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Road projects and local economic impacts

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English summary

This study attempts to document the actual impacts of a sample of road projects. We use different indicators to measure local economic growth and other impacts to which there is political interest. We do not look at wider economic impacts for regions or for the whole country, those can be small and difficult to measure, but rather at impacts for individual municipalities in the area of influence for the road projects that we are studying.

This is an important topic for several reasons. On the one hand, the large government investments in new road and railway projects indicate that there is a need to document the impacts that these projects have. It is important for the realism of plans and goals, and to say something about what it takes for projects to succeed. But it is also important for the public debate, which is partly characterized by assumptions and based on weak documentation of the conclusions drawn. There is a striking imbalance between the number of studies on what we estimate or believe will happen if a project is realized, and studies that document actual results afterwards.

In Chapter 2, we first review how the effects and impacts of road investments normally are calculated. We describe the main content of the impact assessments that are carried out for all large road projects and the role that cost-benefit analysis (CBA) plays in these.

The Norwegian Public Roads Administration, and the other public transport agencies, spend significant resources on CBAs, but several studies have shown that the practical use of the results in actual project selection is limited.

One of the reasons for the lack of use of CBA results in project selection, may be a perception that the CBAs do not always capture important impacts, i.e. that many have a perception that the calculated net benefit may be too low.

For many decades, there was broad agreement among professionals that the calculated user benefits gave a satisfactory representations of the benefit to society, but increasingly both professional communities and decision-makers have pointed out that impacts can also occur in secondary markets through increased competition and agglomeration effects in the labour market. Together,

this can lead to increased productivity, and is often referred to as wider economic impacts. Chapter 2 discusses the development in studies of this phenomenon and changes in guidelines for how wider economic impacts are to be treated in CBAs.

In addition to (and sometimes partly overlapping with) wider economic impacts, road projects often have ambitions related to various political goals such as maintaining or increasing the population in selected areas, reducing insecurity related to landslides and accidents, giving the population access to a better public services, or to link an area together to a common housing and labour market. Achieving such goals can have impacts on the economy, but not necessarily. In many cases, growth in one area will come as a result of redistribution of economic activity from another area. In that case, it is more precise to talk about local goals or gross impacts.

In the chapter, we discuss various goal conflicts in transport projects. For example, the goal of increased settlement in rural areas may be at odds with the goal of increased productivity through agglomeration. In general, it is important to be aware that projects rarely only have positive impacts and that it can be just as relevant to highlight negative externalities as positive ones.

Although the number of ex-post studies of road projects is limited, there is some relevant literature that has documented the impact of previous projects. In Chapter 2, we refer to some of these studies.

In Chapter 3, we take a closer look at the goals and ambitions of a selection of road projects. All large government projects must formulate goals at project-, user- and societal level. Goal formulations are important for management and follow-up of projects. But it is by no means obvious that state agencies can formulate precise and logically coherent goals. In the chapter, we review goal formulations in 55 large road projects and find that the goals in many cases have major weaknesses as they are not measurable, and that the societal goal in several cases are inadequate or consists of a collection of good intentions.

In some projects, however, the goal formulations suggest a higher level of ambition, such as:

- Expand the labour market / facilitate recruitment of labour / more commuting
- Linking regions together

- Growth in population
- Growth in existing businesses / business start-ups
- Increased specialization in businesses
- Increased tourism
- Increased productivity

In the governing documents of the projects, however, only possible positive impacts were emphasized. The mention of potentially negative impacts was absent.

Chapter 4 presents the data and methodology used in the study. To map impacts, we look both at specific goals, as formulated in the projects' governing documents, and at other impacts that may arise as a result of a new road. To map some of these, there is a need for various measurable indicators as well as estimation strategies that are suitable for measuring in which direction the indicator has changed since the road project was completed.

In the chapter, we discuss goal formulations and how the achievement of these can best be measured. We end up with four indicators that are studied further: New business start-ups, employment, commuting and population. The idea is that these can be linked to the goals of an expanded labour market and a connected housing and labour market, to maintain the settlement pattern, and growth in the local business community.

To estimate impacts, we use a synthetic control method. The method is based on comparing the municipality or municipalities that have been given a new road with comparable municipalities that do not have. The purpose is to solve the counterfactual problem, i.e. what would have happened if the project had not been realized. In practice, it is difficult or demanding to find a municipality that is exactly like the municipality (municipalities) where the road was built. One solution to this problem is to put together the control municipality of different municipalities so that the composite (synthetic) municipality is a satisfactory control unit. Synthetic control method makes this selection based on objective criteria and presents the result in a transparent way since it is easy to see which and how different municipalities are part of the synthetic control municipality.

To investigate the impacts, we use a sample of ten projects. The projects must have the following characteristics:

- Relatively large travel time savings or significant increase in road standard compared to the pre-situation.
- Objectives for positive impacts beyond direct user benefits.
- Opening year between 2000 and 2010 to be able to use accessible data.
- Possible to limit the impacts to one or more municipalities.
- Large enough that it is conceivable that impacts can be identified.

We study the following ten projects: Fv653 Eiksund connection, Fv64 Atlantic tunnel, Fv107 Jondal tunnel, E39 Kvivsvegen, Fv609 Dalsfjordsambandet, Fv616 Bremangersambandet 2, E18 Grimstad-Kristiansand, Rv7 Sokna-Ørgenvika, E39 Klett-Bårdshaug. The projects in the sample are medium sized compared to most current projects. We believe that the method and the sample mean that the results should be relevant for future projects.

In Chapter 5, we present the results. We find that only three projects (E39 Klett – Bårdshaug, E18 Grimstad – Kristiansand and Fv519 Finnfast) have had a significant impact on the number of new business in the municipalities they affect. For three projects (Fv64 Atlanterhavstunnelen, Rv7 Sokna – Ørgenvika and Fv107 Jondalstunnelen) there are signs of a negative effect on new businesses. It is demanding to see clear relationships, but we notice that we find the most positive impacts near the large cities Kristiansand, Trondheim and Stavanger.

Even if the goal of a projects is to increase the number of new businesses, the result can sometimes be the opposite. This shows that there are not necessarily only positive impacts of improved transport infrastructure, but that improved accessibility can also move economic activity to other geographical areas – i.e. a redistribution effect. For the projects that have led to new business start-ups, it takes an average of around five years before the effect occurs. In other words, there is a clear time delay in the impacts.

For commuting, we find few impacts. We see the clearest impacts for the Fv64 Atlantic Tunnel, E18 Grimstad – Kristiansand and E39 Klett-Bårdshaug. With a view to strengthening the labour market, few projects achieve such impacts. This may indicate that the labour market is relatively static, and that it may take time before we see large flows between different labour markets. In addition, more than half of the projects in the sample are partly financed by tolls, which can increase the cost of commuting significantly.

The effect on population also varies. Four of the projects (Fv519 Finnfast, E18 Grimstad – Kristiansand, E39 Klett – Bårdshaug and Fv 653 Eiksundsambandet) have led to a significant increase in the population in some of the municipalities they affect. There are also signs of negative population development as a result of three of the projects. The projects that lead to positive population development are projects in connection with cities and regional centres, but even in such areas the effect is not unambiguous. It seems that the population only increases where smaller municipalities are linked to larger municipalities. In several cases, we see that the population decreases in the largest municipality and increases in the smaller municipality. It is a sign that it is first and foremost urban sprawl that is happening. Projects that connect sparsely populated areas do not have positive impacts on settlement.

Our results do not provide a clear answer as to whether road projects are a suitable tool for fulfilling political goals of increased regional integration, and growth in the form of more businesses and an increased population. With one possible exception for Fv519 Finnfast, there are no projects that score positively on all the impacts we have looked at.

We find several examples of significant negative impacts as a result of road investments, so although the impacts in many areas are positive, there is no evidence to say that road investments are a generally potent tool for achieving positive local impacts.

In Chapter 6, we summarize the results. We point out that although many road projects are estimated to be economically unprofitable at the time of the investment decision, the goals of the projects were often linked to assumed positive local impacts. The results show that these are not always realized, and that the impacts in some cases are negative.

If we are to achieve positive impacts of road projects, in addition to the direct user impacts, it is probably better to invest in projects that link peripheral municipalities with relatively populous areas. The impact of better roads in sparsely populated areas is small.

The reasons why the impact of better transport infrastructure in most cases are quite modest, are probably several. In Chapter 6, we point out some possible explanations:

- In most countries with a relatively well-developed transport network, there is a declining marginal utility of infrastructure investments. The best projects, with the most positive impacts, are probably already built.
- The direct transport costs make up (on average) a smaller share of the companies' total costs.
- Companies' and employees' ability to take advantage of improvements as reduced travel time varies, and it can take a long time before the impacts materialize.

Finally, we discuss the need for further research. We point out, among other things, the usefulness of more ex-post studies that can provide a basis for a generalization of prerequisites for achieving growth, and testing of different methods for evaluation.

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Forskningsprogrammet Concept skal utvikle kunnskap som sikrer bedre ressursutnytting og effekt av store, statlige investeringer. Programmet driver følgeforskning knyttet til de største statlige investeringsprosjektene over en rekke år. En skal trekke erfaringer fra disse som kan bedre utformingen og kvalitetssikringen av nye investeringsprosjekter før de settes i gang.

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