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Air traffic control regulation with union bargaining in Europe [1]

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ABSTRACT

This paper studies the behavior of the national air traffic control (ATC) centers in the EU as it relates to bargaining between a union and government. We analyze wage formation, the reactions of ATC's to a price-cap, the slow adoption of new technologies, the reluctance to vertically disintegrate, the slow standardization, and the failures of mergers of neighboring ATC's. The theory is illustrated by using estimated union preference parameters and bargaining power parameters for the government. We find that bargaining power and union preferences vary greatly by country.

1. Introduction

Air Traffic Control (ATC) is responsible for guiding flights in the air and near airports so that air traffic is safe and fluid. This service is usually provided by public companies and staffed by union members. Since a strike by only a few people can cause much disruption, the operation of ATCs is subject to bargaining between government and unions, perhaps leading to costly and inefficient operations. To understand the behavior of some governmental agencies, the preferences of unions must be considered. In the European Union, air traffic control is the responsibility of 37 air traffic control centers (ATC). Each has a national or regional monopoly. Most of these centers are public. Each ATC guides flights through its territory and charges a service fee. There is strong evidence that the organization of European ATCs is less efficient than other systems in different parts of the world. The Performance Review Commission of Eurocontrol (2014), which compared the systems of the EU and the US, found that the EU system was 34% more expensive than that of the US.[2] The inefficiency is attributed to different factors: fragmentation (due to the small size of many ATC's), lack of incentives to introduce new technologies, and, more generally, lack of incentives to reduce costs. The European Commission is proposing different strategies to improve the efficiency of the European ATC sector. These strategies include regulatory changes (price-cap instead of cost-plus regulation) and efforts to introduce more cost-effective ATC technologies.

European policies rely largely on the traditional theory of regulation of public monopolies (surveyed in Laffont and Tirole (1993)). The regulator's main problem is that he does not know the costs of providing services. Knowing the costs of different production options is difficult because it depends on the efforts of management and workers while the production process is nonstandard. Every ATC has its own area, follows its own work routines, and uses its own equipment. This asymmetric

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[2] Winston (2013) finds that also the US air traffic control efficiency can also be strongly improved.

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information, combined with the lack of incentives for management and the ability of unions to shut down airports by striking, is likely to produce poor cost performance. An obvious remedy is to replace the simple, cost-plus regulation that was in place in most ATCs with a price-cap. This is what the EU Commission is doing. The price-cap annually reduces the average service fee that can be charged and puts pressure on costs. This is a recent policy, but it has not been successful up to now. See Delhaye et al. (2016) for a review.[3]

This paper takes a different view of the functioning of national ATC companies by using a union-bargaining model to understand their behavior, and more particularly, their reactions to different European policy initiatives. The European ATC agencies are regularly disturbed by strikes that protect wage and employment levels. This is clearly different than the US, where strikes are no longer allowed since Ronald Reagan fired air traffic controllers who had gone on strike.

In the union bargaining theory – surveyed in Oswald (1985) – the main issue is not the asymmetric information of the regulator, but the bargaining position of the unions. Even if the regulator perfectly knew the minimum cost of the firm, it cannot force the firm to sell at minimum cost because the unions can threaten to strike. This strongly reduces the surplus of the users. We argue, therefore, that it is the bargaining position of governments, ATC's, and labor unions that determines the economic outcome.

We begin in section 2 with a description of the traffic control industry and its European institutions. A brief review of the literature is contained in section 3. Section 4 sets up a simple model of one ATC and describes the reference equilibrium in the absence of regulation. Section 5 uses this model to assess the effects of different European regulations. In this section, we also discuss in more detail the change from cost-plus regulation to a price-cap, the standardization of technologies, the adoption of new technologies, and the effects of mergers. Section 6 uses data on labor productivity and wages to estimate union bargaining power and labor union preferences; this holds for most of the ATC zones. Section 7 concludes.

2. The air traffic control industry and its institutions

An efficient air traffic system requires three efficient components: airlines, airports and air traffic control. Air traffic control can be compared to the network manager functions for railroads; it is a necessary institution which makes sure that flights are operated safely, efficiently routed, and are not confronted with too much congestion. While air traffic control is organized differently in every continent, we focus on Europe. Air traffic control is historically organized as a national monopoly, controlled by the governments and called Air Navigation Service Providers (ANSP).[4]

In comparison to the US ATM industry, the European ATM is highly fragmented. This leads to a large number of operational centers and higher costs per flight hours controlled with the result of overall inefficiency. Some descriptive statistics on the US as compared to the EU are shown in Table 1 below.

European airspace is controlled by 39 ANSPs in 41 Member States of EUROCONTROL. With the exception of MUAC, all ANSPs operate within national jurisdictions and are, to a large extent, monopoly providers of ATC services. ANSPs have different ownership forms; they are commercialized along a spectrum from state entities to public-private partnerships, with a majority being corporatized public entities. Only 4 operate as pure public agencies (see Appendix 1 for details on the ownership).

2.1. Institutions

The European Commission is the central player in Europe. Eurocontrol can be seen as the European-level network operator. It consists of the 27 members, but it also includes the neighboring states. The major European initiative is known as the Single European Sky, launched in 2004. This contained measures on performance, technology, safety and capacity. A Performance Review Committee was introduced to assess the progress. On the basis of the assessments, Eurocontrol took several initiatives that we assess in this paper. One is the creation of Functional Airspace Blocks (FABs). These were supposed to overcome the fragmentation of national airspaces by jointly operating control operations that span several member states, decrease costs and improve performance. Another initiative was to improve the European air traffic control technologies by funding R&D by industry and research institutions.

There were three motivations for the Single European Sky initiative. First, European industry was threatened by technological progress and by cooperation between Boeing and other providers. Second, there was a need for harmonization of the technologies sold by European providers to their national air traffic control agencies. A third initiative is the replacement of the national cost-plus pricing regimes by a price-cap regime that forces all ANSP's to lower their prices by a common percentage over the years.

The European ANSP's are predominantly state-controlled public enterprises, except for NATS in the UK and Skyguide in Switzerland (PRU (2014)). [5] Each ANSP is, in principle, regulated by a government agency ("National Supervisory Agency"). In most countries (except for the UK), these regulators may lack the independence, resources and power to effectively regulate the ANSP's. The ANSP's and their regulators are lobbied by national unions of Air Traffic Controllers (ATCO's), by manufacturers of equipment, and by the airports and airlines that use air traffic control services.

The whole process of reorganizing this sector has taken up to 25 years and has shown only poor progress. This was explicitly stated by EU Commissioner Kallas in October 2012: "10 years and still not delivering." He noted that the targets, especially in matters of costs and delays, have not been reached, and that five billion euros are wasted annually due to inefficiency (Baumgartner and Finger (2014)).

2.2. Some basic data[6]

In 2012, the total revenue of air traffic control for the Eurocontrol zone (the 37 ATC firms) was 9.17 billion Euro and total costs were 9.15 billion Euro. More than 80% of the costs were on-route guidance costs, while the rest were costs of tower control or terminal costs related to the approach or departure from the airports.

European ANSP's employed some 58,000 people, and the industry is relatively capital intensive, as one needs 0.85 Euro of fixed assets to produce 1 Euro of revenue.

Fig. 1 gives a ranking of the size (based on total costs) of the 37 different air traffic control firms in Europe. The five biggest providers are DSNA (France), DFS (Germany), AENA (Spain), NATS (UK) and ENAV (Italy).

Fig. 2 shows the costs of provision per firm, computed per composite flight hour. A composite flight hour is a measure of output which is corrected for the degree of difficulty in en–route costs and tower control costs. Note that there are large deviations that are not directly related to size of the operation.

[3] See Delhaye et al. (2016) for a review.

[4] More detail on the institutional structure of the ATC industry in the world can be found in Button and Neiva (2014). For European developments, more detail on the complex institutional structure and its developments can be found in Baumgartner and Finger (2014).

[5] The full list of ANSP's and their institutional structure can be found in Appendix 1.

[6] The data are from Eurocontrol (2014). We used 2012 data as they are close to the period 2004–2011 we used for the estimation of the bargaining power.