



The Economics of Airport Expansion

Report
Delft, March 2013

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Summary

Introduction

Over the years there have been numerous debates on the expansion of London's airports. The Davies Commission is currently examining 'the scale and timing of any requirement for additional capacity to maintain the UK's position as Europe's most important aviation hub'. The RSPB, WWF-UK and HACAN want to engage in the process, ensuring that a proper methodological framework is used for assessing the different options.

They have asked CE Delft to propose a general framework for assessing airport expansion and new airport development projects, based on best practices and academic research. Special attention is paid to one of the least understood elements in such a framework: connectivity.

Social cost benefit framework

A social cost benefit analysis (SCBA) is the most appropriate way to evaluate airport investment plans. It provides an overview of current and future pros and cons of a particular project for society as a whole (public, private sector and government) as objectively as possible. SCBA therefore differs fundamentally from a financial analysis or business case, which identifies the costs and benefits solely for a particular party.

The use of SCBAs is common practice in the UK and many other countries. The *Transport Assessment Guideline (TAG)* specifies how an SCBA of an airport investment project should be conducted. The main items are transport efficiency, time savings, investment costs and noise. Most of the effects are direct (i.e. accruing to the providers and users of airport infrastructure) or external (i.e. not included in the cost price of airports). In well-functioning markets, indirect effects (e.g. effects on suppliers of airports) should not be counted, as they are passed through by either the producers or the consumers as part of their costs and benefits.

Although economically incorrect, indirect costs are often included in commonly used frameworks, which inevitably leads to double counting by adding direct, indirect, induced and catalytic effects of aviation.

SCBAs should take into account any risks and uncertainties that might occur. A major source of uncertainty in airport projects is the forecast of future demand for aviation. Past experience has shown that these forecasts have been systematically too high, their use consequently leading to overestimation of the main benefits of aviation (transport efficiency and time savings).

The benefits of connectivity

Among the wider economic benefits of airport expansion are the impacts on productivity: agglomeration effects, output change, changes in labour market supply and the move to more or less productive jobs. These are often captured under the term 'benefits of connectivity'. They provide one of the main arguments employed in the public debate on airport expansion, and studies have been published which claim the benefits of expanding London's airports will be very large for the capital as well as for the country as a whole.



Connectivity is defined as the degree to which a country or city is linked to other destinations and the ease or speed with which those destinations can be reached. All modes of transport are relevant in this regard, as well as transport replacement options.

A comparative analysis of the aviation network of the main European hubs (Heathrow, Paris, Frankfurt, Amsterdam) reveals that Heathrow has fewer destinations than other hubs and that the number of destinations is not rising as fast as at other airports. However, Heathrow offers a high frequency of flights to the destinations it serves. It appears that Heathrow's network is much more specialised on the most profitable routes.

The relationship between connectivity and GDP has not been studied in much detail in the academic literature. Even less is known about the possible existence of a causal relation between connectivity and economic growth, trade or other relevant economic parameters. The available empirical evidence suggests there is a weak correlation, mostly for less developed economies, but there is no evidence of causation.

The relation between aviation activity and economic performance has attracted more attention. A review of the academic literature suggests there is a two-way causal relation between aviation activity and regional economic performance, with an increase in aviation activity causing an increase in GDP, and vice versa. This relation appears to be stronger for remote regions and stronger for poorer regions and countries than for well-developed ones. When reviewing this evidence, one should be aware that the method used to establish a causal relation cannot establish whether airports cause additional economic activity per se, or whether regions with airports grow at the expense or surrounding regions without airports.

Conclusion

This study provides a transparent framework for (social) cost benefit analysis of airport expansion and new airport development projects. It is extremely important that all types of effects are included in the CBA and to avoid any double counting by including indirect effects. This means that considerable effort is needed to evaluate the type of effects that can be expected to occur and to appropriately include them in the CBA.

Many studies find a positive correlation between aviation and economic growth, but no causal relationship between connectivity and economic growth was found. The positive effect of aviation on economic growth appears to be stronger for remote and poor regions than for central, well-developed ones. It is not clear whether this effect is truly additional, or whether regions with airports grow at the expense of other regions.



1 Introduction

1.1 Background

For many years there has been discussion on the capacity and expansion of London's airports. The current debate is on whether or not capacity should be increased at these airports, and if so, where this additional capacity should be placed. The main options for expansion are to build a third runway at Heathrow airport, an additional runway at another London airport or a new airport in the Thames Estuary. Proponents of airport expansion claim that current capacity is insufficient and that expansion is needed for economic growth. Opponents, on the other hand, question the lack of capacity and the presumed large benefits to the economy. They argue that expansion is unnecessary, will lead to major costs and result in more noise and environmental pollution.

The UK government has therefore established an Airport Commission to "examine the scale and timing of any requirement for additional capacity to maintain the UK's position as Europe's most important aviation hub". The Commission is to report in two stages. By the end of 2013 it will report on the steps needed to maintain the UK's hub status and how to improve use of existing capacity over the next five years, and by 2015 it will report on its assessment of the options for meeting the UK's international connectivity needs. For its work, the commission will seek stakeholder input.

The RSPB, WWF-UK and HACAN want to engage with the Commission, ensuring that a proper methodological framework is used for assessing the different options. Based on best practices and academic research, this report proposes such a framework. Furthermore, it investigates the relationship between expansion, connectivity and economic growth.

1.2 Objective

The aim of the study is to propose a general framework for assessing airport expansion and new airport development projects, and to propose a methodology to analyse the impact of one of the least understood and often neglected elements of such a framework: connectivity.

1.3 Research question

The two main questions that this study aims to answer are as follows:

1. What framework should be used to assess the economic impacts of airport investment projects?
 - Which of the costs and benefits that are included in current cost benefit analysis (CBA) frameworks should be taken into account in airport investment projects?
 - What are the likely differences in costs and benefits between airport expansion and new airport development?



2. Does airport expansion lead to increased capacity, more connectivity and more economic growth?
 - What is the relationship between capacity and connectivity?
 - What is the relationship between connectivity and economic growth?

1.4 Scope

This study focuses on potential airport investment projects in South-East England, considering two types of airport project: expansion of existing airports and new airport development. This report is not an investment analysis, but rather an analysis of the costs and benefits that need to be taken into account to estimate the impact of airport expansion or new airport development for society as a whole.

The research carried out for this study is based primarily on existing literature and includes little new data analysis. An analysis of optimisation of airport capacity is therefore beyond the scope of the present project. Nevertheless, the report contains many elements that could be useful for such an analysis.

1.5 Outline

Chapter 2 provides an answer to the question of what framework should be used to conduct a proper CBA of airport investment projects. Chapter 3 studies the relation between airport capacity, connectivity and growth. Chapter 4 concludes with the findings of the study.



4 Conclusions

This report set out to answer two questions:

1. What framework should be used to assess the economic impacts of airport investment projects?
2. Does airport expansion lead to increased capacity, more connectivity and more economic growth?

Assessing the economic impacts of airport projects

The most widely recognised method to assess the economic impacts of airport investment projects is a social cost benefit analysis (SCBA). A SCBA identifies all the effects of an investment project over time and expresses them in monetary terms. For effects that are traded, such as building a runway, market prices can be used. For most effects that are not traded, such as time savings, various well-established methods exist to estimate their monetary value. By expressing all effects in monetary terms, the relative importance of the various costs and benefits can be analysed. Some effects, such as the impact on biodiversity and landscape, are often not expressed in monetary terms.

In the UK, the Transport Assessment Guidelines recommend social cost benefit analysis for airport investment projects. A SCBA yields very different results from other methods that are sometimes used to determine the economic impact of airports or aviation. A commonly used method is to add the direct, indirect, induced and catalytic effects. The results cannot be used in a SCBA, however, since the indirect and induced effects are in fact part of the direct effects. For example, if an airport expansion results in more passengers using the airport, this indicates that a consumer surplus exists. Passengers may decide to use a share of the surplus to buy something at the airport. Thus consumer or producer surplus created in shops and restaurants at the airport is included in the consumer surplus of the expansion and should not be added to the former.

A SCBA shows whether or not a particular project creates wealth and, if there are alternatives, which of these creates the greatest wealth. Of course, creating wealth need not be the only policy objective. A political decision-making process may also take into account distributional effects, legal aspects, public opinion, equity, fairness and employment effects, which do not feature in SCBAs.

The relation between aviation activity and economic performance

Among the wider economic benefits of airport expansion are the impacts on productivity agglomeration, output change, labour market supply and the move to more or less productive jobs. These are often captured under the heading 'benefits of connectivity'. They provide one of the main arguments used in the public debate on airport expansion and studies have been published which claim the benefits of expanding London's airports will be very large for the capital as well as for the country as a whole.



This study has reviewed the evidence on the relation between connectivity and economic performance. Although the few academic studies found report some degree of correlation, this study has not identified any evidence of causation either way. Hence, claims about the economic benefits of connectivity are not founded on solid evidence.

The relation between aviation activity and economic performance has attracted more attention. A review of the academic literature suggests there is a two-way causal relation between aviation activity and regional economic performance, with an increase in aviation activity causing an increase in GDP, and vice versa. This relation appears to be stronger for remote regions and stronger for poorer regions and countries than for well-developed ones. When reviewing this evidence, one should be aware that the method used to establish a causal relation cannot establish whether airports cause additional economic activity per se, or whether regions with airports grow at the expense of surrounding regions without airports.

