



## Norwegian experiences with tendered buss services

Jon-Terje Bekken <sup>1 2 \*</sup>, Frode Longva <sup>1</sup>  
Nils Fearnley <sup>1</sup>, Oddgeir Osland <sup>1</sup>

<sup>1</sup> Institute of Transport Economics, Oslo

<sup>2</sup> Molde University Colle, Molde

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### Abstract

Competitive tendering of local public transport services has been allowed in Norway since 1994. By 2005, 28 percent of all route production in Norway was procured on the basis of tendered contracts, covering around 40 percent of all passengers. The majority of the tendered contracts were gross cost contracts, whereas historically, most Norwegian contracts have been net cost contracts. This article analyses the effect of competitive tendering on operating cost and subsidies paid. It is found that competitive tendering reduces costs by 10 percent and that most of the cost reduction has been used to reduce subsidies for public transport by local authorities. The effects of competitive tendering in Norway are smaller compared to other countries. This can be attributed to the fact that the industry had improved efficiency over a long period before competitive tendering was introduced.

*Keywords:* Competitive tendering; Public transport; Contract; Procurement.

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### Introduction

Competitive tendering is now a well-established practice for procurement of public transport (PT) services in several European countries, and is continuously spreading to further areas. Its popularity is partly related to its success to deliver cost-efficient production, even though later developments cast doubts on whether these efficiency gains are sustainable in the longer run. Moreover, the efficiency gains provided through the first-time tendering process seem highly dependent on variations in previous contractual arrangements and whether or not there has been a public, in-house production unit. Explanations of efficiency gains from competitive tendering in different areas must take into account the context in which the tendering process has taken place. In that respect, the level of efficiency before tendering is introduced to a large extent limits the potential gain from actually introducing tendering.

This article examines the effects of competitive tendering in Norway on cost and subsidy levels. In Norway, local public transport lies under the jurisdiction of 19 county

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\* Corresponding author: Jon-Terje Bekken (jbe@toi.no)

councils. Until 1986, a part of the framework-funding scheme for local authorities was earmarked for PT services. In 1986, such earmarking was removed, allowing local authorities to freely prioritise between PT and other services under their jurisdiction. This created a strong focus on the costs of PT operation.

PT service production has traditionally been procured through negotiated net cost contracts with private or semi-private (publicly owned) operators. Public in-house production has been limited to the major cities. Due to this, a majority of the Norwegian bus industry has been fully or partly on private hands, to a large extent combined with the market initiative of net-cost agreements. This implies that there was a great deal of private interests in the bus industry even prior to the 1994-directive, which permitted the use of tendering by law. The 1994-directive, together with reduced state funds for transport and communication purposes within the framework-funding scheme, brought about a rising use of competitive tendering during the late 1990s. In 2005, 28 percent of all route production in Norway was procured on the basis of tendered contracts, covering around 40 percent of all passengers. Nevertheless, negotiated contracts still constitute the majority of all local bus contracts in Norway.

The main question this article sets out to answer is; what are the cost savings of competitive tendering for Norwegian procuring authorities? The analysis is based on a recent evaluation of competitive tendering in Norwegian local bus transport, where analysis of quantitative data over a 15 year period are combined with a qualitative assessment of different contractual arrangements both for tendered services and for services not tendered as a control group (Bekken et al 2006). The analysis presented in this article is primarily based on the quantitative data set, even though the results are interpreted by using the qualitatively obtained information.

## **Background and hypothesis**

Competitive tendering refers to a situation where the state allows other legal entities to compete for the right to carry out a task that the state traditionally has carried out itself or purchased directly by means of negotiated contracts (Longva et al 2005). Hence, competitive tendering differs significantly from free competition and does not necessarily imply privatisation of the businesses. Both Denmark (Copenhagen) and Sweden were quick off the mark with competitive tendering for local bus services and created the basis for what is often referred to as the Scandinavian model in such contexts (van de Velde 2005 and 2004). This means that the authorities are responsible for drawing up the public transport service, which is then purchased from private/public legal companies through a tendering process. Even though Norwegian authorities show a growing interest in implementing incentive contracts within the tendering regime, the "Scandinavian model" is still the dominant form in Norway as well (Longva et al 2005).

Evidence from the Scandinavian countries supports the general view that competitive tendering is associated with cost savings for the procuring body, at least on a short-term basis. In Sweden, competitive tendering was introduced in 1989. Previously, most service production was run by public companies, either on the basis of in-house production or procured through negotiated gross cost contracts. However, in 2001 95 percent of services had been subject to competitive tendering at least once, and now private operators dominated the market (Alexandersson and Pyddoke 2003). National data for the period 1987-1993 indicated unit cost reductions due to competitive

tendering of around 13 percent, later re-estimated to an isolated effect of 6-7 percent (Alexandersson et al 1998). Figures from Stockholm and Helsingborg indicate even greater unit cost reductions on a short-time basis, in the range of 20-30 percent (Nilsson et al 2005, Nilsson et al 2003, Jansson 2002 and Reiter 2002).

In the longer run, however, the efficiency gains seem to have halted in Sweden. Recent data show little further reduction in unit costs since the mid-1990s. Moreover, data from larger urban areas even indicate rising cost levels in the third and fourth round of tendering (Nilsson et al 2005, Jansson 2002). The costs are nevertheless still below their initial levels, even though they encompass much higher service standards. Alexandersson and Pyddoke (2003) largely confirm this picture on a nationwide basis. They have updated the data set initially presented in Alexandersson et al (1998). The period of rising share of tendered services (1989 to 2001) coincides with steadily falling cost levels, at least until 1999. In the years 2000 and 2001 costs were increasing, but still way below the level of 1989. Consequently, the isolated cost saving effect of tendering is a bit smaller than in their initial study, but still significant.

In Denmark a 1990-legislation imposed a requirement for competitive tendering on all bus services, which was gradually implemented in the period up to 2002. Private operators replaced the previous market dominance of public operators. In Copenhagen, unit costs were reduced by about 24 percent in the period 1990-1997 (HUR 2001). As in Sweden, however, later rounds of tendering have shown increasing costs, partly due to rising service standards. Similar developments are also found in England (ATCO, 2004). Nevertheless, unit costs are still below the pre-tendering levels (HUR 2005).

These Scandinavian experiences mirror Wallis and Hensher's (2005) conclusion from investigations of tendering-effects in urban bus services from 10 developed countries, covering more than 20 cities. Based on evidence from research conducted in Great Britain, Scandinavia, USA, Australia and New Zealand, the authors conclude that short-run cost savings from competitive tendering vary from 5 to 50 percent. As a crude "rule of thumb" the authors suggest indicative cost savings of 30 percent from competitive tendering on a short-run basis. These cost-savings find further support in a review of European experiences in Longva et al (2005). They argue that such cost effects occur from competition irrespective of the tendering procedures and contractual clauses actually chosen.

As pinpointed in the studies referred to above, numerous factors will influence the differences in results between the different countries and areas. One main factor seems to be that of the pre-competitive tendering situation, defined by historical contractual clauses and ownership structure. As opposed to their Scandinavian partners, previously dominated by public operators running on negotiated gross cost contracts, Norway has a tradition for granting the subsidies on a net cost basis to operators operating on long-termed concessions given for an area or a single route, except for the capital area of Oslo, the operators were all private right incorporated companies, often with private shareholders only (Johansen 1999). This Norwegian combination of net cost contracts and private operators is rather unique in international terms (Johansen et al 2000). Consequently, the supposed effect of privatisation per se seems less prominent in Norway.

Over the period 1986-96 unit costs for the Norwegian bus industry as a whole were estimated to have reduced at the range 6-20 percent, whilst tendering contracts still only attributed to around 2 percent of the service production (Johansen 1999). Much cost saving was in other words already achieved before competitive tendering became an

influential force in Norway. These cost reductions seem more attributable to the threat of competitive tendering and the change from an earmarked funding scheme to a more free funding scheme rather than the use of competitive tendering itself. It must also be mentioned that so-called “normalised cost contracts” with “efficiency agreements” has been widely used. Such contracts require the operator to improve efficiency by a certain percent by deducting this from the general price increase of the “normalised costs contracts”. Such contracts are still influential in Norway, as only 28 percent of the services were procured on the basis of competitive tendering in 2005 (Bekken et al 2006). The cost reductions prior to the rising share of competitive tendering leads us to an expectation of lower cost saving potential in Norway than elsewhere. Nevertheless, some cost savings for the procuring authorities should be expected, at least when it comes to unit costs, partly as a result of competition itself and partly as a result of the move from net cost contracts to gross cost contracts.

The procuring authorities introduced gross cost contracts at the same time as competitive tendering was introduced. While net cost contracts constituted 90 percent of all services that were procured on a negotiated basis in Norway in 2005, gross cost contracts constituted 96 percent of the tendered ones (Bekken et al 2006). Even though Norwegian authorities show growing interest in implementing financial incentives within the gross cost framework, the corresponding higher risks endured by the operator are rarely compensated with greater freedom of design (Bekken et al 2006). Hence, the growing use of incentive contracts does not alter the fact that competitive tendering in Norway has brought about a shift in market responsibility from the operator to the authorities, mirroring the move from a net cost to a gross cost subsidy regime. Service and quality levels previously approved by local authorities on the basis of the operators’ initiative, are now increasingly being pre-defined by the authorities as part of the procurement process. Costs in terms of route planning, quality assessments, market research and market risk are thus being transferred as well. Parts of the cost-saving effects from first round of tendering may therefore be attributed to transfer of costs and risk rather than efficiency improvements.

To summarise, the following findings for Norway will be expected from competitive tendering: (i) The higher share of competitive tendering, the lower costs for the procuring authorities, (ii) The initial cost reductions will however be lower in Norway than experienced elsewhere (as in Sweden and Denmark), and (iii) The move from negotiated net cost contracts to gross cost tendering leads to subsidy reductions rather than service improvements and increased service levels.

### **Data sources and model specifications**

The data used for the analyses consists of pooled time series of key indicators for public transport from each of the 19 Norwegian counties. The data set covers the period from 1986 to 2005 (forecast), although the time series are fairly complete only from 1992 to 2005. That is from 3 years before the first tendered buss service in Norway. Because some of the time series are incomplete for individual data and counties, some ratios (like subsidy as proportion of costs) are only obtainable from a few counties in the last five years.

The data set has been quality assured in two ways. First, each of the counties has had the opportunity to comment, explain and update their data. Second, we have checked the

data for large or inexplicable variations from year to year, and removed data, which are obviously erroneous. In some cases incorrect data have been replaced with interpolated values. There will inevitably still be some errors in the data set, which relate in particular to some of the older data. However, the database is the best available historic data for local public transport in Norway. Table 1 summarises key figures in the data set for 1991 and 2004.

Table 1: Key figures of the data set. Monetary values in fixed 2004 NOKs (€1≈NOK8).

	1991			2004		
	Lowest	Mean	Highest	Lowest	Mean	Highest
Proportion tendered services*	0 %	0 %	0 %	0 %	20 %	100 %
Subsidy as proportion of costs**	30 %	41 %	80 %	18 %	37 %	60 %
Cost/veh.km, NOK	14,2	20,5	42,3	16,0	19,1	23,1
Average fare, NOK***	8,2	13,0	16,2	10,1	14,3	18,2

\* Proportion of produced kilometres subjected to competitive tendering

\*\* Year 2000 data used instead of 2004

\*\*\* One county with exceptionally high fare levels has been excluded

Three econometric models are specified in order to isolate the effect of competitive tendering on total costs, cost per vehicle kilometre and total subsidy, respectively. OLS regression is used to correct for the influence of other variables that affect costs and subsidy levels. OLS is a sufficiently appropriate approach for the purpose of isolating the effects of tendering from the effects of other factors when we have pooled time series data. OLS estimation is a simple estimation procedure, which also provides simple interpretation of parameters. Further, it also facilitates comparison with the Swedish study of Alexandersson et al. (1998), who used OLS. The limitations of OLS models concern in particular the inability to estimate models that are intrinsically nonlinear in their parameters – an issue beyond the scope of this study – and problems with truncated variables. It is unlikely, however, that the choice of estimation procedure will affect the overall findings of the study, although it may produce different estimates especially of the extreme cases.

Whereas Alexandersson et al. (1998) in a similar study specified models with extensive use of variables representing changes in lagged, lead and current levels of tendering, which neither produced many significant parameters nor readily interpretable estimates, we have kept the models simple, the number of explanatory variables low and focused on those model specifications that produce robust estimates.

The following model specifications will be used. They are the result of several model runs where different specifications were tested:

1.  $K = \beta_0 + \beta_1 * VKM + \beta_2 * PAX + \beta_3 * D_{diesel} + \beta_4 * Tender$
2.  $VK = \beta_0 + \beta_1 * VKM + \beta_2 * PAX + \beta_3 * D_{diesel} + \beta_4 * Tender$
3.  $T = \beta_0 + \beta_1 * VKM + \beta_2 * PAX + \beta_3 * D_{diesel} + \beta_4 * Tender + \beta_5 * POP$

Where:

K is total cost \*

VK is cost per vehicle kilometre \*

T is subsidy paid by the County \*

VKM is vehicle kilometres produced \*

PAX is the number of passengers per year\*

$D_{\text{diesel}}$  is a dummy for diesel duty, which was introduced in 1999  
 Tender is the proportion of route production is subjected to competitive tendering  
 POP is population density \*  
 $\beta$  are the parameters to be estimated ( $\beta_0$  is the constant term in the equation)

All monetary values are transformed to 2004 prices, using the retail price index. Variables marked with an asterisk (\*) are log-transformed using the natural logarithm. Their parameter estimates are therefore readily interpretable as (constant) elasticities. The variable "Tender" is not log-transformed. The interpretation of the effect of competitive tendering is therefore that one unit (percentage point) increase in the route production subject to competitive tendering increases K, VK and T with a factor of  $\beta_4$ .

Our a priori expectations are 1) that  $\beta_1$  has a positive sign in model 1 and 3, i.e. increased route production increases cost and subsidy levels. In case of scale economies  $\beta_1$  will be negative in equation 2; 2) that  $\beta_2$  and  $\beta_3$  are positive; and 3) that  $\beta_3$  is negative, i.e. competitive tendering reduces costs and subsidies.

An important structural difference between the counties is the degree of urbanisation. While some counties are largely rural, others – notably Oslo – are predominantly urban. The variable POP is included to correct for this.

### Empirical findings

Figure 1 shows the developments in operating costs and subsidies paid by county councils to public transport operators. The figure also indicates the timing of key events that have influenced cost and subsidy levels.

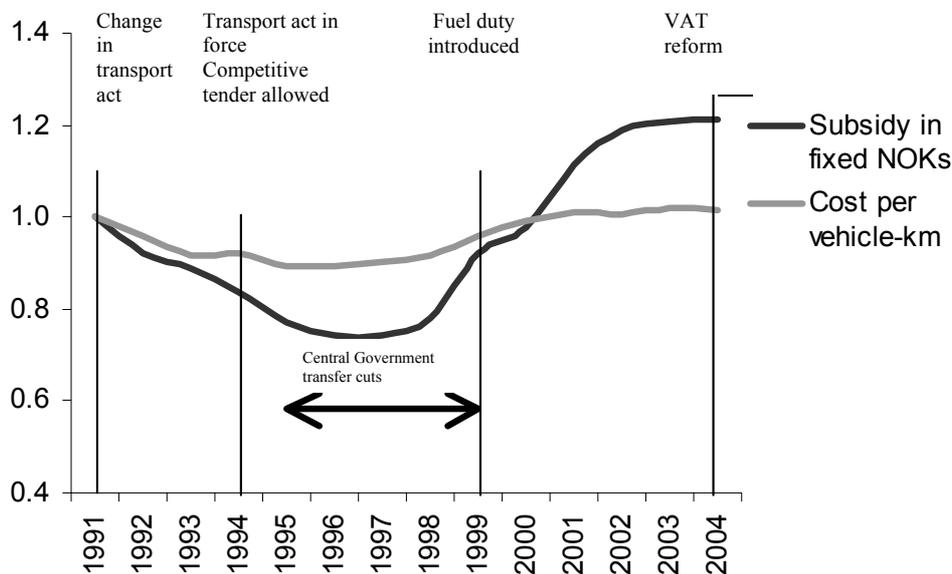


Figure 1: Developments in average cost per vehicle-kilometre and subsidies. Index 1991=1.00. Fixed prices.

Cost and subsidy levels fell in the 1990s up until about 1997/98. From 1997/98 onwards, costs and in particular subsidy levels increased dramatically till around 2000

when the curves flatten off. It is evident that the developments in subsidy payments follow the developments in costs. However, the fluctuations in subsidy payments are significantly larger than the variation in costs. This is partly due to the fact that subsidies typically are about 30 percent of costs, making changes in subsidies related to changes in costs by a factor of three.

The cost and subsidy reductions started before the Transport Act was set in force in 1994. Several explanations can be offered. The change of financing scheme of the county councils from earmarked to framework funding in 1986, implied that the counties had to prioritise between public transport and policy areas like health and education. Moreover, it has been argued that the cost reductions were a result of operators preparing themselves for the competitive tendering regime that was to come (Carlquist and Fearnley, 2001). Central government transfers to county councils were then reduced every year from 1995 to 1999 due to the expected efficiency gains in local public transport that would arise from competitive tendering.

Prior to 1999, bus services were exempted from the diesel duty. From 1999 this exemption was replaced by a reimbursement scheme. On average the compensation has been somewhere around 95% of the diesel duty. Our analyses do not exclude costs and subsidies that relate to this tax. It is therefore evident from figure 1 that costs and subsidies increased in 1999.

In 2004, a VAT reform was set in force. This reform subjected local public transport in Norway to value added tax (VAT). The VAT was set at 6 percent, but with full deduction of input VAT at 24 percent. In reality this was therefore an indirect way of state subsidies to local public transport services, which was also the expressed purpose.

#### *Do half-way solutions result in poorer performance?*

As an initial attempt to identify possible effects of competitive tendering in the data material, we have grouped the 19 Norwegian counties according to their use, or determination to introduce, competitive tendering. Three categories are identified:

1. Predominantly tendered contracts: Counties with more than 50 percent competitively tendered bus mileage and/or decision to increase use of competitive tendering (4 counties).

2. Mixture: Less than 50 percent competitively tendered bus mileage or use of negotiated contracts with explicit threat of tendering or decision to introduce tendering (7 counties).

3. Predominantly pre-negotiated contracts: No tendering and no intention to introduce competitive tender (7 counties).

By comparing these three groups of counties we get a first impression of their relative performance (table 2).

Table 2: Change between 1991 and 2005 in counties with predominantly tendered services, a mixture of tendered and pre-negotiated contracts and predominantly pre-negotiated contracts, respectively.

	<i>Predominantly tendered contracts</i>	<i>Mixture</i>	<i>Predominantly pre-negotiated contracts</i>
Trips/capita	+18%	-7%	+18%
Route production	+4 %	-17 %	+13 %
Cost/veh. km	-18%	+15%	+1%
Subsidy/cost	+12%	+26%	+10%
<b>Average fare</b>	+8%	+1%	+5%

This preliminary comparison clearly shows that counties, which have chosen a regime with a mixture of tenders and pre-negotiated contracts, have performed poorly relative to those, which to a greater extent have chosen one or the other. We see from table 2 that route production has been reduced substantially despite large subsidy increases in the "mixture" group. Operating costs per vehicle-kilometre have also increased considerably in this group. The result is loss of passengers, quite opposite the achievements in the two other groups of counties.

The comparison can also be interpreted in terms of market orientation. Typically, passengers place more emphasis on improved service levels than on fare reductions (Carlquist and Fearnley, 2001). While the "mixture" group has kept fare levels more or less unchanged at the expense of reduced service levels and higher subsidy requirements, the two other groups have increased fares in order to finance service improvements. The latter approach is therefore more market oriented, and, as opposed to the "mixture" group, has resulted in increased patronage.

The threat of tendering, which should be most present in the "mixture" group, seems not to have had any dampening effect on costs or subsidies. Rather, this preliminary presentation of the data suggests a less straightforward pattern of relationship between competitive tendering and threat of competitive tendering on the one hand, and cost performance on the other.

Obviously, our division of county types is somewhat arbitrary, and hides other structural differences between the groups. For example, counties in the first group have larger populations, more passengers and higher operating cost than the others. In the next section, therefore, we enhance the analytical approach by isolating the effects of competitive tendering from other factors that influence performance.

#### *Tenders have reduced costs and subsidies*

We have estimated models for total costs, costs per bus kilometre and subsidies, as described above. Competitive tendering is among the explanatory variables in each model. The chosen model specifications are the results of several model runs in which different explanatory variables have been tested. In addition to sign, size and significance level of parameter estimates, we have preferred simple models rather than models with large numbers of explanatory variables as long as the overall performance of the models is maintained. For example, population density was found to replace 18 county dummies relatively well, and thus preferred. Table 3 summarises the model outputs.

Table 3: Model summaries

<i>Variable</i>	<i>Total cost model</i>	<i>Cost per bus kilometre model</i>	<i>Total subsidy model</i>
Vehicle kilometre	0.90 **	-0.10 **	0.80 **
Passenger number	0.17 **	0.17 **	0.10 *
Diesel duty	7.1 % **	6.1 % **	26 % **
Population density			-0.07 **
Percent competitive tendering	-0.1 % *	-0.1 % *	-0.7 % **
Adj R <sup>2</sup> = 0.94	0.94	0.50	0.62

\* Significant 10 % level

\*\* Significant 5 % level

The effect of competitive tendering is stable in all models. Competitive tendering contributes to a reduction in both costs and subsidies. Our calculations show that a 1 per cent increase in route production open to competition reduces costs by 0.1 per cent. In other words, competitive tendering reduces costs by approximately a tenth. A move from no competitive tendering to full competitive tendering will provide cost savings of approximately 10 percent.

According to our model estimate, one percentage point increase in the use of competitive tendering reduces the need for subsidies by 0.7 per cent. Given the fact that subsidies only cover a fraction of the costs (typically a third) and that the county councils have good opportunities to reap the majority of the cost saving in connection with tenders, tenders have a greater effect on the level of subsidies than on costs. In addition, as we have shown in table 2 above, fare levels have increased faster in counties with competitive tendering, contributing to further reductions in subsidy requirements.

This means both that tenders have resulted in more cost-effective production and that the savings have to a large extent been taken out in the form reduced subsidies rather than improved service levels.

## Conclusion and discussion

The main aim of this article has been to analyse the effect of competitive tendering on operating cost and subsidies. The article has put forward two important conclusions. First, exposure to competition has up to now contributed to cost effectiveness, which in turn has made it possible to reduce subsidies. At the same time, reduced subsidies have also been a driving force behind the use of competitive tendering. Second, counties that have chosen a regime with a mixture of tenders and negotiated contracts appear to have experienced a less favourable development than those that to a larger extent have chosen one over the other.

### *Tenders have reduced costs and subsidies, but less than in other countries*

As mentioned, we have found that tenders contribute to a reduction in both costs and subsidies. Our calculations show that competitive tendering reduces operating costs by 10 percent. A 1 per cent increase in production open to competition reduces the need for

subsidies by 0.7 per cent. In other words, tenders have resulted in more cost effective production, and the savings have been taken out in the form of reduced subsidies, rather than enhanced level of service.

Compared with international experiences, the cost saving effect from competitive tendering in Norway is on the lower scale. This is not to say that competitive tendering has been less successful in Norway compared to other places. The result is due to the fact that the industry had improved the effectiveness substantially already before competitive tendering was introduced. Thus, one should consider the context in depth before jumping to conclusions on the success of competitive tendering.

There are, however, also reasons to cast a critical glance at our a priori hypothesis of massive cost transfers occurring as a consequence of the shift from net cost to gross cost contracts. A closer examination of previous net cost contracts reveals that actual passenger incentives and income risks are smaller than initially assumed. As shown in Bekken et al (2006) the negotiated net cost contracts in Norway often encompass clauses that allow for renegotiation of the contract if the passenger revenue is significantly higher or lower than the revenue from the previous year. Moreover, the subsidy level is negotiated on a year-to-year basis, putting even further limits to the effect on passenger incentives inherent in the net cost contracts. When the new tender contracts are increasingly supplemented with patronage incentives and associated risks, while being of a significantly longer duration, the differences in the actual income, risk and investment structures – and thus the transfer of costs from the operator to the authority – become less. This is further strengthened by the fact that increasing use of incentive contracting in Norway is rarely accompanied with increasing room for design manoeuvring for the operator, restricting his options when it comes to risk diversification.

At the same time, effects and challenges experienced by the counties in the transition from a direct purchase regime to competitive tendering will vary from one county to another - from one context to another. This is partly due to the fact that the forms of competition and contracts which are introduced under the new regime will vary between counties according to the degree of exposure to competition and also because the form of the contracts which they are giving up will vary from county to county. Altogether, this calls for further nuances when it comes to how large (or small) effects can be expected from the introduction of tenders in each individual county. In many ways, the national level appears to be too broad.

#### *Does tendering have any adverse effects?*

One of our main findings were that counties that have chosen a regime with a mixture of tenders and negotiated contracts appear to have experienced a less favourable development than counties that to a larger extent have chosen one over the other. One explanation for this striking difference in performance can be related to the fact that the introduction of competitive tendering reduces the reliability of dialogue in pre-negotiated contracts, so that the operators adapt to a competitive situation even though their contract is not immediately exposed to competition. Additionally, it is the case that areas with the greatest potential for cost reductions are first put out to tender.

The threat of competitive tenders may thus have two rather opposite effects, depending on the context in which they are implemented. On the one hand, the threat

creates pressures to make the business more efficient. This was clearly apparent in Norway through the effectiveness agreements prior to competitive tendering. On the other hand, however, threats of tendering may weaken the long-lasting trust relationship between one particular operator and the purchaser. This is of particular importance in those cases where previous production was sustained by so-called high-trust relationships and incomplete contracts (Longva and Osland 2005). The introduction of competitive tendering in one part of the county may thus create unclear operator-purchaser relationships in the remaining parts that still rely on negotiated net cost contracts with heavy risk bearing and market responsibility for the operator. The mere existence of a threat of tendering will inevitably make the prolongation of the contract less likely, leading the operator to keep more in terms with the actual length of the contract as described by its formal clauses. Consequently, the operator's horizon of investments will be shortened, and with annual negotiations this results in a very shortsighted focus on costs, and discourages long-term investments and other long-term commitments.

All of this suggests that there is a danger inherent in the threat of competition which over time can make the threat less useful when it comes to cost reduction. New contractual clauses and role diversification are therefore necessary in the non-tendered parts of the county as well, making them more in line with their new relational context, even on a negotiated basis.

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