

Economic Regulation as a Tool to Improve Air Navigation Service Provision

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Abstract

Recently, there has been increasing worldwide interest in the economic regulation of Air Navigation Service (ANS) provision. This paper discusses how economic regulation might be used as a tool to improve ANS provision.

In the past, air navigation services have usually been provided by government departments, nominally on the basis of cost recovery and without any formal economic regulation. Recently, there has been increasing pressure on government funding leading some governments to consider moving transport infrastructure funding out of the public sector. Corporatisation of service providers, international policies, and service issues have all led to increasing interest in the economic regulation of air navigation service provision.

Economic regulation in the context of air navigation service provision can be seen as a tool to encourage change, improve service quality and regulate price. It is not simply about regulating a static monopoly.

This paper considers two scenarios, economic regulation and a competition regime and economic regulation with co-operation between service providers rather than competition. It concludes that economic regulation with co-operation between service providers is probably the best way forward at the present time. The paper discusses the unbundling of the air navigation services into four components and possible economic regulation mechanisms for each component.

Keywords: air navigation service, air traffic control, corporatisation, economic regulation.

JEL-code: G38, L12, L93

Introduction

Recently, there has been increasing worldwide interest in the economic regulation of Air Traffic Control (ATC) service provision. This paper discusses how economic regulation might be used as a tool to improve ATC service provision. Many of the ideas presented here were developed during a study carried out by LogicaCMG for the European Commission and its support is acknowledged. However, the views presented here are those of the author.

The paper is divided into four parts:

- A discussion of the developments in air navigation service provision that have led to increasing interest in economic regulation.
- A brief discussion of what the term economic regulation means in this paper.
- Presentation of some possible economic regulation initiatives, and finally
- A summary of the conclusions.

Developments in Air Navigation Service (ANS) Provision

In the past, air navigation services have usually been provided by government departments, nominally on the basis of cost recovery (following International Civil Aviation Organisation

(ICAO) principles), and without any formal economic regulation. Recently, there has been increasing pressure on government funding leading some governments to consider moving transport infrastructure funding out of the public sector. At the same time, there have been significant increases in air traffic volumes with the associated increase in revenues from air navigation service provision.

These developments have led a number of governments to transfer air navigation service provision to autonomous bodies – administratively autonomous and in some cases financially autonomous also. This is the so called “corporatisation” of air navigation service providers. In almost all cases the service providers have remained under the control of the state. Among the corporatised air navigation service providers are Airservices Australia, Airways Corporation of New Zealand, National Air Traffic Services Limited in the UK and Nav Canada. CANSO lists many more in its report on corporatisation¹.

ICAO’s policies support separation of service provision from regulation, autonomous entities to operate air navigation services, international co-operation in the operation of air navigation services and, more recently, economic regulation. In each case, provided that these initiatives are in the best interests of the airspace users and service providers.

There are also a number of service issues that have led to increasing interest in economic regulation. These include:

- Increasing delays in the face of increasing traffic.
- Significant variations in service quality between service providers.
- Significant variations in price between service providers – where a higher price does not necessarily mean a better service.

¹ Corporatisation of Air Navigation Services, The Civil Air Navigation Services Organisation, August 1999.

- A perception of slow progress and inertia in service improvement.
- Fragmentation of service provision between service providers. This is a particularly important issue in Europe but it is an issue to a greater or lesser extent, world-wide.

So to summarise, corporatisation of service providers, ICAO's policies, and service issues have led to increasing interest in the economic regulation of air navigation service provision.

Economic Regulation

Economic regulation in the context of air navigation service provision can be seen as a tool to encourage change, improve service quality and regulate price. It is not simply about regulating a static monopoly.

Economic theory says (amongst other things) that competition through market forces should result in optimal allocation of resources and the best quality product or service at the lowest price. However, market forces do not always operate properly. A common failure of market forces is where there are monopoly activities. Air navigation service provision, at least for the core services such as ATC, is a monopoly activity. In monopoly situations, the approach of economic regulation is to re-introduce competition where possible or where that is not possible to design pricing mechanisms and incentives which will give results comparable to competition.

Possible Economic Regulation Initiatives

Some possible economic regulation initiatives will now be discussed. Two scenarios have been considered, economic regulation and a competition regime and economic regulation with co-operation between service providers rather than competition.

First, economic regulation and competition. There are two sorts of competition, competition “in” the market where providers compete to sell their goods or services, and competition “for” the market in the case of monopoly activities. While ancillary services such as meteorological services could be competed “in” the market, the core services such as ATC are monopoly activities, at least with current operational concepts. Competing ATC services therefore means some form of franchising or in the case of state owned monopolies, some form of competition for corporate control of that monopoly. This was the case with NATS in the UK where there was a competition to select a private sector partner who would take operational control of the company. The conclusion of this paper is that franchising of air navigation service provision from a national perspective may:

- Reinforce national fragmentation, because it would simply lock in that fragmentation for the duration of the franchise – typically tens of years.
- Fail to ensure that investment is allocated properly, and give rise to detrimental network effects: these last two arise because the holder of the national franchise will be encouraged to improve their own performance without regard for the fact that the ATC system is actually a global network of routes, sectors and airports.

It is therefore concluded that economic regulation and competition is probably not the best way forward at the present time.

Now consider economic regulation and a regime of co-operation between service providers.

This paper proposes that the following principles should apply:

- The service should be non-discriminatory (as required by ICAO), although that does not rule out offering a differential service to users.
- The charges should be cost related, although that does not rule out the possibility of a reasonable return on investment for the service provider – note that the principle is for cost relatedness not simply cost recovery.

- There should be transparency, which means unbundling of services with each service separately itemised in the charges.
- The economic regulation regime should be neutral to service provider status. This means that it should be equally valid whether the service provider is a fully integrated government department, corporatised in some way or fully in the private sector. This is important because many people think that economic regulation is synonymous with privatisation, which is not the case.

One of the principles is transparency which means unbundling of services. It is proposed that air navigation services be unbundled into the following four components:

- Network infrastructure, for example routes and airspace structure.
- Air traffic flow management (ATFM).
- Air traffic control (ATC).
- Ancillary services, for example meteorological services.

This is consistent with ICAO's, and most other, descriptions of air navigation services. Each of these components will now be discussed in turn.

First, network infrastructure. In terms of organisation, there should be co-operation between states on airspace design so that airspace is designed according to operational need and not unnecessarily constrained by national boundaries. Similarly, there should be greater civil and military co-operation on airspace design. This will require the civil and military users to better appreciate each others requirements and constraints. Where states work together on infrastructure improvements, funding will be required. It is not unreasonable for this to be recovered through the route charges. It is noted that ICAO now recognises pre-funding of infrastructure projects providing that safeguards, such as economic regulation, are in place.

Next, air traffic flow management. Figure 1 illustrates the importance of air traffic flow management in Europe where the political geography means that even a short flight of a few hundred kilometres means travelling through the airspace of perhaps two or three states.

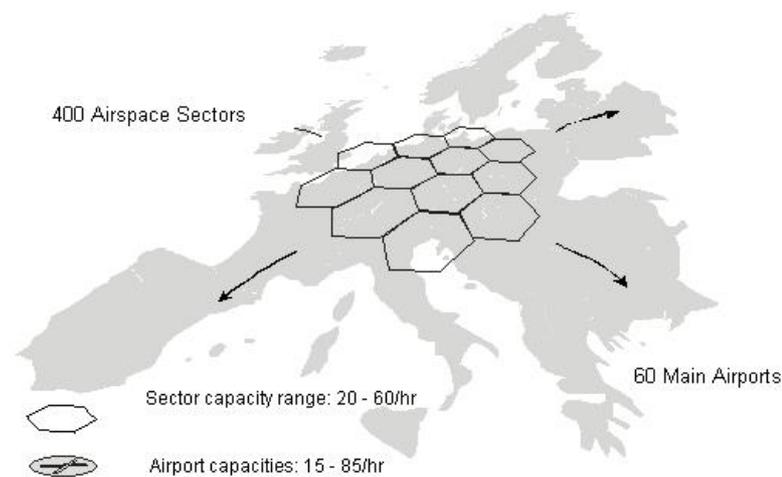


Figure 1: The European air traffic network

Air traffic flow management is important world-wide. The USA provides an example of air traffic flow management within a single state, in contrast to Europe where air traffic flow management spans many states and is provided by Eurocontrol. It is proposed in this paper that the air traffic flow management function should be corporatised and that it should be governed jointly by the service providers and airspace users. The reason for proposing this form of governance is that it will internalise the inevitable conflicts and differing priorities that arise between service providers and users in ATFM. It will mean that the way ATFM operates is transparent to both service providers and users. In order to encourage the desired

behaviour in the ATFM function, users, and service providers, the following incentives are proposed:

- It is recognised that ATFM has to do the best job it can with the resources it is presented with on the day in terms of sector capacities, weather, etc. so the incentives would have to be based on some relative measures of performance rather than absolute measures of performance. For the ATFM function, incentives based on delay, routing and flexibility would seem appropriate. If the ATFM function is operating well then delay ought to be reduced, users ought to get their choice of routing and there ought to be flexibility in the system. It is recognised that delay and routing are not entirely independent as users might accept alternative routings in order to reduce delay.
- Users should be offered incentives to accept alternative routings and to provide as much notice of their requirements as possible.
- Service providers should be encouraged to deliver capacity. Perhaps some metric based on the actual capacity offered on the day as a fraction of some nominal capacity could be used to incentivise service providers.

The basis of the charging formula for the ATFM service should therefore be the cost of the service. This is appropriate because the service providers/users club governance will ensure transparency of the costs to the users. In addition, there should be incentive terms of the sort discussed for ATFM performance, for the users and for the service providers.

Turning now to the air traffic control component of air navigation services. In terms of organisation, it is proposed that ATC be organised according to what are termed here as zones of operational coordination. These are airspace blocks designed according to operational need and not according to national boundaries or other constraints. Within a zone of operational coordination the ATC service is provided by those states whose airspace the zone spans. The

service is provided by what are termed here as resource pooling alliances. A resource pooling alliance is simply a general term for any form of co-operation between the service providers. It is not intended to be prescriptive. At one extreme it could be a memorandum of understanding between them, at the other extreme it could be a joint venture company set up by the service providers. One thing that zones of operational coordination imply is some common air traffic controller status (or licence) between the states involved.

Figure 2 shows two states, State A and State B. Sector 1 is in State A and the corresponding unit rate (a measure of the price of the service) is Unit Rate A. Sector 2 is in State B and the corresponding unit rate is Unit Rate B. The diagonal lines show a route which goes from Sector A to Sector B and back again. The sector boundary, dictated by the national boundary, is not well placed for this route. Traffic has to be handed over from Sector A to Sector B and then back again.

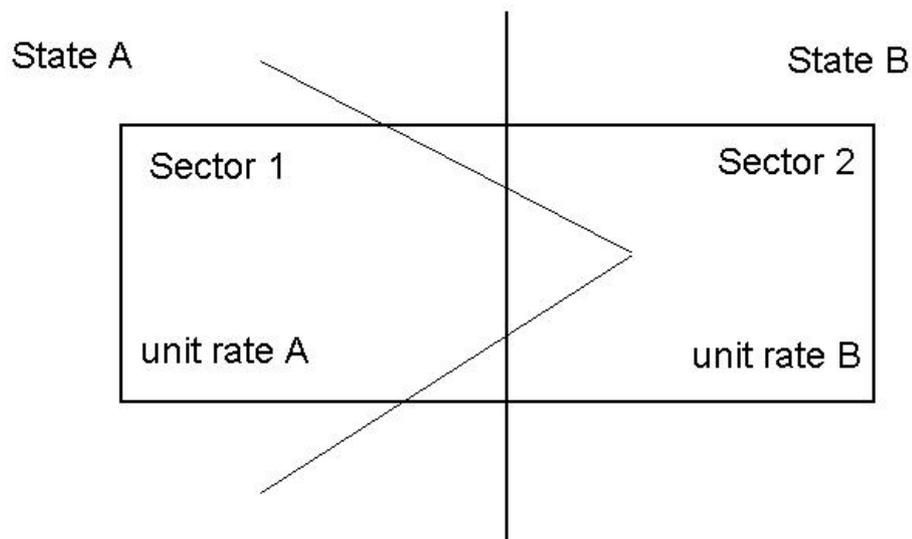


Figure 2: Sectors in different states

Figure 3 shows how things might be arranged with Sectors A and B combined into a zone of operational coordination, thus removing the handovers at the sector boundaries. Note that the zone has its own unit rate, the Zone Unit Rate.

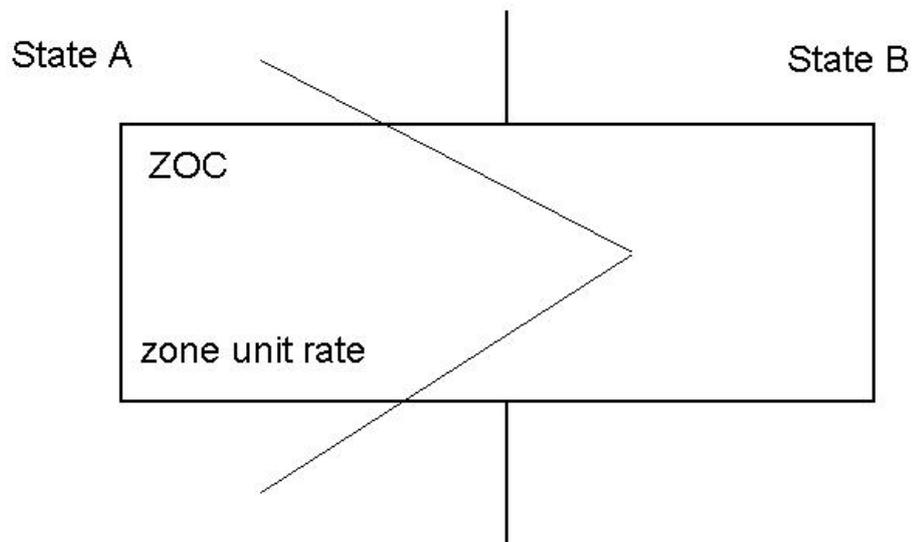


Figure 3: Sectors combined into a zone of operational coordination

It is the zone unit rate that provides an incentive to encourage the service providers to cooperate and form the zone of operational coordination. The zone unit rate might be higher than the unit rates A or B, thus providing a financial incentive to the states to participate in the zone. In this case, the higher unit rate would have to be justified in terms of operational performance. The zone unit rate could still provide a financial incentive even if it were similar or lower than unit rates A and B. This is because it is expected that the service providers could make operational savings through participating in the zone, for example sharing equipment, more efficient use of air traffic controllers. Detailed modelling would be required to establish the economic viability of any particular zone. The incentives proposed here are

therefore the zone unit rate itself and a term depending on delay. It is proposed that the charging formula for the ATC service should be based on price cap regulation, that is the zone unit rate should be price cap regulated, with incentive terms, principally delay.

Finally, ancillary services. The only comment within this paper is that many of these could be opened to competition.

Conclusions

Corporatisation of service providers, ICAO's policies and a number of service issues have all led to increasing interest in economic regulation. Economic regulation is about encouraging change, improving the service and regulating price. It is not simply about regulating a static monopoly situation. Two possible scenarios have been examined. It is concluded that economic regulation combined with competition between service providers is probably not the best way forward at the present time. Economic regulation with co-operation between service providers is probably a better approach and some possible initiatives have been discussed.