

Inter-municipal Cooperation and Satisfaction with Services: Evidence from the Norwegian Citizen Study

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ABSTRACT

We investigate the effects of inter-municipal cooperation on citizen satisfaction with fire services and refuse handling. While there is a growing interest in cooperation as a way of providing municipal services, little is known of the effect on citizen satisfaction. Through a multilevel analysis combining individual and municipal data, we find that inter-municipal cooperation has a negative effect on satisfaction with fire services, no effect on refuse collection but a positive effect on satisfaction with source separation. The results, we argue, show how the organizational form may affect satisfaction in different ways depending on service characteristics.

Key words: public administration, inter-municipal cooperation, satisfaction, multilevel analysis

INTRODUCTION

Inter-municipal cooperation has become an important and popular way of delivering municipal services both in Norway and internationally. It has become a widespread strategy to handle increased pressure on service supply, and the average Norwegian municipality is involved in eleven different inter-municipal labour forms of cooperation (Leknes et al., 2013). This is a particular challenge for the many small municipalities.¹ These frequently lack sufficient resources to balance a growing need for service provision with an aging population and a restricted economic situation (Nergelius, 2013). Municipalities in the Nordic countries can be categorized as the service delivery type (Bennett, 1993), which also contributes to increased demand for quality. Municipal expenditure in Norway is as high as 49 percent² of the total public expenditure.

As inter-municipal cooperation has grown in popularity, increased scholarly attention has been paid to this phenomenon in recent years. American studies have largely focused on the driving forces behind the process of inter-municipal cooperation and its objectives. By contrast, European studies have focused more on the outcomes (Bel and Warner, 2014). However, the outcome as described in the literature is primarily concerned with financial results. So far, little or no attention has been paid to the possible effects on citizens' perception of the services produced by cooperating municipalities. This article seeks to close this gap and thus investigates the effects of inter-municipal cooperation on citizen satisfaction with services. The analysis is applied to the two most common cooperatively provided services in Norway: fire services and refuse handling.

The marketization of the public sector and an increasing view of the citizen as a customer have given a renewed interest in citizen satisfaction measures (Bouckaert & Van de

¹Of the 428 municipalities in Norway, 228 have a population of under 5000. <https://www.ssb.no/statistikkbanken/selecttable/hovedtabellHjem.asp?KortNavnWeb=folkendrkv&CMSSubjectArea=befolkning&checked=true>

²<http://www.ssb.no/nasjonalregnskap-og-konjunkturer/statistikker/nr/aar/2014-02-12?fane=tabell&sort=nummer&tabell=162747>

Walle, 2003; Kelly & Swindell, 2002). Such satisfaction measures have more often been included in municipal performance targets (Miller & Miller, 1991). In the private sector, customer satisfaction is the crucial goal to provoke the re-buy decision. In parallel, citizen satisfaction is critical to the municipal management accountability and to affect location decisions of citizens. Despite the interest in and importance of citizen satisfaction in a well-functioning democracy, the literature on satisfaction is clear that important cautions must be taken in assuming a causal link between citizen satisfaction and internal performance measures (Bouckaert & Van de Walle, 2003; Kelly & Swindell, 2002; Stipak, 1979). Although it is not argued here that citizen satisfaction is a direct representation of service quality, it is considered an important objective in its own right, and a balancing supplement to internal performance measures of the quality of municipal services.

Through a multilevel analysis combining individual data from two rounds of the Norwegian Citizen Study (2009, 2013) with municipal data from the Study on Municipal Organization (2008, 2012), the official Register of Legal Entities (Brønnøysundregistrene) and Statistics Norway (SSB), we show that inter-municipal cooperation has a negative effect on satisfaction with fire services. However, we also find a positive effect on satisfaction with source separation arrangements, but no mentionable effect on satisfaction with refuse collection services. Essential differences between the services are related to contractibility, measurability, user-agency interaction, the way they are funded and their political interest. These differences, we argue, have important implications for why inter-municipal cooperation yields opposite effects on satisfaction with these services.

We organize the following sections as follows; first we present the two services under analysis, how they are organized in Norway and their specific characteristics. The following section reviews the literature on possible effects of inter-municipal cooperation at the organizational level, while the third section addresses how the organizational outcomes in the

next stage may affect outcomes at the individual level. In the last sections we present the model and discuss our findings.

COOPERATION WITHIN FIRE SERVICES AND REFUSE HANDLING IN NORWAY

The formal structure of municipal cooperation within fire services and refuse handling in Norway entails establishment of an inter-municipal corporation as an independent legal entity, with unlimited liability. There are a very few exceptions, where a municipality may contract out the service to a host municipality that undertake the whole responsibility of delivering the services. Both forms of municipal cooperation are included in our main independent variable. On the highest level the inter-municipal company is governed by a representative board of directors with a representative from each of the participating municipalities. This representative is elected by the municipal council. The owner's share is calculated primarily based on prior budget for the service, and may be adjusted relative to population, specific local needs for investments et cetera. This share represents both the municipality's decision power in the representative board and its' share of the costs. In addition to the representative board the company has a professional board of directors which is responsible for following up the general manager and operation of the company.

Refuse handling is regarded one of the simplest municipal services, and has long been considered a suitable service for contracting to private actors as well as other governments. It is in Norway the service where outsourcing to an inter-municipal company is most frequently used. Local governments in Norway still play the main role in organizing refuse handling, and only the market for industrial refuse collection is exposed to competition from private contractors. This study considers inter-municipal cooperation within residential refuse handling, where the corporation must be owned by two or more municipalities. Refuse handling services are financed through user fees, based on the municipalities' calculation of unit costs.

When comes to fire services, inter-municipal cooperation has become more and more common and is now the second most cooperatively provided service. It is not considered the easiest service to contract, but the high needs for trained personnel and investments in equipment has made inter-municipal cooperation an increasingly attractive arrangement for this service. The municipality itself is responsible for providing fire prevention and – protection that meets state requirements, though the service is contracted out to the inter-municipal company. The state requirements are characterized by the municipalities as rigid, and especially have strict demands to education level of fire officers. The last change in Norwegian law regarding training requirements for part-time firefighters has put extra pressure on the smallest municipalities who are increasingly seeking cooperation alternatives. The inter-municipal fire company develops a strategic plan for fire prevention and -protection in each of the regions, or for the cooperating region as a whole. This implies in some municipalities closure of their fire stations, and centralization of the service to neighbouring municipalities. Fire services are funded indirectly through the income tax.

The two services under consideration have very distinct characteristics that will influence the effects of inter-municipal cooperation both at the organizational and the individual level. Refuse handling is regarded a highly contractible service, with easily measured activities and outcomes. Two influential studies of municipal service organization (Brown & Potoski, 2003; Levin & Tadelis, 2010) report that local government officials consider refuse handling as one of the most measurable, contractible services – and fire services as one of the least. This entails that for fire services, both the achieved outcomes and the activities to be performed are difficult to identify and to measure. This difference can have implications for the effects of cooperation at the organizational level. Refuse handling is also a service that users experience directly and regularly, in Norway usually once a week. The average user is rarely or never directly in contact with fire services, and this difference may

have implications for how users evaluate the service (Van Ryzin, 2007). As already noted, refuse handling services are funded directly through user fees. Fire services are funded indirectly through the income tax. In the case that cooperation leads to lower costs, and subsequently lower user fees, cost perceptions can enter the judgment of refuse handling services. For fire services, possible cost-reductions will not be observed by individuals through fees. Last but not least, these two services are meeting two fundamentally different needs of the citizens. In the case of fire services it is a matter of feeling safe, that the department is equipped and capable at any time to save their lives and property in case of fires or other emergencies. Refuse handling meets merely practical needs, and the most important criteria for evaluation may be price, number of collections, availability of garbage stations, source separation arrangement, or others. For example, closing down and moving the fire station to a different municipality would certainly cause different reactions than moving a refuse plant. We have chosen to include this dimension under the label political interest. For services of higher political interest it is more critical if something should go wrong, and a feeling of closeness to the service and to decisions will play a more important role.

[Insert Table 1. about here]

BENEFITS AND CHALLENGES FROM COOPERATION AT THE ORGANIZATIONAL LEVEL

Improved quality at a reduced cost?

A study by Oliver (2010) strongly suggests that satisfaction is, among other things, a function of quality. Some of the most optimistic evaluation reports indicate that inter-municipal cooperation is the easy-fix for small municipalities that wish to retain their independency, enabling them to achieve both scale economies and improved service quality without any

notable disadvantages (Leknes et al., 2013; Nilsen & Vinsand 2007). By far the most common argument for initiating inter-municipal cooperation is based on economies of scale and fiscal constraints (Anell & Mattisson, 2009; Bel & Warner, 2013; Holzer & Fry, 2011). When services can be used by a large population without harming the level of quality, economies of scale can be realized. Research indicates that operating expenses per inhabitant in Norwegian municipalities is lower in municipalities in the range 5000–10,000 (Langørgeren et al., 2005), indicating that there is potential for scale economies in small municipalities.

Even though economies of scale is the main motivation behind establishment of inter-municipal cooperation, the debate on whether such cooperation leads to increased efficiency is still not concluded, and the realization of economic advantages seems to be challenging in practice for some cooperatives (Anell & Mattisson, 2009; Jacobsen, 2012). For example, a study by Sørensen (2007) finds that refuse collection companies with several municipal owners operate with a higher cost per unit than those with a single (municipal) owner. On the other hand, some researchers argue that cooperation does reduce costs (e.g., Bel et al., 2014; Bel & Costas, 2006; Zafra- Gómez et al., 2013).

After the inter-municipal cooperation is established, Norwegian municipality representatives tend to focus more on the qualitative than quantitative improvements when asked about their experiences. Politicians and municipality CEO's put forward strengthened competence and improved service quality as the most important benefits from inter-municipal cooperation followed by economic savings (ECON, 2006; Nilsen & Vinsand, 2007). In line with the Resource Based View of the firm (Barney, 1991; Wernerfelt, 1984) it is plausible that competence gains can be achieved by joining resources through cooperation. This is especially relevant to highly professionalized services such as is the case with many municipal services. These services are typically characterized by few incidents (e.g., fires) which entails that this highly specialized competence is rarely activated. By establishing

larger units, the professionals may benefit from increased practical experience. Furthermore, larger organizations are more capable of offering full-time positions which professionals who have invested in education are likely to demand. Small units often struggle in offering adequate career possibilities and attracting qualified people (Foster et al., 1980; Jacobsen, 2011).

The growing occurrence of inter-municipal cooperation is considered a part of the increasing fragmentation of the public sector (Jacobsen 2007). A municipality is fragmented horizontally when more sections within the organization are created, each with different responsibilities (for example one board per inter-municipal cooperation). A municipality is fragmented vertically through decentralization of tasks and outsourcing to more or less autonomous actors. Fragmentation seems to have strengthened the focus on performance management as a natural consequence of the increased difficulties in applying more “traditional” direct management (ibid.). This direct management depends on a hierarchically integrated organizational form with close monitoring of the activities. Some will argue that an increased focus on performance management in itself may contribute to improved performance (Kaplan & Norton, 1992; Neely et al., 2002; Newberry & Pallot, 2004). On the other hand, stronger focus on measuring results may lead to an exaggerated focus on the measurable targets, neglecting those which are more difficult to measure (Bevan & Hood, 2006; Tranøy & Østerud, 2005). Speklé and Verbeeten (2014) find that performance and the effects of performance management systems in the public sector depend on the level of contractibility. In the same vein, Jung (2013) finds that the size of the budget is negatively related to organizational efficiency (a combined measure of outcome, output and efficiency measures), mediated by target- and timeline ambiguity. It is thus suggested that a positive impact of increased budget requires clear targets and timelines.

Increased distance and loss of accountability

An everlasting dilemma in the organization of the public sector is the level of centralization or decentralization of decision power (Grønlie, 2005). Organization of municipal services through inter-municipal cooperation represents centralization of authority to an intermediate level between the municipality and the state. A centralized task responsibility will provide more uniform solutions within different geographical areas and with increasing size of the population each citizen's influence on the shaping of municipal services decreases. Proximity to the local population will facilitate a quicker response to changing requirements, and decentralization may promote innovation through competition between municipalities (Dye, 1990; Kincaid, 1991). Decentralization may also enhance political participation, because the local citizens have an arena to discuss issues in their close environment. The proximity between the elected officials and the voters is a benefit to smaller municipalities, and election participation rates show there is a clear trend towards a significantly higher participation (Hagen & Sørensen, 2006). It is expected that a feeling of closeness is a factor leading to increased citizen satisfaction in small municipalities, something which is labelled the "proximity effect" (Christie, 1982; Monkerud & Sørensen, 2010; Østre, 2011). To a varying degree, this effect of proximity will be altered when service delivery is centralized through inter-municipal cooperation.

When services are delivered by other organizations outside the government, an important issue is that the government remains the ability to be accountable for the performance of these contractors (Hodges, 2012). Several authors note that contracting of services may challenge public sector accountability (Boston, 1995; Schmid, 2003) and raise concerns of whether public agencies possess the necessary capabilities to monitor and evaluate the contracted services (Bel & Warner, 2008; Shaoul et al., 2012). This is becoming recognized in the context of inter-governmental service provision, and Lacey et al. (2012)

discusses how inter-organizational cooperation can challenge the accountability for performance. Cäker and Nyland (forthcoming) also provide an example of how vertical accountability for both quality and financial measures is challenged by inter-municipal cooperation in the case of fire services. In sum, increasing distance to services and lack of accountability can contribute to a growing ambiguity and a weakened insight into municipal activities that are cooperatively provided.

Even though there are no systematic findings on service quality improvements from inter-municipal cooperation, we expect that cooperation will have a positive effect on internally measured performance. This is based on the quite concurrent theoretical arguments, and unanimous reports from municipality respondents on quality improvements. We further expect refuse handling services to have a stronger effect of cooperation on performance, since increased budgets and more extensive use of performance management may seem to be more beneficial to highly contractible and measurable services. When comes to cost efficiency, the question of whether cooperation reduces costs is left more open, because research on the topic is quite conflicting. Last, we reason that inter-municipal cooperation leads to an increased distance to services, from the perspective of both government officials and the general public. An increased distance between the local government and the service providers is manifested through the loss of accountability. All of these organizational level benefits and challenges may affect citizen satisfaction, and as will be discussed in the next section, depend on the service characteristics.

EFFECTS OF COOPERATION AT THE INDIVIDUAL LEVEL

Empirical studies on satisfaction with municipal services

Several authors exhibit a view on citizen satisfaction that the responses given in citizen surveys are not accurate, nor trustworthy regarding service quality (Bouckaert & van de Walle, 2003; Brown & Coulter, 1983; Stipak, 1979). Several studies find no systematic relationship between internal performance measures and satisfaction (e.g., Brown & Coulter, 1983). Parks (1984) was one of the first to argue that there is no reason to assume a close connection between internal performance measures and satisfaction measures – because they measure distinctively different things. Internal performance indicators often have a strong focus on input factors such as expenditure and personnel. The assumption that these factors should correlate closely with satisfaction measures is not necessarily logical. The lack of correlation does not entail that citizens are ignorant of the quality of their public services as some authors claim. Citizens base their evaluations on criteria that are important to them, though not necessarily the performance criteria set by the public administration (e.g., Kelly, 2002).

More recent research has, nevertheless, refined the knowledge on linkages between internal and external performance indicators. At least two studies find a strong correlation between the two in studies of the citizen ratings of street maintenance, park conditions (Licari et al., 2005), and street cleanliness (Van Ryzin et al., 2008). In other words, there is some evidence that citizens are able to judge the performance of some public services quite “accurately.” Kelly and Swindell (2002) suggest that citizens may judge more capital-intensive services differently to labour intensive services. Further, Van Ryzin (2007) argues that public services which are regularly experienced directly by the citizen are judged more in accordance with internal quality and performance measures. As already noted, we expect refuse handling to have a greater potential for performance improvements through inter-municipal cooperation due to the high level of contractibility and measurability. For possible quality improvements to have a strong effect on users, regular direct user-experience is

required. Since the average user rarely or never is in contact with the fire service, this link becomes more uncertain. Possible cost reductions are also directly experienced for refuse handling services, but not for fire services. This implies that if cooperation reduces costs, positive effects on citizen satisfaction are more likely for refuse handling. Last we have the described dimensions of increased distance to services and loss of accountability. These challenges are equally likely to arise for any municipal service, as a direct result of the formal organization. We do, however, not expect them to have similar effect on citizen satisfaction with these services. For refuse handling, we do not expect these challenges to have a strong negative effect on citizen satisfaction, because of the low political interest in this type of service. For fire services, possibilities of weaknesses are far more severe, and the political interest in this service is higher. We therefore expect the potential challenges of increased distance and loss of accountability to have a negative effect on citizen satisfaction with fire services, as citizens may be more uncertain about how well the fire service is organized, if all municipalities' needs are covered, and in general how safe they are in case of fire or other emergencies.

[Insert Figure 1. about here]

This leads us to the three hypotheses summarized as follows:

Hypothesis (H1): Inter-municipal cooperation leads to lower satisfaction with fire services than in municipalities without such arrangements.

Hypothesis (H2): Inter-municipal cooperation leads to higher satisfaction with refuse collection than in municipalities without such arrangements.

Hypothesis (H3): Inter-municipal cooperation leads to higher satisfaction with source separation than in municipalities without such arrangements.

DATA AND METHODS

To test for a relationship between inter-municipal cooperation and citizens' satisfaction with services we combined survey data with data at the municipal level. For this purpose we employed hierarchical modelling, investigating data from almost 29,000 respondents from 426 Norwegian municipalities. The individual-level data are from the two rounds of the *Norwegian Citizen Study*³ (2009 and 2013). At the municipal level we used data from three sources. For our main independent variables we used data from *The Study on Municipal Organization*.⁴ Since this source lacked data from more than 100 municipalities, we supplemented with information gathered from *The Brønnøysund Register Centre*⁵. Our municipal-level control variables were gathered from *Statistics Norway*.⁶

The data is hierarchically structured in two levels, which implies that units at the citizen level are nested within units at the municipal-year-level. By employing multilevel analysis we are able to account for the variance measured at the lowest level by taking the higher levels into consideration (Steenbergen & Jones, 2002: 219). Further, the shared context of citizens is a cause of dependency among our observations which we correct for by using multilevel modelling (Kreft & de Leeuw, 1998: 9).

³ This study has been carried out by the Directorate of Administration and Information and Communication Technology. It provides an insight into citizens' opinions and experiences from service areas such as children, education, knowledge, health and care, social inclusion, safety, support, economy, transport, culture, and communication.

⁴ The data used in this article is distributed by the Norwegian Social Science Data Services (NSD). Some of the data are gathered from the *Norwegian Citizen Study, the citizen part*. This has been financed by the Ministry of Government Administration, Reform and Church Affairs. An anonymized version of the data has been made available by the Directorate of Administration and Information and Communication Technology. Some of the data are gathered from the *Study on Municipal Organization, the municipal file*. This study was financed by the Ministry of Local Government and Regional Development. An anonymized version of the data has been made available by the Norwegian Institute for Urban and Regional Research. None of the above mentioned organizations are responsible for the analysis of the data or the interpretations made by the authors.

⁵ The Brønnøysund Register Centre is a government body under the Norwegian Ministry of Trade and Industry. For more information, visit <http://www.brreg.no/english/>

⁶ Statistics Norway is responsible for official statistics in Norway. For more information, visit <http://www.ssb.no/en/>

We employ random intercept models which assume that the intercepts for the different level-2 (municipality-year) will vary. Our three dependent variables are FIRE SERVICE, REFUSE COLLECTION, and SOURCE SEPARATION. They all range from 1 to 7 where high values indicate that the respondent is pleased with the service provided by the municipality.⁷ The respective means and standard deviations are 5.755/1.169, 5.928/1.281, and 5.468/1.718. Our main explanatory variable is called INTER-MUNICIPAL COOPERATION, and denotes whether or not the municipality in question participates in inter-municipal cooperation with regard to fire services (models 1 and 2) or with regard to refuse handling (models 3 to 6). This variable is coded based on data from the *Study on Municipal Organization*. For our models on fire service, 157 of 427 municipalities reported having an inter-municipal agreement in 2008, and 165 of 424 in 2012. The corresponding number for refuse handling is 322 out of 417 in 2008, and 334 of 426 in 2012. Note that the total number of municipalities in 2008 was 430 and in 2012 was 428.

Control variables

We have included the following controls at the individual level: WOMAN (0–1), AGE (18–99), INCOME (1–8), HIGHER EDUCATION (0–1), and EMPLOYED (0–1). The variable for gender, WOMAN, is recoded into a dichotomous variable where women have the value 1 and men are the reference category. HIGHER EDUCATION and EMPLOYED are also dichotomous. For the former, persons with university or university-college level education are coded with the value 1. For the latter variable the same is true for those that are employed. INCOME is coded into eight categories where a high value indicates that a person's household has a high income.

⁷ The question for THE FIRE SERVICE is: "How good or bad do you feel the following municipal service is? The Fire Service." The question for REFUSE COLLECTION is "How good or bad do you feel that the following is in your municipality? Gathering of household refuse (garbage)." The question for SOURCE SEPARATION is "How good or bad do you feel that the following is in your municipality? The opportunity to source separate refuse for recycling." The answers for all three questions range from 1 (very poor) to 7 (very good).

As controls at the municipal-year level we have included POPULATION, TAX REVENUE PER CAPITA, RUNNING EXPENSES PER CAPITA, RUNNING EXPENSES (for the fire service and refuse services respectively) as a percentage of total expenses, and a dummy variable YEAR 2013 where the value 1 means that the respondent was part of the 2013-survey. In addition, we have included the variable AREA indicating the area of the municipality in square kilometres. We have included population and area because size of the municipality is likely to be related to citizen satisfaction. The larger municipalities are more financially robust than the smaller ones, yet on the other hand smaller municipalities are expected to have higher citizen satisfaction caused by a proximity effect. Tax revenues and running expenses are included to control for any effects of wealthier municipalities having more satisfied citizens, in addition to possible effects of higher costs for the user in the case of refuse handling. Our municipal-year variables are gathered from *Statistics Norway*.

Cooperation is used as a strategy to overcome challenges of competence and/or financial character (e.g., Hulst & Van Montfort, 2007). This entails that the municipalities who choose to cooperate, with higher probability faced these kinds of challenges prior to entry than the ones who are not cooperating. It is in other words a possible issue of endogeneity, where the weakest performing municipalities are the ones cooperating. One of the ways we attempt to control for this is by investigating if there is an interaction effect between cooperation, time and satisfaction. If the weakest performing municipalities cooperate, it will possibly result in a higher *increase* in quality or efficiency and thus satisfaction within cooperating municipalities. Our models can be represented formally as:

$$\begin{aligned}
 [1]Y_{ij} = & \beta_0 + \beta_1X_{1ij} + \beta_2X_{2ij} + \beta_3X_{3ij} + \beta_4X_{4ij} + \beta_5X_{5ij} + \beta_6X_{6j} + \beta_7X_{7j} + \beta_8X_{8j} + \beta_9X_{9j} \\
 & + \beta_{10}X_{10j} + \beta_{11}X_{12j} + \beta_{12}X_{12j} + e_{ij} + u_{0j}
 \end{aligned}$$

$$[2]Y_{ij} = \beta_0 + \beta_1X_{1ij} + \beta_2X_{2ij} + \beta_3X_{3ij} + \beta_4X_{4ij} + \beta_5X_{5ij} + \beta_6X_{6j} + \beta_7X_{7j} + \beta_8X_{8j} + \beta_9X_{9j} \\ + \beta_{10}X_{10j} + \beta_{11}X_{11j} + \beta_{12}X_{12j} + \beta_{13}X_{10j}X_{11j} + e_{ij} + u_{0j}$$

where equation [1] represents models 1, 3, and 5, while equation [2] including a level-2 interaction term, represents models 2, 4, and 6.

RESULTS

Our six models are presented in Table 1. We see that all individual-level variables are statistically significant in all models, except for INCOME and EMPLOYED which are not significant in Models 5. and 6. Women are generally more satisfied with both the fire service, refuse collection, and the possibility for source separation than men, as are older people compared to younger people. Citizens with higher education are more dissatisfied with both services juxtaposed with those with lower education, and the same is true for people who are employed. Those with a high income are more dissatisfied with the fire service than their poorer counterparts. However, they are also more satisfied with refuse collection, and there is no significant effect of INCOME when it comes to source separation. People with higher education are on average less satisfied with all services than those with a lower education. The same applies to those in the work force. However, this finding is not significant in respect of source separation.

Regarding the level-2 and level-3 variables it is important to stress that the standard errors are calculated on the basis of the level-2 and level-3 N respectively. As such, it is more “difficult” to produce significant results compared to a level-1 variable, since the small N leads to a large standard error. A result thus needs to be very strong in order to be statistically significant. We have therefore chosen to discuss results that are significant at the 10 percent level (in addition to those at five and one percent levels). The level-2 control variable POPULATION is positive and significant when it comes to satisfaction with fire services, but

has little effect on refuse collection and source separation. A municipality's tax revenue is positively related to its citizens' satisfaction with fire services, and negatively related to satisfaction with refuse handling services.

[Insert Table 2. about here]

People living in municipalities where TAX REVENUE PER CAPITA is large are more satisfied with fire services than those living in municipalities with smaller tax revenue, but less satisfied with refuse collection and source separation. RUNNING EXPENCES PER CAPITA is associated with citizens who are less satisfied with fire services. If a municipality spends relatively more on fire services (as a percentage of total expenses) its citizens will be significantly more satisfied with the fire service, and *vice versa* when it comes to municipal expenditure on refuse handling and satisfaction with these services.

Our dummy variable YEAR 2013 shows that people are more pleased with both fire and refuse collection services in 2013 than they were in 2009. Concerning our main explanatory variable, INTER-MUNICIPAL COOPERATION, we read from Model 1 that it has a significant negative effect on individuals' satisfaction with fire services, thus supporting our first hypothesis. There is a positive but not significant effect of this variable on REFUSE COLLECTION, so our second hypothesis cannot be confirmed. When it comes to Model 5 our variable is positive and highly significant. The third hypothesis that inter-municipal cooperation leads to higher user satisfaction with source separation is thus supported. There is no significant interaction effect in any of our models, neither when it comes to FIRE SERVICE, REFUSE COLLECTION, or SOURCE SEPARATION. The effects of time are illustrated in Figures 2 to 4.

In sum, we have found support for our hypotheses regarding fire service and source separation. There is no significant effect on satisfaction with refuse collection.

[Insert Figure 2. about here]

[Insert Figure 3. about here]

[Insert Figure 4. about here]

[Insert Table 3. about here]

DISCUSSION

As presented in Table 2, we find support for our first hypothesis that inter-municipal cooperation leads to lower satisfaction with fire services than in municipalities without such arrangements. Bearing in mind the popularity of this way of providing municipal services (e.g., Hulst & van Montfort, 2007), and the mainly positive images presented in Norwegian evaluation reports (e.g., ECON, 2006; Leknes et al., 2013), the result is interesting. Though there is no systematic evidence on the qualitative outcomes, it is reasonable to expect that a larger fire brigade will, for example, be more able to make necessary investments in technology and have benefits in training and attracting competent fire officers.

We anticipated that an increasing distance to a service which is important for citizens' feeling of safety would negatively affect satisfaction. Further, lack of accountability and its related symptoms of loss of overview and insight into municipal services, were expected to have a negative effect on satisfaction for this type of service. When controlling for size, tax revenue, running expenses, time, and the individual variables, there is an effect of cooperation on satisfaction, which is seen to be negative and significant at the 0.01 level. Furthermore, the rare interactions between most citizens and the fire brigade cast doubt on the existence of a clear link between internally measured performance and satisfaction (Van Ryzin, 2007).

Our models show that there are in fact negative effects of cooperation reflected in the citizens' evaluations. Hitherto, it has only been assumed that challenges of this kind exist, but lack empirical support. Our findings indicate that these effects are actually perceived by the population. Avoiding the potential problem that results at one point in time are biased by

selection was also an important reason for studying the effect at two different times. It is possible there is a higher representation of initially “poorer performing” agencies among the cooperatives, which could be a reason for the citizens in cooperating municipalities to report lower satisfaction. To comply with this potential problem we study satisfaction both in 2009 and 2013, and also examine possible interaction effects of time and cooperation. The results in Model 1 show that the negative relationship between inter-municipal cooperation and satisfaction with the fire service is stable over both periods, and Model 2 shows that there is no significant interaction effect between time, cooperation and satisfaction. This result reinforces the results from Model 1 and our assumptions that the organizational form of inter-municipal cooperation has a genuine negative effect on satisfaction with fire services. In order to test the causality more thoroughly one would have to investigate municipalities who introduced inter-municipal cooperation somewhere between our two measuring points. Unfortunately, in this period in Norway this only applies to 10 municipalities. We have run additional models (similar to Models 2, 4, and 6), finding no significant difference between the above mentioned municipalities and the others (as we would expect considering the low N in this category).⁸

Regarding refuse handling, the service is divided into two different sections; collection and source separation. We do not find any effect of cooperation on refuse-collection, and our second hypothesis that inter-municipal cooperation leads to higher satisfaction with refuse collection than in municipalities without such arrangements is not supported. As discussed above, refuse collection can be considered a service of very low and possibly the lowest political interest. It is therefore not expected that the above-mentioned increased distance and reduced accountability have as strong an effect on satisfaction with this

⁸ The N for the different groups were: No inter-municipal cooperation (263); Inter-municipal cooperation (156); and Introduced inter-municipal cooperation (10).

service compared to fire services. This is an area where we would expect that people simply want things to run as smoothly and unnoticed as possible, at a reasonable cost.

The difference between collection and source separation is that source separation of refuse is something that intervenes to a greater extent into one's everyday life and demands some effort on the individual. Satisfaction with refuse collection will presumably be adequate as long as the cost is reasonable and refuse is removed on time. Hence, we assume that the hypothesis on satisfaction with refuse collection is not supported because there may be too few possibilities for cooperation to affect how this arrangement is experienced. As we see from Model 3, the strongest municipal-level indicator is `RUNNING EXPENSES REFUSE`, and it is possible that satisfaction with refuse collection is mainly influenced by price. However, we suggest that satisfaction with source separation arrangements is more sensitive to variations in how this is organized. Since pooling of resources may allow the cooperative take advantage of more competence and experience (Barney, 1991; Wernerfelt, 1984), they will be able to develop better solutions than those that are not cooperating. This can be different solutions regarding the classification of different types of refuse, number of categories to separate, need for specific disposal supplies, and so forth. Hypothesis 3 is supported, and as we can see from Model 5, the positive effect of inter-municipal cooperation on satisfaction with source separation is significant at the 0.05 level.

The direct funding of refuse handling services through user fees, entails that cost perceptions may enter the evaluation. If cooperation reduces costs and user fees, an increase in user satisfaction would be expected for these services. This is consistent with our findings that `RUNNING EXPENCES PER CAPITA` is negatively related to satisfaction with refuse handling, but positively related to satisfaction with fire services. However, from an additional analysis on costs and user fees (not presented here), we find no significant effect of cooperation on refuse handling costs neither on user fees in Norwegian municipalities in

2012. This can explain our result that running expenses are negatively related to satisfaction with refuse collection, but this effect is not mediated through cooperation in the model because there does not seem to be a link between cooperation and reduced costs. We can summarize that the findings partly support our presumption that improvements in organizational performance from cooperation are more easily realized and reflected in higher satisfaction in the case of refuse handling. Model 5 on source separation supports this argument. However, this is not supported in Model 3. One possible explanation for this is that there are simply too few possibilities for cooperation to affect how refuse collection arrangements are experienced. The results regarding refuse handling also confirms our presumption that the expected challenges of cooperation do not negatively affect satisfaction with refuse handling. Our findings suggest that the possible **democratic challenges** and proximity issues are reflected to a higher degree in citizen satisfaction for services that are characterized by higher political interest.

CONCLUSION

This article is a contribution to the ongoing debate on the effects of an increasingly popular form of delivering services, inter-municipal cooperation. Here, we have investigated the relationship between inter-municipal cooperation and citizen satisfaction with services. This is done by way of hierarchical modelling combining individual-level data from 2009 and 2013 with municipal data from 2008 and 2012. Three hypotheses were presented, based on expected outcomes in the accumulated literature on inter-municipal cooperation. Our main finding is that the effect of cooperation on citizens' satisfaction is dependent on the specific service characteristics. Our findings indicate that the increasingly popular way of providing services through inter-municipal cooperation has a negative effect on citizens' perceptions of fire services, and partly positive effect on citizens' perceptions of refuse handling services.

This has implications for policy makers and may possibly be a contribution to the current debate on merging municipalities.

Based on the results, we suggest that challenges described in the inter-municipal cooperation literature are reflected in citizens' satisfaction with services of moderate political interest that are not frequently experienced. The organizational form inter-municipal cooperation increases distance to services and may result in reduced accountability for performance, a growing ambiguity and a weakened insight into municipal activities. Hitherto, no study has addressed the possible effects of these challenges on citizens' perceptions and satisfaction with municipal services. Our findings contribute to filling this gap, and indicate that they are perceived and negatively affect citizens' satisfaction.

Regarding refuse handling, the above mentioned challenges are not expected to have as strong an effect, as this service is considered to be of very low political interest. Improved organizational performance is expected to be more easily achieved through increased use of performance management and larger budgets, since this type of service is highly contractible and characterized by clear goals and timelines. In addition, a more direct relationship between internally measured performance and satisfaction is anticipated for frequently experienced services. Our results indicate that satisfaction with refuse collection is not affected by inter-municipal cooperation because there may be too few possibilities for cooperation to affect how this arrangement is experienced. Our results show that running expenses is an important explanatory variable for satisfaction with refuse collection, which is funded directly. The absence of a link between cooperation and lower costs in the Norwegian refuse sector may also be an important reason why cooperation does not yield any results on satisfaction with refuse collection in the present analysis. Cooperation does, on the other hand, have a positive and significant effect on satisfaction with source separation arrangements. We reason this part of the service is more sensitive to how it is organized, because the operation of source

separation intervenes to a greater extent into one's everyday life and demands some effort on the individual. Last, we find no interaction effect between cooperation, time and satisfaction, indicating that cooperating municipalities do not achieve a higher increase in satisfaction than those who have not entered into such an agreement.

Since our study is limited to the two services – refuse handling and fire services – future research analysing different municipal services can provide closer insight into the effects of cooperation on citizens' satisfaction. Furthermore, more systematic findings on how internally measured performance may or may not be affected by cooperation would be valuable to this field of research.

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Table 1. Service characteristics expected to influence effects of cooperation

	Contractibility/ measurability	Direct user experience	Funding	Political interest
Refuse handling	High	Frequent	Direct	Low
Fire services	Low	Very rare	Indirect	Moderate

Table 2. Random intercept model with citizens' satisfaction with the fire service and refuse handling at the municipal level, regression coefficients with standard errors in parentheses.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	Fire service	Fire service	Refuse collection	Refuse collection	Source separation	Source separation
Constant	5.402*** (0.116)	5.399*** (0.017)	5.319*** (0.096)	5.308*** (0.099)	5.264*** (0.180)	5.274*** (0.189)
Individual-level						
Woman	0.122*** (0.016)	0.122*** (0.016)	0.170*** (0.015)	0.170*** (0.015)	0.089*** (0.018)	0.089*** (0.018)
Age	0.005*** (0.001)	0.004*** (0.001)	0.016*** (0.000)	0.016*** (0.000)	0.014*** (0.001)	0.014*** (0.001)
Income	-0.018*** (0.004)	-0.018*** (0.004)	0.012*** (0.004)	0.012*** (0.004)	0.007 (0.005)	0.007 (0.005)
Higher education	-0.118*** (0.017)	-0.118*** (0.017)	-0.105*** (0.016)	-0.105*** (0.016)	-0.168*** (0.020)	-0.168*** (0.020)
Employed	-0.075*** (0.020)	-0.075*** (0.020)	-0.080*** (0.019)	-0.080*** (0.019)	-0.033 (0.023)	-0.033 (0.023)
Municipal-year-level						
Population	0.002*** (0.000)	0.002*** (0.000)	0.000* (0.000)	0.000* (0.000)	-0.001* (0.001)	-0.001* (0.001)
Area	0.008*** (0.002)	0.007*** (0.003)	-0.002 (0.002)	-0.002 (0.002)	-0.012*** (0.004)	-0.012*** (0.004)
Tax revenue per cap.	0.011** (0.004)	0.011** (0.004)	-0.007** (0.003)	-0.007** (0.003)	-0.008 (0.007)	-0.008 (0.007)
Running expenses per cap.	-0.008*** (0.001)	-0.008*** (0.001)	-0.000 (0.001)	-0.000 (0.001)	0.001 (0.002)	0.001 (0.002)
Running exp. Fire/refuse	0.140*** (0.043)	0.140*** (0.043)	-0.033*** (0.008)	-0.033*** (0.008)	-0.047*** (0.018)	-0.047*** (0.018)
Year 2013	0.153*** (0.040)	0.158*** (0.049)	0.073** (0.031)	0.095* (0.056)	0.043 (0.066)	0.024 (0.126)
Inter-municipal coop.	-0.101*** (0.037)	-0.094* (0.054)	0.010 (0.032)	0.025 (0.046)	0.149** (0.071)	0.136 (0.101)
Year 2013 * Inter-mun.		-0.013 (0.072)		-0.029 (0.062)		0.025 (0.140)
Random Effects						
s_e^2	1.296 (0.013)	1.296 (0.013)	1.529 (0.006)	1.529 (0.013)	2.184 (0.018)	2.184 (0.018)
s_u^2	0.138 (0.013)	0.138 (0.013)	0.054 (0.006)	0.054 (0.006)	0.501 (0.033)	0.501 (0.033)
Level-1 N	22,049	22,049	28,925	28,925	28,705	28,705
Level-2 N	827	827	823	823	823	823
Log likelihood	-34,538.4	-34,538.4	-47,414.7	-47,414.6	-52,597.4	-52,597.4

Note: *** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.1$. s_e^2 = variance of level-1 residual, s_u^2 = variance of level-2 residual. Population is measured in thousands, running expenses in thousands, running expenses fire/refuse as a percentage of total expenses, area is measured as square kilometres / 100.

Table 3. Summary of the hypotheses.

	Supported	Partially supported	Not Supported	Model(s) used
<i>H1:</i> Inter-municipal cooperation leads to lower satisfaction with the fire service than in municipalities without such arrangements.	X			#1
<i>H2:</i> Inter-municipal cooperation leads to higher satisfaction with refuse collection than in municipalities without such arrangements.			X	#3
<i>H3:</i> Inter-municipal cooperation leads to higher satisfaction with source separation than in municipalities without such arrangements.	X			#5

Figure 1

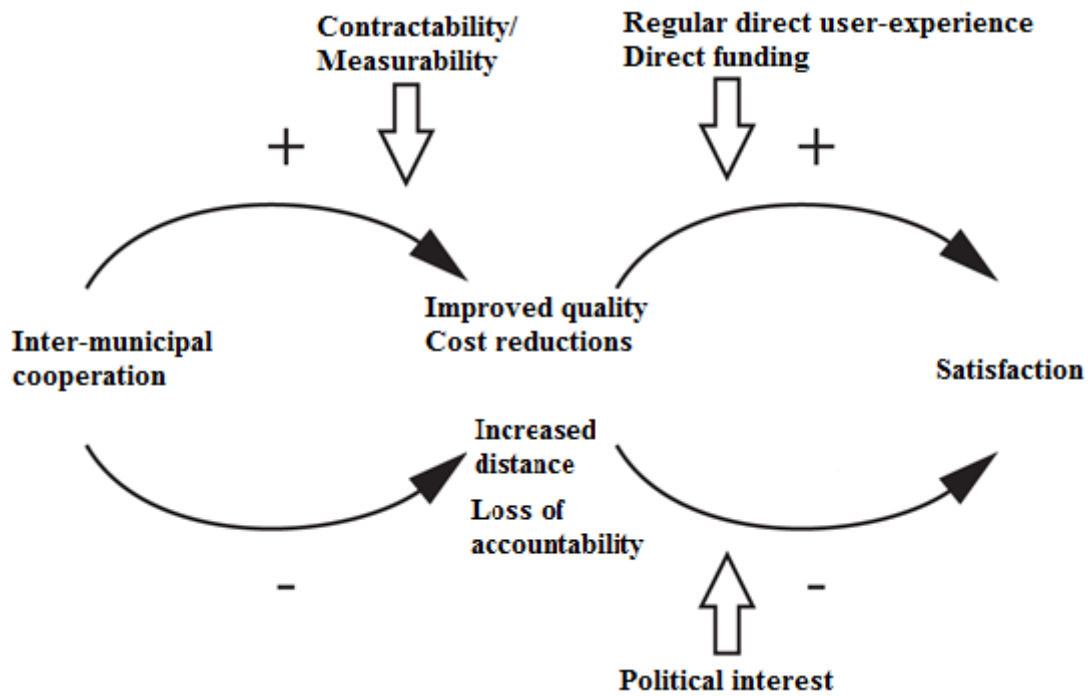


Figure 2

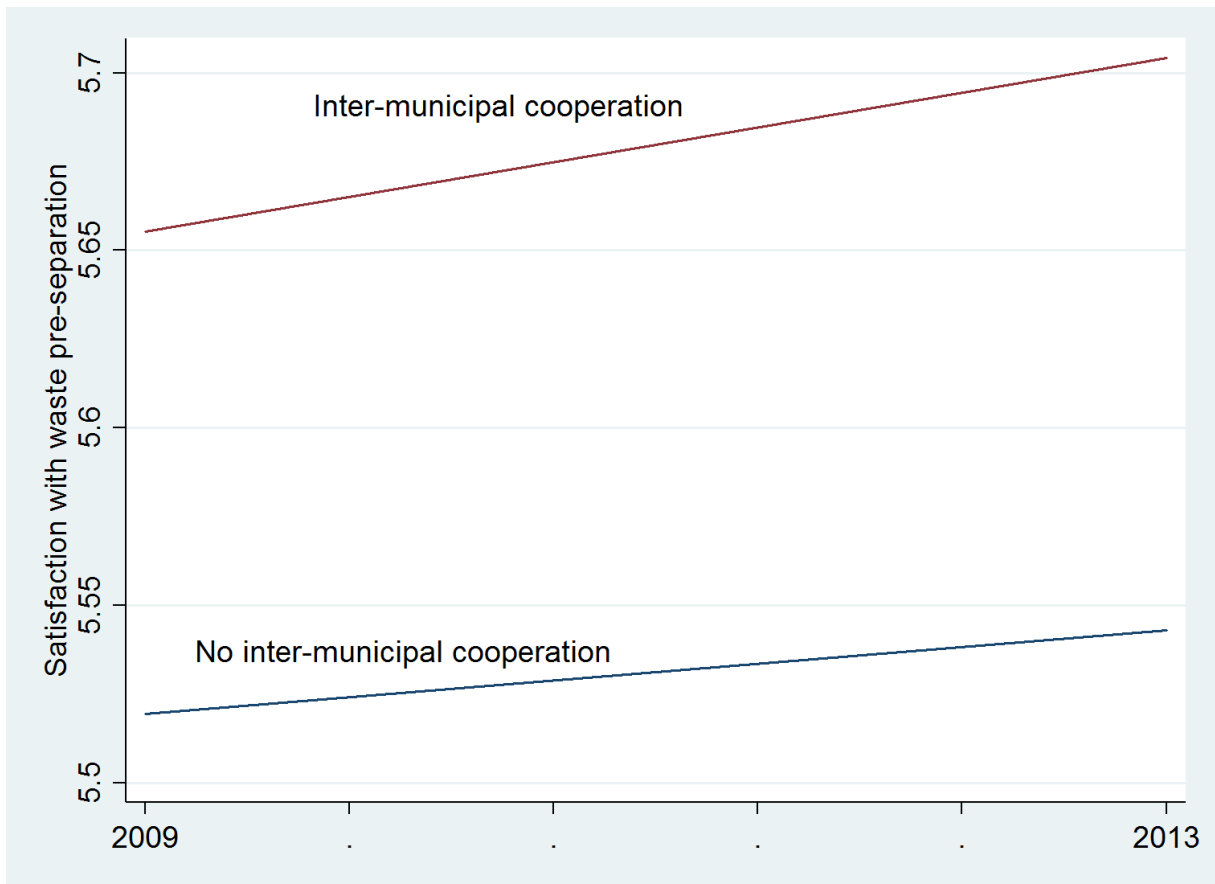


Figure 3

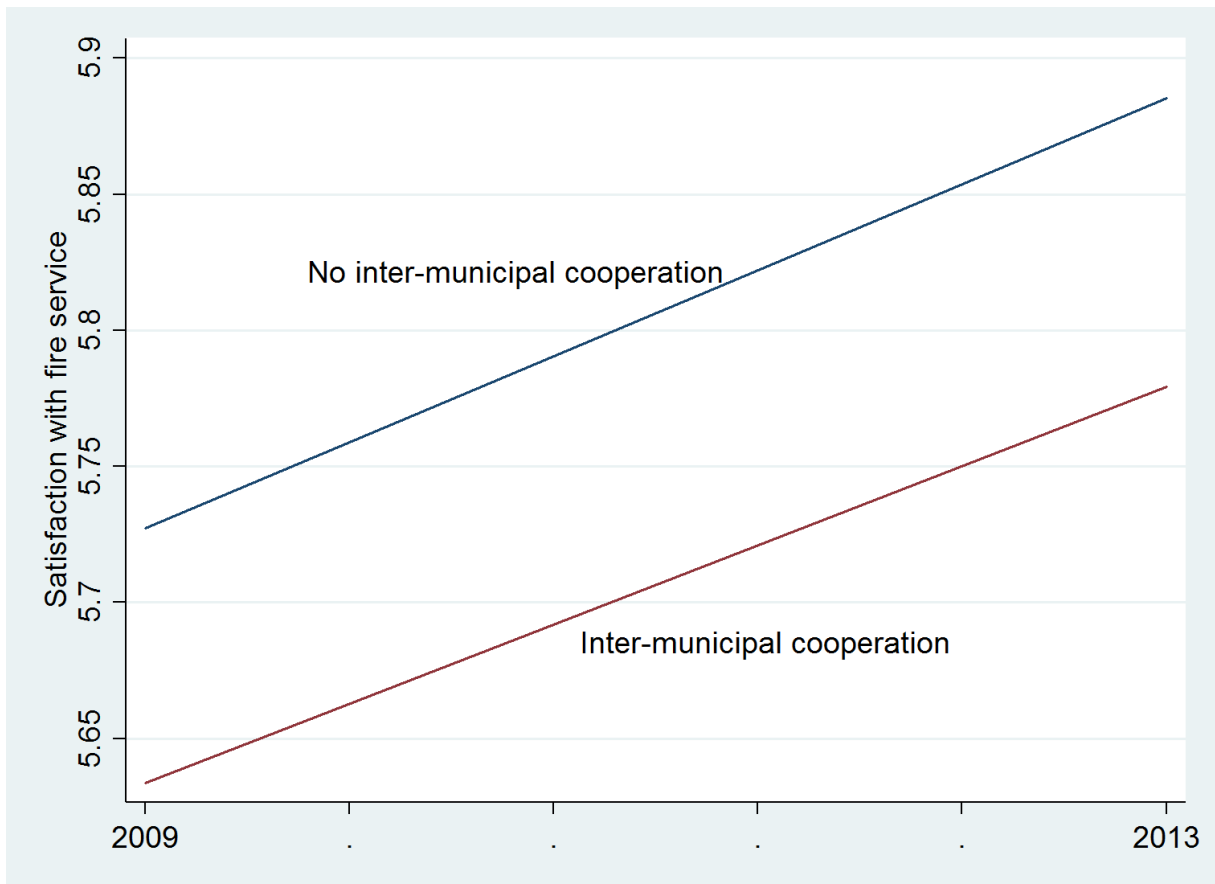


Figure 4

