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Efficient frontier analysis of Dutch public transport tendering: A first analysis

Wijnand Veeneman [a, *], Janneke Wilschut [a], Thijs Urlings [a, b], Jos Blank [a], Didier van de Velde [a, c]

[a] Faculty of Technology, Policy and Management, Delft University of Technology, The Netherlands
[b] CAOP, The Hague, The Netherlands
[c] inno-V, Amsterdam, The Netherlands

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ABSTRACT

Dutch public transport provision has been competitively tendered out increasingly since 2001. Except for the Amsterdam city bus services, all bus transport in the country is carried out under a competitively tendered contact. Several evaluations have been carried out on the effects of competitive tendering in the Netherlands. Elsewhere we have seen stochastic frontier studies used to analyze the effects of governance changes. This paper carries out such a study for the Netherlands.

In addition, the study expands the dataset with regional data as well as customer satisfaction and patronage data.

This paper represents the first analysis of 10 percent of the concession years since 2001. It shows some unexpected outcomes, like tendering not bringing the higher efficiency expected. In addition, it also shows expected results, as the efficiency costs of quality incentives.

1. Introduction

The introduction of new forms of governance in passenger land transport has been ongoing throughout Europe and the rest of the world. Public transport authorities are looking for effective organizational forms, from regulatory regimes, through contracting, to relation development between operator and authority. All should support the policy goals and providing an attractive mode of transport.

In preparation for new governance models, a great deal of research was aimed at modeling the possible effects of the new forms. Assumptions were made and possible effects were calculated (for example Jansson, Lang, & Mattsson, 2008a) as ex-ante evaluation. In the trail of the new governance came the need to evaluate of the changes ex-post (for example Mouwen & Rietveld, 2005). The key questions were whether the original goals were met and how to further refine the governance after the first key changes were made (see Veeneman, 2002).

A great number of the ex-post evaluative research looked at the variables on which the promises of the new governance models were aimed. An important goal of the governance changes in Europe was improving efficiency by bringing competition and private enterprise into a monopolistic and public operator dominated sector. Consequently, efficiency has become a key research topic (for example Odeck & Alkadi, 2001) in the sector. In addition, we see research aimed at understanding specific effects that were unintended and seen as negative, like effects on drivers and their working conditions (Long & Perry, 1985).

The efficiency studies often use data envelopment and stochastic frontier approaches. In our literature study we present several of these studies. This paper presents a research project that wants to further develop that line of research and to understand the development of governance in the Netherlands. To do so we have focused on four further steps:

- Embedding a stochastic frontier study in qualitative survey, to improve making sense of the data,

* Corresponding author. Faculty of Technology, Policy and Management, Delft University of Technology, PO Box 5015, 2600 GA Delft, The Netherlands. Tel.: +31 (0)152787754.
E-mail address: W.W.Veeneman@TUDelft.nl (W. Veeneman).

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- Including the contractual form, to better understand the effect of the contract and tendering type on the efficiency and outcome,
- Including a large set of regional context variables to control for other explaining variables for difference between the concessions,
- Establishing a focus on long-term evaluation by setting up the research as an ongoing project.

This paper represents the first step in this research.

2. Dutch public transport governance

Before 2001 the Dutch public transport system was organized in a traditional way, at that time found throughout Europe. One national rail operator (NS) provided the services on most of the rail network. A regional bus operator (VSN Groep) provided the services in most of the country. And the major cities could rely on their own municipal operators. The national government and larger municipalities (above 30,000 inhabitants) receiving funding from the national government were in yearly negotiations with these operators on their offerings. Several exceptions existed, however this represents the overall regular to regime before 2001 in the Netherlands (Veeneman, 2010).

The exceptions were foreboding a new form of regulation for Dutch public transport. During the late 1980s and the early 1990s it became apparent that the current regulation did not allow for strong control by governmental authorities (municipalities and the national government) on public transport operators. These government authorities found themselves negotiating with monopolists often slow in accepting governmental wishes. The Dutch operators were monopolist de facto, not de jure. They were relatively free in defining the public transport services and running them in the way that they saw fit. Subsidies were awarded as a factor of fare box revenues: suppletion or super-incentive contracts. The operators' income was heavily dependent on the amount of travelers they transported. This should have incentivized reducing costs to the authority and maximizing the amount of travelers. This was largely in line with the wishes of the subsidizing governmental authorities. However, operators were suboptimizing by running parallel lines; with buses and rail, and between regional services and urban services in urban areas. In addition, operators were slow to adapt to innovations, like environmental improvements, with costs trumping growth as driving incentive.

Two developments came together and led to a change in regulation. On the one hand the European Union started promoting competition, from 1969 onwards. First, the competition itself would allow for the improvement of public transport quality and efficiency, as was the main believe in Brussels. In addition, European operators had to be able to provide services throughout Europe. On the other hand, the various governmental authorities grew weary of the operators holding of their wishes and felt a need for stronger control. The growth of urban fabric around the bigger cities strengthened that need. Governmental authorities looked for more coordination and control.

The new legislation of 2001 came with the decentralization and centralization. Not only had many municipalities to relinquish their role in public transport governance, also the national government reduced their role to governance of regional bus services and parts of the national rail network. Instead, the governance was transferred to the 12 provinces and 7 metropolitan regional governments as public transport authorities. These provincial authorities had until 2001 no involvement in regional public transport and had to start to develop their policies and intervention in this sector. See, e.g., van de Velde and Leijenaar (2001) for more details on this transition.

This new regime gave these governmental authorities the de jure monopoly to provide public transport services. But this right came with the legal obligation to use competitive tendering to select operators. Except for Amsterdam, in 2013 all have competitively tendered all their bus concessions at least once.

The changes led to a large reshuffle on the side of the operators. NS had to allow for tendering of regional railway, opening the rail network up to alternative operators. These mostly come from the regional operators that were formed out of the earlier monopolists. The national regional bus operator (VSN) has sold off its northern area to Arriva and its southern are to Veolia. The remainder became to be known as Connexxion. Smaller operators have smaller parts of the market Qbuzz (linked to NS), Synthus (linked to Keolis) and EBS (linked to Egged group).

The expectation was that the change of the regulatory regime in the Netherlands would improve efficiency and effectiveness of public transport in the Netherlands. The effects are regularly reviewed, but generally inconclusive or limited. We'll discuss these reviews in the next section. The first outcomes were that efficiency had indeed been improved, however the other goal, growth of ridership, could not be observed. Note that subsidy cuts imposed by central government during the same period also had an impact.

This study aims at getting a better perspective on the effects of tendering in the Netherlands.

3. Literature review into governance evaluation

In the last decades, several academic fields have gained an interest in the way in which public transport is organized. Key areas are *design of services* (for example Vuchic, 1981), *policy* (for example Button, 1998) often related to *land-use* (for example Geerlings & Stead, 2003). Where in the US and Canada governance has long been an important issue (for example Chisholm, 1989; Gram, 1907; Hatzopoulou & Miller, 2008), in Europe the interest for governance seems to have grown parallel to the blooming interest of European policy makers, aiming to bring competitiveness to the European public transport sector (see also Van de Velde, 2003). Starting of in economic science (for example Jansson, Lang, & Mattsson, 2008b), the interest has widened from linking national *regulatory regimes* to outcome to linking *governance* to outcomes. Basically, the question rose “what can transport authorities do to improve public transport performance” (for example Van de Velde, Veeneman, & Lutje Schipholt, 2008), following the question what national and supranational governments could do in that field.

Fielding, Babitsky, and Brenner (1985) evaluate the performance of US transport operators looking at the relation between service inputs, outputs and patronage. They show the three key forms of efficiency, as they call them cost-efficiency (between inputs and outputs), cost-effectiveness (between inputs and patronage) and service effectiveness (between outputs and patronage). Through a factor analysis they compounded 7 key variables, while underlining the problem of data scarcity.

All these academic areas use their own operationalized performance variables, focusing on various ways to operationalization efficiency or effectiveness (Veeneman, 2002). With the experiments with new governance forms in Europe, triggered by the new regulatory regimes, came the need to thoroughly analyze the effects of the changes, to purposefully direct the changes towards the promised better performance. The early experiences of evaluative research of new governance models, like competitive tendering, under new European regulatory regimes proved somewhat problematic.

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