration effects occur (Laird and Mackie, 2009). Fixed link projects might not be representative of all network infrastructure projects, although these cases can help us improve our understanding of how projects that have a significantly change in the accessibility impact local industries and labour market.

Several studies have been conducted on particular aspects of the economic effects of infrastructure projects (Louw et al., 2013). According to Banister and Berechman (2001), studies on the effect of transport investments on industries and labour marked should be conducted at a micro level for areas that experience a significant change in travel time. However, the number of studies following these recommendations are scarce (Holl 2004; de Bok and van Oort, 2011). This can be explained by limitations in data, including suitable cases, and confidentiality restrictions (de Bok and van Oort, 2011). Since the effect of increased accessibility for industries are reflected in firm performance and location decisions, this limitation in empirical studies is problematic (Lindfors, 2014; Bråthen and Hervik, 1997). By analysing areas that experience a significant change in travel time at a firm level, this paper contributes to filling the gap, using a micro level approach on indicators of agglomeration such as employment, commuting and firm localisation.

The following hypotheses, regarding infrastructure impacts on local industries on islands connected by fixed link projects on the western coast of Norway, are tested in this paper:

1. Fixed link projects lead to more integrated and expanded labour markets
2. Fixed link projects lead to an increasing number of employees on the connected islands
3. Fixed link projects lead to an increasing number of firms on the connected islands
4. Fixed link projects lead to relocation of more firms to the newly connected islands
5. Fixed link projects lead to an increase in turnover for firms on the connected islands

In addition to investigating hypotheses 1–5, this paper looks further into the interaction between infrastructure improvements and changes in firms and employment patterns. The aim of the paper is to find possible impacts from three fixed link projects in Norway using a time series analysis. We compare and observe the development of the variables for the affected areas and similar control groups, but without a fixed link connection. Using the difference in difference method (DD), we find significant changes in local industries. The results are supported by interviews of firms affected by the opening of the fixed link.

2. Case studies

This paper focuses on three fixed link projects on the western coast of Norway. The cases are similar in that the fixed links replaced ferry services that connected islands to urban areas on the mainland. Fig. 1 shows the three cases studied, including the fixed links, the connected municipalities (solid line) and the municipalities used as reference or control groups (dotted line).

The number of inhabitants in the studied areas is different. Eiksundsambandet (a) connects four municipalities with 22,500 inhabitants to two cities on the mainland with 9000 and 10,500 inhabitants respectively. Finnfast (b) connects a municipality with 2800 inhabitants to a larger metropolitan area with 240,000 inhabitants. Atlanterhavstunnelen (c) connects 5700 inhabitants on the island to a city on the mainland with 24,500 inhabitants.

The travel time savings are significant in the three cases. After the fixed links were built, the connected municipalities got within commuting time (<50 min) to the respective cities on the mainland. The tolls for Eiksundsambandet and Atlanterhavstunnelen are similar to the replaced ferry ticket price. For Finnfast, the toll is more than twice the previous ferry ticket price.

Table 1 describes the characteristics of the connected islands before and after the opening of the fixed links. All places experienced a growth in traffic volumes to/from the connected islands.

The control groups consist of similar municipalities in the nearby region. The selection was done based on areas connected to the mainland by ferry with similar characteristics in the before situation. The economic characteristics of the affected area and control group are shown in Table 2.

Even though there are some differences between affected areas and the control areas the overall picture seems to show similarities in terms of size and economical structure. However, it is important to bear in mind the differences when analysing the data. A more narrow control group has been used for analysing commuting,

Table 1
Description of the characteristics for the three cases before and after the opening of the fixed links.

	Eiksundsambandet (a)	Finnfast (b)	Atlanterhavstunnelen (c)
Opening year	2008	2009	2009
Travel time to the nearest city before the fixed link	70 min	90 min	45 min
Travel time to the nearest city after the fixed link	50 min	50 min	20 min
Ferry ticket price	EUR 7	EUR 8	EUR 10
Toll	EUR 0 (EUR 8 until 2014)	EUR 17 (EUR 23 until 2011)	EUR 10
Traffic the year before the opening (AADT)	800	400	800
Traffic five years after the opening (AADT)	2200	700	2250