Merging city and suburban governments: A public choice perspective on the Norwegian local government reform

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The administrative boundaries of the central city almost universally cover a smaller area than its functional boundaries. As mobility patterns go mainly into the central city, local governments in central cities supply public goods beyond their own residents. They should want to extend their boundaries in order to internalize more of these externalities, while suburban municipalities should oppose this. This implication is clear from a theoretical perspective, but can rarely be tested given that local government reform is infrequent and typically top-down. However, the 2014-2017 Norwegian municipal reform offers a rare opportunity for empirical evidence to test this proposition. The paper examines the merger decisions made by municipalities in all city regions in Norway. The analysis provides support for the proposition that central cities want to internalize more of the externalities from their public goods production, while suburban municipalities oppose this: First, central cities tend to have higher property tax rates and to provide more public goods compared to suburban municipalities. Second, central cities were much more interested in merging than suburban municipalities: while the central cities wanted to merge with a total of 75 suburban municipalities, only 15 of the latter were positive to merging with the central city.

Keywords: Municipal reform, city regional governance, Norway, interjurisdictional spillovers, city-suburb amalgamation

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1. Introduction

City-regions consist of a mosaic of gradually decreasing degrees of functional interdependence, making it hard to determine where the city-region ends. Furthermore, the built area and the functional reach of the city-region tend to grow over time to cover larger areas. These two features mean that it is rare, and perhaps even impossible, for the administrative and functional boundaries of the city-region to match (Storper 2014). The administrative boundaries of the central city almost universally cover a smaller area than its functional boundaries. As mobility patterns in city-regions go mainly from suburbs into the central city, local governments in central cities supply public goods to a larger population beyond their own residents. Conversely, local governments in the suburbs can rely partly on the central city to provide some public goods and therefore don't have to contribute to these investments. Consequently, central cities tend to have higher tax rates (Brülhart et al. 2014). Of course, this does not imply that central cities lose from having suburbs, as suburbs contribute to agglomeration economies and increased demand for public services, allowing economies of scale. However, it does create a mismatch between principals and agents that has fiscal as well as democratic implications.

As an implication of this, central cities should want to extend their boundaries to internalize more of the externalities from their production of public goods for the benefit of the broader regional population. Suburban municipalities, on the other hand,

should oppose this, as they are better off if they don't have to contribute to the central city's production of public goods. This theoretical expectation can rarely be tested directly as local government restructuring is relatively rare and usually carried out by a higher level of government. As noted by Hanes et al. (2012: 2733), "structural reforms are generally state-imposed and local government amalgamations are often associated with conflicts between local and national interests", resulting in a lack of empirical evidence on local decisions and preferences on mergers. Local voluntary restructuring tends to be limited to individual cases, restricting the opportunities for generalisation, or to specific services (e.g. schooling, see Brasington 2003; Brasington and Parent 2017).

However, the 2014-2017 Norwegian municipal reform[1] offers a rare opportunity for empirical evidence to test this proposition, for several reasons: First, the national government's initiation of the reform ensured simultaneous processes across the country, with all municipalities making decisions by June 2016 based on a thorough assessment of different merger options. Second, the reform was based on voluntary mergers between municipalities, placing local interests and preferences at the forefront. The national government intervened only in a few cases to overrule local decisions.

The paper examines the decisions made by municipalities in all 20 large or medium-sized city-regions in Norway on mergers involving the central city. The analysis supports the proposition that central cities want to internalize more of the externalities from their public goods production, while suburban municipalities oppose this: First,

[1] Restructuring local government boundaries in city-regions was one of the explicit aims of the reform, as stated by the national government. The municipal proposition for 2015 highlights the "lack of coherence between administrative and functional divisions" as one of the main explanations for the needs of reform, linking this in particular to urban areas. Accordingly, the reform aims for municipal boundaries that are "better adapted to natural housing and labour market regions" (Ministry of Local Government and Regional Development 2014).

central cities tend to have higher property tax rates and to provide more public goods than suburban municipalities. This creates an incentive for suburban municipalities to oppose merging. The case study shows that central cities were much more willing to merge than suburban municipalities: while the central cities wanted to merge with a total of 75 suburban municipalities, only 15 of the latter were positive to merging with the central city.

2. A public choice perspective on the political geography of city-regions

City-regions are the fundamental units in the global economy (Glaeser 2011; Storper 2013). They are the functional building blocks in which labour and capital come together to create integrated labour markets and enjoy external economies of scale. At the city-regional scale, producers and citizens share indivisible goods and facilities, labour and capital is matched, and learning through face-to-face contact takes place (Duranton and Puga 2004). The untraded part of the economy is typically produced and consumed within the city-region, while the region competes with other regions in the national and global economy over shares of the tradable part of the economy.

City-regions are typically not governed by a single authority, but by "a complex mishmash" (Storper 2014: 118) of governments at different levels. Wood (1961) classically talked of 1400 governments in the New York metropolitan area. However, fragmented government is found not only in large cities but also in many small and medium-sized cities around the world. City-regions are governed by local, regional and national governments, as well as networks and agencies coordinating the actions of various governments at the same or across levels. These agencies try to cope with the fundamental problem of serving overlapping and different sets of principals for the

various policy problems that the city-region needs to address. The constituencies for different agencies furthermore change over time, as the built area of cities has tended to expand and technology has enabled the functional integration of a larger area outside the city itself into the city-region. This aggravates the governance problem, as existing jurisdictions become misaligned with the new scales at which policy problems need to be solved (Storper 2014; Harrison and Hoyler 2014).

The economic argument for decentralised government from Oates (1972) holds that decentralisation may improve welfare by allowing government to accommodate heterogeneous local preferences. Local government can better match the level of public goods production to local preferences, which must be balanced against potential economies of scale enabled by larger units (Alesina and Spolaore 1997). This is also the case in city regions, where populations tend to sort into local zones with more homogeneous preferences (Tiebout 1956; Storper 2014). Borge et al. (2014) confirm empirically that local governments improves matching of public goods provision to local demand.

Following Oates (1999: 1121), "[d]ecentralized levels of government have their raison d'etre in the provision of goods and services whose consumption is limited to their own jurisdiction". Democracy – including local democracy – presumes the existence of a *demos*, or a reasonably well-defined set of citizens who vote on political decisions and are bound by these decisions, and who contribute to the production of public goods (as well as publicly provided private goods) from which they also benefit. This premise is habitually broken in city-regions, as it is often impossible to limit public goods

consumption to the members of the jurisdiction itself (Isserman 1976)[2]. Anybody who moves around in the city, whether they live there or not, can use roads or public transport, or access concert halls or theatres in the city. In city-regions with strong functional interdependencies and frequent mobility across jurisdictional boundaries, this means that the production of public goods is subject to inter-jurisdictional spillovers[3]. This includes policies that by default benefit the entire region, such as economic development policies that aim to boost the region's competitiveness in the global economy.

There are various ways of addressing this problem. One is to transfer authority to a higher level of government. Regional or national governments have responsibility for providing many public goods at the city-regional scale, e.g. through national road networks or funding for national cultural institutions which are typically located in cities. However, central provision of public goods which are consumed mainly in one city-region begets other problems, such as competition between regions for scarce resources. Such competition may encourage rent-seeking that carries even greater costs than free-riding (Cheikbossian 2008).

Another solution is to provide these public goods through collaborative bodies where several municipalities participate. This type of network governance is becoming an

[2] Of course, many public services, especially publicly provided private goods such as schools, nurseries, welfare services, are limited to local residents. However, public or quasi-public goods are by definition non-excludable or imperfectly excludable and can thus be used by residents and non-residents alike. Many such goods are mainly consumed within a limited area and are provided by local governments, e.g. local roads. Some of these will mainly benefit local residents (e.g. noise barriers), while others potentially benefit the whole regional population (e.g. concert halls). There is a large literature on the "publicness" of publicly provided goods that addresses this, e.g. discussing goods which are subject to congestion and therefore considered local public goods (Brueckner 1981; Craig 1987; Edwards 1990).

[3] These spillovers create problems for market-based solutions to city-regional governance in the tradition of Tiebout (1956), as pointed out by various authors (e.g. Williams 1966; Zodrow and Mieszkowski 1986; Bloch and Zenginobuz 2006).

increasingly important part of the governance of city-regions, and a large number of studies of urban governance focus on them (e.g. Sørensen and Torfing 2007; Kübler and Schwab 2007; Hidle and Normann 2013). The number of intermunicipal collaborations, municipal joint ventures, quangos and other types of collaborative bodies across several neighbouring governments have proliferated, and nowhere more so than in city-regions. However, such network structures come with problems of their own. They normally involve transfer of political authority from directly elected bodies at the local government level to – at best – indirectly elected boards controlling the network, dispersing and obscuring responsibility for important political decisions (Aars and Fimreite 2005). Furthermore, different public services are often organised in separate network organisations, creating problems for coordination of policy across different areas (Provan and Milward 2001).

A third solution is to merge municipalities into larger jurisdictions that can integrate these spillovers. This is unlikely to solve the underlying problem that agencies need to serve overlapping and different sets of principals, as any scale is likely to fit some policy problems better than others. Lefèvre (1998) notes that the aim of correspondence between functional territory and jurisdiction is futile, as different goods and services have different functional territories. If the jurisdiction becomes too large, competition between different geographical areas within the jurisdiction for scarce resources will naturally follow[4]. Furthermore, the continued growth of the built area and functional reach of the city-region implies that the new boundaries will once more become obsolete with the passage of time (Storper 2014). Nonetheless, several countries have

[4] For instance, municipalities in city-regions typically consist of several school catchment areas, which creates competition between different districts for funding and implies that taxpayers across the municipality contribute to paying for a service that only residents of a particular district can use.

implemented mergers, reducing the number of municipalities through various types of local government reforms (Blom-Hansen 2010; Baldersheim and Rose 2010; Aulich et al. 2014). These reforms are often motivated by the desire to achieve economies of scale (Reingewertz 2012), but in many cases also aim to integrate metropolitan government. Such reforms can be carried out top-down through decisions by the national government, or bottom-up through voluntary mergers between local governments.

However, municipalities may have fundamentally different interests when it comes to voluntary mergers, especially in city-regions, as "central cities (or zones in polycentric metro areas) provide public goods enjoyed by suburbanites, who in turn typically enjoy lower tax rates than central cities" (Storper 2014: 126). Flows of labour and consumers go into the central city more than out of it, so suburbanites spend more time in the central city than city-dwellers do in suburbs[5]. Gaigné et al. (2016) demonstrate theoretically that central cities will normally have higher tax rates than suburbs, while Brülhart et al.'s (2014: 50) empirical review confirms that "larger and more central municipalities are generally found to apply higher tax rates". These tax rates incorporate spillovers from the economic activities of suburban residents as well as endogenous differences in the political preferences of residents due to Tiebout sorting. However, from a theoretical perspective, it is reasonable to assume that they also reflect the greater costs borne by central cities in producing public goods for a broader regional population.

Central cities have an inherent interest in expanding their territories by merging with suburban municipalities in order to internalise more of the benefits from the public

[5] This remains true in most city-regions despite urbanisation processes in suburbs and the rise of edge cities.

goods which they produce. There is a corresponding incentive for suburban municipalities to oppose such mergers[6] (or for suburban areas to secede from the central city, see e.g. Keil 2000 on Los Angeles' San Fernando Valley). Reflecting this, central cities typically support metropolitan government schemes and intermunicipal collaboration and will sometimes make heavy concessions to achieve them (Lefèvre 1998: 22). Previous studies also tend to show that tax and revenue considerations can drive merger decisions (Mukhija and Mason 2013). If central cities are structurally more positively inclined to mergers than suburban municipalities, purely voluntary mergers will face difficulties due to these different underlying interests. Political preferences may also drive this, as central cities are typically more heterogeneous and thus more closely reflect the overall regional population (Storper 2014). The sheer population size of the central city will in many cases also imply a closer match between its preferences and those of an integrated metropolitan government.

On this basis, three simple hypotheses can be made: First, central cities will have higher local tax rates than suburban municipalities. Second, central cities will spend more resources providing public goods than suburban municipalities. Third, central cities will be positive to merging with suburban municipalities, while suburban municipalities will be reluctant to merging.

3. The case study: Voluntary reform in Norwegian city-regions

In order to assess these hypotheses, the paper examines the Norwegian municipal reform of 2015-2016. This reform is helpful in testing the framework for two main

[6] Swanstrom (2001) discusses the argument that suburban municipalities would also benefit from city-regional government due to its positive impact on the region's competitiveness in the global economy, concluding that there is limited evidence for the propositions that fragmented government harms competitiveness and that suburban municipalities depend on central cities for their economic well-being.

reasons: Firstly, the reform was nationwide, meaning that all municipalities made merger decisions within a limited time. Secondly, the reform relied on voluntary local decisions in each municipality[7], allowing the preferences of individual municipalities to be observed. Each municipality conducted a local process consisting of extensive discussion among elected politicians as well as broader public consultations through referenda or surveys in most municipalities. The final decision thus followed a thorough local debate. Minutes from local council meetings in each municipality record the final decision, which is further summarized by the county governors in reports to the national government, enabling precise recording and documentation of each decision.

The national government provided fiscal incentives for merging, in the form of short-term reform funding, longer-term adjustment funding over 15-20 years, and permanent changes in the local government funding system to reduce funding for small municipalities. The latter mainly reduced funding for "voluntarily small" municipalities (based on distance to other municipalities) in an attempt to make central government transfers more independent of local government structure. Another instrument specifically provided funding for mergers involving regional centres. The largest cities did not qualify for this instrument, but all medium-sized central cities were eligible. All merging municipalities received funding, regardless of whether the merger was voluntary or imposed by the central government.

[7] The background for this decision was that the national government was a minority government which had to rely on support from other parties to implement the reform. The Liberal party provided this support on the condition that the reform was based on voluntary mergers between municipalities. More fundamentally, top-down structural reform was seen as a violation of the constitutionally enshrined principle of local self-government (Flo 2015). Following the local decisions, the national government imposed mergers on 13 municipalities which had rejected them. In two cases, this involved mergers between suburban municipalities and central cities (Søgne with Kristiansand and Songdalen, and Haram with Ålesund and three suburbs).

The paper focuses on city-regions and analyses municipalities which are part of the region surrounding a large or medium-sized city, as defined by Gundersen and Juvkam (2013). The analysis covers all 20 large- and medium-sized city-regions in Norway and includes all 155 (pre-reform) municipalities which are functionally integrated in these city-regions per Gundersen and Juvkam's (2013) analysis of commuting patterns.

Table 1 shows the population of each region, in total and distributed by urban and suburban population. In this context, "urban population" refers to the population in the largest and eponymous city within each region. In total, 3.9 million people (75 percent of the population of Norway) lived in one of the 20 largest city-regions as of October 2015. This includes 2 million living in central cities and 1.8 million in suburban municipalities. The idea that local government is fragmented in all city-regions is supported: the total population of the region is larger than that of the central city in all regions. The two northern cities of Bodø and Tromsø encompass most of the populations in their city-regions (96 and 97 percent, respectively), due to the sparse population in Northern Norway. In Southern Norway, the central city's population share is typically much lower, ranging from 31 percent in Tønsberg to 71 percent in Lillehammer, and with an average (weighted and unweighted) of 51 percent.

---Table 1 about here---

Data on the regions' working population are drawn from Statistics Norway (2016a). In most cases, the working population of the central city outnumbers its resident population of workers, confirming that labour mobility flows tend to go into rather than out of the central city. Exceptions are found in city-regions near Oslo, where part of the

resident population commute into the capital[8]. Labour mobility tends to go mainly into the central city, and very few suburban municipalities have a significant surplus of inbound labour mobility. Ullensaker and Bærum in the Oslo region and Sola in the Stavanger region are the only cases of suburban municipalities with a reasonably large surplus of inbound labour mobility.

In 11 regions, the urban area itself stretches beyond the borders of the urban municipality, covering up to 11 additional suburban municipalities. Furthermore, all regions have a commuter belt including several suburban municipalities in which more than 10 percent of the workforce commutes into the urban core. In the largest regions, more than 30 percent of the workforce of several municipalities commutes into the core. Municipalities in the commuter belt can be considered functionally integrated in the city-region and forming part of its labour market.

Some regions include several cities or urban centres[9]. However, in most cases, one municipality has a larger population and greater inwards commuting. The dominant city has therefore been classified as the central city in the analysis in these cases, while other urban centres have been classified as suburban. However, in three cases, the city-region is defined as polycentric with both municipalities treated as central cities. These are cases where the cities are of similar size and have similar commuting patterns (Fredrikstad/Sarpsborg, Sandefjord/Larvik, and Skien/Porsgrunn). As a robustness

[8] This is the case for Fredrikstad, Skien, Sandefjord and Moss, which all have marginally higher outbound than inbound labour mobility. Other municipalities in these regions also have more outbound than inbound labour mobility, with the exception of Porsgrunn, near Skien.
[9] This is the case for Stavanger and Sandnes, Kristiansand and Lillesand, Fredrikstad and Sarpsborg, Skien and Porsgrunn, Tønsberg and Horten, Sandefjord and Larvik, and Arendal and Grimstad.

check, the analyses were also conducted with only the largest municipality as the central city, without any major differences in the results (results available on request).

4. Property tax rates

The first question is whether local tax rates are higher in the central city than in the suburban municipalities. In order to address this question, we examine rates of local property tax, which is the main lever available to local policy-makers when it comes to taxation. Norwegian municipalities are allowed to charge property tax of between 0 and 0.7 percent of the property's tax value. Policy-makers make use of this power in practice[10], as evidenced by the large variance in local property tax rates across different municipalities.

Table 2 shows a simple bivariate comparison of the property tax rates in the central city and the suburban municipalities, based on Statistics Norway's (2016b) data on municipal finances for 2015. For the suburban municipalities, the average is calculated in each region across all suburban municipalities, weighted by population. The property tax rate is higher in the central city than in the suburban municipalities in 10 regions, while the opposite is the case in 9 regions. At face value, then, the bivariate comparison does not show any systematic differences in property tax between central cities and suburban municipalities.

[10] Municipalities also charge income tax at a level between 0 and 11.8 percent of net income (as of 2016). However, the power to vary income tax is not used in practice as all municipalities charge the maximum 11.8 percent. Property tax is therefore the only tax instruments on which local policy-makers in Norway actively make decisions. Local governments can also charge fees for infrastructure and welfare services, but these can only be used to cover costs (Fiva and Rattsø 2007).

However, in two of the latter cases – Bodø and Tromsø – the suburban property tax is based on only one suburban municipality, as the city-region in these northern cities consists of only two municipalities. Four out of 20 central cities do not charge property taxes, all in Eastern Norway. For the cities outside Oslo, this may be due to their access to public goods in the capital – as discussed above, several cities near Oslo also have more outbound than inbound labour mobility. Property taxes also tend to be low in the suburban municipalities around these cities. For Oslo itself, its status as the national capital implies that the central state provides some public goods, e.g. in the form of institutions with a national function[11]. In other large cities, the differences between central city and suburban tax rates are fairly high. This is true in all the three second-tier cities – Bergen, Stavanger, and Trondheim.

---Table 2 about here---

The simple bivariate comparisons above do not take into account other potentially confounding factors that might affect property tax levels. First, smaller municipalities might be more expensive to run than larger ones due to economies of scale in the production of public goods. Most models of local taxes consider this factor (e.g. Gaigné et al. 2016; Brülhart et al. 2014). The Norwegian municipal reform was also motivated by this consideration. Besides the aim of better correspondence between functional and administrative boundaries in city-regions, the other main aim of the reform was to reduce the number of small municipalities. The reform proposition argues that "municipalities should have at least 15000-20000 inhabitants" (Ministry of Local Government and Regional Development 2014). Second, political preferences might also

[11] For instance, Røed et al. (2009) show that central state funding for culture is four times higher per capita in the Oslo region than in other regions combined.

vary between central cities and suburban municipalities. The decision to live in the central city or in a suburb reflects different underlying preferences among those who make the decision and is also associated with differences in income and social status. It is not unreasonable to expect this to materialise also in different political opinions and voting patterns. Finally, central government transfers might also vary across municipalities. The central government aims to compensate municipalities that are more expensive to run for their greater costs. Indeed, one of the incentives aimed at reducing the number of small municipalities was a reduction in the compensation for small population size. In the past, such transfers have compensated for diseconomies of scale and reduced the incentives for mergers (Sørensen 2006). In order to probe the relationship between being the central city and property tax rates further, Table 3 therefore presents the results of a set of OLS regressions of property tax rates on whether or not the municipality is the central city in its region, controlling for these potentially confounding factors.

Model 1 simply examines the effects of being the central city and whether the municipality has a population below the national government's preferred minimum size of 20,000. The analysis shows a statistically significant and positive association of property tax rates with both predictors. Compared to suburban municipalities with a population above 20,000, central city property tax rates are around 0.14 percent higher on average, while small municipalities' tax rates are around 0.15 percent higher.

Model 2 expands the analysis by also taking political factors into account. A new dummy variable is added measuring whether there is a socialist majority (total seats for Labour, Socialist Left and Red parties) in the municipal council. This is based on data from Fiva

et al. (2015). Municipalities with socialist majorities on average have higher property tax rates of around 0.16 percent, controlling for other factors. The coefficients of the original two variables are robust to the inclusion of this additional variable.

Model 3 further expands the analysis by including a measure of central government transfers per capita, again drawn from the Statistics Norway (2016b) database of municipal finances. Central government transfers are not significantly associated with levels of property tax. However, the effect of small population size and socialist council majority are weakened and no longer significant when controlling for central government transfers, while the effect of being the central city remains and actually becomes slightly stronger.

Model 4 is a robustness check in which the analysis is run as an ordinal logit regression to relax the assumption in OLS that residuals are normally distributed. The results are consistent with those in model 3: The central city effect is positive and significant, while small population size and socialist council majority are not significant.

---Table 3 about here---

5. Production of public goods

If central cities serve public goods for a larger region beyond their own inhabitants, this should also be visible in differences between central cities and suburban municipalities in money spent on such public goods. In order to probe this, Table 4 examines the relationship between being the central city and spending in an area where the benefits are typically difficult to limit to the inhabitants of the municipality itself. Specifically, the

dependent variable is the natural logarithm of local government operating costs for culture per capita in 2014 (Statistics Norway 2016b). Spending on culture is potentially important for developing a region which is attractive for prospective employees and thus for economic development. This is particularly prominent in the regional development framework following Florida (2002) which has inspired many policy-makers in Norway and elsewhere in recent years (Horrigmo 2012; Rommetvedt 2013). Spending on culture benefits the city-region as a whole, while for individual municipalities the cultural offering available in the region is more important than what is on offer locally. Consequently, local government expenditure on culture fits well with the propositions made in the theoretical section.

Models 1-3 use the same independent variables as above, and the story is also similar: Spending on culture is higher in central cities and in small suburban municipalities than in suburban municipalities with a population above 20,000. While the effect of small population size disappears when central government transfers are controlled for, the central city effect remains and actually becomes slightly stronger. In this case, the central city effect is significant at 99 percent or higher in all models. It does not matter whether the council majority is from the left or right. Central government transfers have a strong positive effect which is significant at the 99.9 percent level. In the simplest model 1, spending on culture for central cities is predicted to be NOK 2,009 per capita, compared to NOK 1,530 per capita for suburban municipalities with a population above 20,000 and NOK 1,777 per capita for suburban municipalities with a population below 20,000.

Model 4 extends the analysis by also taking property tax rates into account. The analysis above argued that central cities charge higher property tax rates because they need to supply public goods for a larger region. If this is the case, there should also be a positive association between property tax rates and spending on such public goods. The analysis shows that this is indeed the case. Property tax is associated with a significant increase in spending on culture. The effect of being the central city remains positive and statistically significant, with a coefficient that is only slightly lower than in model 3. This suggests that central cities fund certain public goods (in this case culture) for the whole region through their higher property tax rates as well as through other means (as there is still a residual effect of being the central city).

---Table 4 about here---

Column 5 repeats the analysis for another public good which is open to residents and non-residents alike, specifically infrastructure. The analysis uses data from the same source as in the above analysis, in this case the natural logarithm of local government operating costs for infrastructure per capita, also in 2014 (Statistics Norway 2016b). The results are similar to the analysis for expenditure on culture. Indeed, the coefficient for the central city effect is identical for infrastructure and culture. Central government transfers and property tax rates are also positively and significantly related to spending on infrastructure.

Of course, an alternative explanation for the above pattern could simply be that central cities spend more on all public services, not just those which are non-excludable to non-residents. In order to examine patterns for other types of local government services, the

final three columns estimate Model 4 for some of the most important publicly provided private goods for which local government is responsible: Health and welfare, pre-school care, and primary schools[12]. These are three of the largest spending areas for local government. The analysis shows higher level of spending in central cities for health and welfare services (albeit with a weaker coefficient that in the above analyses), but suburban municipalities spend significantly more than central cities on primary schools. For pre-school care, the central city coefficient is also negative, but not significant.

6. The municipal reform

The final part of the analysis examines whether central cities want to merge with suburban municipalities to a greater extent than vice versa. Data on municipalities' merger decisions are collected from the official reports of the 17 county governors, openly available at fylkesmannen.no. All municipalities had to report to the county governor by June 2016 on their decisions regarding whether to continue in their current form or merge with one or more neighbouring municipalities. These reports had to show that the municipality had thoroughly considered and evaluated all merger possibilities. The county governors subsequently produced written reports to the national government in June 2016 where they also reported on final decisions and ongoing processes in each municipality in their county. The data have been updated with developments up to December 2016. In February 2017, the national (minority) government announced that they would approve all voluntary mergers and had secured a parliamentary majority for imposing an additional 13 mergers, two of which involved suburban municipalities merging with central cities.

[12] The results are consistent for Models 1 to 5, with the exception of the coefficient for pre-school care, which only becomes significant in Model 4.

The first column in Table 5 shows the decisions made in the central cities in terms of the number of suburban municipalities with which the municipal council approved or actively stated a preference for merging. The full list, including the names of the suburban municipalities in question, is shown in the appendix. This is not an exhaustive list – it only includes the suburban municipalities actively named in decisions by the central city. In many cases, the central city additionally stated that they would be open to merging with any other willing municipality. Consequently, the list is limited to suburban municipalities with which negotiations were opened or where the prospects for a merger were seen as sufficiently realistic for an active decision to be made by the central city in favour of merging. Even with these limitations, the 23 central cities in the 20 regions considered in this paper voted in favour of merging with a total of 75 suburban municipalities.

Nineteen of the 23 central cities (including both central cities in the polycentric regions of Fredrikstad/Sarpsborg and Sandefjord/Larvik – although not with each other) approved mergers with one or more suburban municipalities. Only two central cities rejected mergers: In Gjøvik, a proposed merger with two suburban municipalities was rejected by 57.7 percent of voters in a referendum (in the suburban municipalities, the no vote was 61 and 71 percent). Arendal initiated merger talks with 7 suburban municipalities. However, its closest suburbs, Froland (where 46 percent of the population commute into Arendal) and Grimstad (which is part of the contiguous urban area of Arendal) both rejected the merger early in the process. Following this, Arendal developed a merger proposal with four other municipalities, only one of which directly bordered Arendal. The proposal was rejected in a population survey, with 45 percent in Arendal being against and only 28 percent in favour of the proposed merger, while 27

percent were undecided. Once more, opposition was stronger in the suburban municipalities, ranging from 55 to 75 percent opposed to the merger. Based on this, the council decided to reject the merger, but also stated that it was open for talks with other municipalities who wanted to merge. Besides Gjøvik and Arendal, Oslo also did not approve any mergers with other municipalities. In this case, no talks with were initiated with any suburban municipalities. Oslo city council declared itself open for talks with any other municipalities who wanted to merge, but it did not want to initiate any merger discussions itself. Suburban municipalities were invited to initiate such discussions, but none followed up on this. Nesodden and Oppegård were involved in initial discussions with Oslo, but Nesodden decided to keep its current boundaries, while Oppegård voted to merge with other suburban municipalities.

The second and third columns in Table 5 show the decisions of suburban municipalities on mergers with the central city. Of the 75 proposed mergers, only 15 suburban municipalities wanted to merge with the central city. In total, 54 suburban municipalities rejected the merger (in one case – Råde – rejecting proposals from three central cities in two different regions – Fredrikstad and Moss). Four made no official decision. These were all in Skien, where Porsgrunn rejected to merge with Skien, causing all suburban municipalities to cease talks. There were no cases of suburban municipalities wanting to merge with the central city which were rejected by the latter. Although such a scenario is not at all hard to imagine, this category is not included in the table as it is empirically void. Mergers were agreed by some suburban municipalities in 9 of the 17 city-regions where the central city approved one or more mergers. Only in one case – Sandefjord/Larvik – was the merger approved by all suburban municipalities.

In the other cases, some suburban municipalities approved merging with the central city, while others rejected it.

---Table 5 about here---

In order to probe which factors determined the decisions on mergers, Table 6 shows the results of a regression analysis for the municipalities for which a final decision can be observed. This includes the 69 suburban municipalities either accepting or rejecting the urban core, the 23 central cities, and 9 suburban municipalities in the Arendal and Gjøvik regions where both sides rejected the merger, a total of 101 municipalities.

Model 1 simply regresses the log odds of merging on being the central city. As expected, being the central city has a strong and significant positive effect on the probability of favouring the merger. Model 2 extends the model by taking population size and political preferences into account. For the latter variable, the seat share of the Centre Party in the municipal council (also from Fiva et al. 2015) is used, as the Centre Party was the staunchest opponent of the municipal reform[13]. Additionally, the overall divergence between municipal and regional political preferences is calculated using the Lee index of voting dissimilarity, which sums the absolute differences between the municipal and the total regional vote share for each party[14] at the 2015 municipal elections (Lee 1988; Hearl, Budge and Pearson 1996; Fitjar 2010). As expected, the divergence is lower in central cities as these make up a large share of the regional population (R=-0.31***). The

[13] The main socialist party, Labour, supported mergers in most of the central cities. Including socialist council majority in the model instead of (or in addition to) Centre Party seat share makes no difference to the results. Neither variable is significantly associated to merger decision in any of the models.
[14] The differences in votes for parties gaining more than 3 percent of the national vote is used, i.e. Labour, Conservatives, Progress Party, Centre Party, Liberals, Christian People's Party, Greens, and Socialist Left.

smallest suburban municipalities were somewhat more likely to support mergers with the central city than larger suburban municipalities, but the difference is not statistically significant. The effect of Centre Party seat share is also positive, but not significant. The overall preference divergence as measured by the Lee index is also not significantly associated with the merger decision. Hence, similar voting preferences between central cities and the overall region do not explain why central cities are more favourable to mergers.

Model 3 extends the model by taking transfers from the central government into account. This has no direct impact on the probability of accepting the merger. However, the coefficient for small population size is now larger and statistically significant. Model 4 further extends the model by also taking property tax rates into account. This has a significant negative effect on the probability of supporting mergers – i.e. municipalities with higher property taxes are significantly less likely to want to merge.

---Table 6 about here---

The public choice perspective presented in this analysis has not featured prominently in discussions and analyses in Norwegian media about why suburban municipalities have tended to reject the advances of the central cities. Instead, such analyses have focused mainly on three factors: First, suburban municipalities tend to be smaller and therefore to be more responsive to their citizens. Second, suburban municipalities tend to offer a higher of quality of public services than central cities[15]. Third, inhabitants in suburban

[15] Inhabitants in smaller municipalities also tend to be more satisfied with municipal services, although this is partly explained by their demographic composition and higher transfers from the central state (Monkerud and Sørensen 2010).

municipalities identify strongly with their local community and have seen mergers as a threat to this identity (Flo 2015).

In order to assess the validity of these claims, data from the Agency for Public Management and eGovernment's (Difi 2016) citizen survey for 2015 have been used to derive measures of the municipalities' responsiveness, quality of services, and identity. The survey included 11,567 respondents across all Norwegian municipalities. Specifically, responsiveness is measured by the question "how satisfied or dissatisfied are you with how the municipality's politicians listen to inhabitants?" (all questions were answered on a scale from -3 to +3). Quality of public services is measured by the question "overall, how satisfied or dissatisfied are you with the quality of the above-mentioned [municipal] services?" Local identity is measured by the question "how strong or weak attachment do you feel towards the municipality in which you live?" As perceptions of responsiveness and the quality of public services are highly subjective (i.e. different people may have different standards), the answers for individual respondents are benchmarked against the same respondent's answer to equivalent questions at the national level. These refer to politicians in the national parliament and services offered by the central state, respectively. This produces a summary measure of how much more or less responsive municipal-level politicians are compared to national-level parliamentarians, and how much more or less satisfied the respondent is with public services offered by the municipality compared to those offered by the central state. For the question on identity, there was unfortunately no equivalent national-level question which could be used as a benchmark. Finally, the three variables were used to develop a municipal-level measure by calculating the mean value for each municipality. Obviously, this measure relies on an insecure estimate as it is based on sample data,

including a low number of respondents in some municipalities. Nonetheless, it provides an indication, especially when a reasonable number of municipalities are included in the analysis.

Models 5-8 in Table 6 show the result of the analyses when these three indicators are included. None of the three new variables have a significant effect on the merger decision in any of the models. For quality of municipal services, the coefficient is even negative. Furthermore, the coefficients of the original variables in the model are stable and robust to the inclusion of these additional control variables.

7. Conclusion

The public choice approach has considerable merits in explaining outcomes in the Norwegian municipal reform. The reform was based on voluntary processes at the local level, with municipalities being free to decide for themselves whether and with whom to merge. However, a problem was that central cities across the board were more positive to merging with suburban municipalities than vice versa. This asymmetry severely limited the number of successful mergers in city-regions. While central cities in total approved mergers with 75 suburban municipalities, only 15 of the latter agreed to the mergers. As a result, the central city was able to merge with all its preferred suburban partners in only one out of 20 city-regions, and was not able to merge with any suburban municipalities in half the regions.

The analysis shows that this can be explained by the opposing basic interests of central cities and suburban municipalities. Central cities tend to provide public goods which suburbanites can also enjoy, such as infrastructure and cultural institutions. Partly

because they need to pay for these services, while the suburban municipalities do not, local tax rates tend to be higher in cities. The analysis confirms that central cities have higher property tax rates than suburban municipalities, and that they spend more per capita funding public goods which are not limited to local residents, such as infrastructure and culture. There is therefore an incentive for suburban municipalities to continue to access these public goods without having to fund them. For central cities, there is an equivalent incentive to expand their jurisdiction to make more of the regional population contribute to funding these public goods. When suburban municipalities do choose to merge with the central city, these are often very small municipalities, where the lack of economies of scale provides large enough drawbacks to outweigh the gains from free riding.

The results have implications for the understanding of the potential for voluntary mergers in city-regions, as well as more broadly for the relationship between central cities and suburban municipalities. Gaigné et al (2016) note that the relationship between the administrative and the economic limits of the central city have not received much attention in previous research. The analysis shows that suburban municipalities are likely to resist attempts at expanding the administrative boundaries of the central city. If such changes are deemed necessary, they will most likely have to be imposed by a higher authority rather than through voluntary processes at the local level.

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Table 1: Norwegian city regions, 2015

Region	Population central city	Population suburban, total	Population total	Urban core, % of population	Regional working population	Working population living in central city	Working population working in central city	Suburban municipalities included in contiguous urban area	Suburban municipalities with > 30 percent commuting to central city	Suburban municipalities with > 10 percent commuting to central city
Oslo	656,614	657,710	1,314,324	50.0 %	743,143	349,982	457,000	11	14	32
Bergen	277,378	133,872	411,250	67.4 %	213,642	147,157	166,522	0	6	13
Stavanger	132,587	204,475	337,062	39.3 %	186,118	71,881	83,477	3	6	13
Trondheim	186,868	87,308	274,176	68.2 %	145,389	98,708	114,321	0	4	10
Drammen	67,714	101,358	169,072	40.1 %	75,214	32,985	36,817	5	2	5
Fredrikstad	78,834	74,403	153,237	51.4 %	69,435	43,789	52,069	0	3	10
Kristiansand	88,384	48,905	137,289	64.4 %	66,436	36,734	35,431	1	1	4
Tønsberg	42,179	94,404	136,583	30.9 %	62,757	21,111	27,882	1	1	6
Skien	53,919	73,633	127,552	42.3 %	56,566	25,734	25,236	2	2	6
Haugesund	36,879	72,385	109,264	33.8 %	50,483	18,608	22,191	1	1	4
Sandefjord	45,689	46,243	91,932	49.7 %	45,023	24,808	28,389	1	3	5
Hamar	30,098	61,388	91,486	32.9 %	43,257	14,641	19,776	2	1	3
Ålesund	46,769	41,725	88,494	52.8 %	42,502	39,894	41,552	0	0	5
Arendal	44,262	37,949	82,211	53.8 %	40,550	21,465	21,253	0	0	2
Tromsø	73,296	2,274	75,570	97.0 %	35,446	21,080	21,942	1	1	5
Gjøvik	30,131	40,595	70,726	42.6 %	33,025	14,962	16,595	0	0	3
Molde	36,676	20,995	57,671	63.6 %	29,505	14,008	17,790	0	0	6
Moss	32,103	20,519	52,622	61.0 %	28,650	27,034	27,851	0	0	3
Bodø	50,466	2,036	52,502	96.1 %	21,555	14,725	14,071	2	1	3
Lillehammer	27,396	11,303	38,699	70.8 %	20,523	14,148	16,399	0	2	2
Total	2,038,242	1,833,480	3,871,722	52.6 %	2,009,219	1,053,454	1,246,564	30	48	140

Table 2: Property tax rates (per mille) in Norwegian city regions, 2015

Region	Property tax central city		Property tax suburban, population weighted average
Oslo	0		1.4
Bergen	5		2.8
Stavanger	4		1.2
Trondheim	5.45		2.9
Drammen	0		1.3
Kristiansand	6.25		3.9
Fredrikstad	7	(both cities)	3.1
Tønsberg	0		0.7
Skien	5.3	(Skien 6.5, Porsgrunn 3.6)	6.4
Haugesund	4.8		6.6
Ålesund	2		1.0
Hamar	5		5.3
Tromsø	5.4		7.0
Sandefjord	0	(both cities)	0
Arendal	6.4		3.3
Gjøvik	4.4		4.2
Molde	3.6		4.5
Bodø	3.9		7.0
Moss	3.95		3.4
Lillehammer	6.5		5.9

Table 3: Regression of property tax rates (per mille) in 2015 on local government characteristics

	Model 1	Model 2	Model 3	Model 4: Ordinal
Central city	1.44*	1.44*	1.50*	0.91*
	(0.67)	(0.66)	(0.66)	(0.41)
Population < 20,000	1.53**	1.52**	0.97	0.70
	(0.48)	(0.48)	(0.60)	(0.40)
Socialist council majority		1.59*	1.50	0.98
		(0.77)	(0.76)	(0.51)
Central government transfer per capita			0.05	0.04
			(0.04)	(0.03)
Constant	2.50***	2.36***	1.13	26 cut points, coeff. not reported
	(0.33)	(0.34)	(0.89)	
N	155	155	155	155
R^2	0.07	0.10	0.11	
Pseudo- R^2				0.03

Note: * = P<0.05, ** = P<0.01, *** = P<0.001

Table 4: Regression of local government expenditure on culture per capita (log_e of operating costs, thousands NOK) in 2015 on local government characteristics

	Model 1	Model 2	Model 3	Model 4	Infra-structure	Health and welfare	Pre-school care	Primary schools
Central city	0.27**	0.27**	0.29***	0.25**	0.25**	0.10*	-0.07	-0.15***
	(0.09)	(0.09)	(0.08)	(0.08)	(0.08)	(0.04)	(0.04)	(0.03)
Population < 20,000	0.15*	0.15*	-0.02	-0.05	0.02	0.10**	0.01	0.04
	(0.06)	(0.06)	(0.08)	(0.07)	(0.08)	(0.04)	(0.04)	(0.02)
Socialist council majority		0.03	0.00	-0.04	-0.18	0.02	-0.10*	-0.09**
		(0.10)	(0.10)	(0.10)	(0.10)	(0.05)	(0.05)	(0.03)
Central government transfer per capita			0.02***	0.02***	0.02***	0.02***	-0.01***	0.01***
			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Property tax rate				0.03**	0.02*	0.01†	0.00	0.01***
				(0.01)	(0.01)	(0.00)	(0.00)	(0.00)
Constant	0.43***	0.42***	0.03	0.00	-0.76***	2.38***	2.25***	2.40***
	(0.10)	(0.04)	(0.11)	(0.11)	(0.11)	(0.05)	(0.05)	(0.04)
N	155	155	155	155	154	155	155	155
R^2	0.07	0.07	0.15	0.20	0.27	0.52	0.14	0.52

Note: * = P<0.05, ** = P<0.01, *** = P<0.001

Table 5: Merger decisions

Region	Central city wants merger with suburban municipalities	Suburban municipalities want merger with central city	Suburban municipalities do not want merger with central city
Oslo[1]	0	-	-
Bergen	3	0	3
Stavanger	5	2	3
Trondheim	4	1	3
Drammen	5	1	4
Kristiansand	6	1	5
Fredrikstad[2]	3	0	3
Tønsberg	3	1	2
Skien[3]	5	0	0
Haugesund	6	0	6
Ålesund	9	3	6
Hamar	3	0	3
Tromsø	3	0	3
Sandefjord[4]	3	3	0
Arendal	0	-	-
Gjøvik	0	-	-
Molde	6	2	4
Bodø	6	0	6
Moss	2	1	1
Lillehammer	3	0	3
Sum	**75**	**15**	**54**

[1] Oslo was open to merging with suburban municipalities, but did not initiate any official processes as it wanted the initiative to come from the suburban municipalities.

[2] Combined number for the twin cities of Fredrikstad and Sarpsborg: Each city wanted to merge with two suburban municipalities, one of which was the same in both cases (Råde, which rejected both proposals as well as a proposal from Moss).

[3] These numbers are for Skien, which wanted to merge with Porsgrunn and four other municipalities. Porsgrunn rejected the merger and as a consequence, talks with the other four were not conducted.

[4] Combined number for the twin cities of Sandefjord and Larvik. Sandefjord wanted to merge with Andebu and Stokke, while Larvik wanted to merge with Lardal. In all cases, the suburban municipalities also wanted the merger.

Table 6: Logit regression of decisions on mergers involving central city

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Central city	3.22***	4.05***	4.07***	4.75***	4.86***	4.77***	4.73***	4.86***
	(0.68)	(0.92)	(0.93)	(1.04)	(1.06)	(1.05)	(1.05)	(1.07)
Population < 20,000		1.26	1.57*	1.76*	1.79*	1.75*	1.74*	1.81*
		(0.75)	(0.80)	(0.83)	(0.83)	(0.83)	(0.84)	(0.83)
Centre Party seat		2.91	3.34	5.19	5.14	4.90	4.91	5.14
share		(3.40)	(3.52)	(3.55)	(3.58)	(3.65)	(3.64)	(3.63)
Lee index of voting		-2.76	-1.44	-1.73	-1.56	-1.49	-1.42	-1.57
dissimilarity		(2.55)	(3.05)	(3.09)	(2.98)	(3.17)	(3.18)	(3.08)
Central government			-0.05	-0.04	-0.03	-0.04	-0.04	-0.04
transfer per capita			(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Property tax rate				-0.23*	-0.23*	-0.23*	-0.23*	-0.24*
				(0.11)	(0.11)	(0.11)	(0.11)	(0.11)
Responsiveness of					0.31			0.33
local politicians					(0.40)			(0.41)
Quality of municipal						-0.23		-0.24
services						(0.56)		(0.55)
Mean attachment to							0.09	0.09
municipality							(0.61)	(0.60)
Constant	-1.37***	-2.04**	-1.09	-0.98	-1.33	-1.01	-1.49	-1.75
	(0.28)	(0.75)	(1.13)	(1.16)	(1.20)	(1.15)	(3.26)	(3.20)
N	101	101	101	101	100	100	100	100
Pseudo-R^2	0.25	0.2*	0.30	0.34	0.34	0.34	0.34	0.34

Note: * = P<0.05, ** = P<0.01, *** = P<0.001

Appendix table A.1: Merger decisions

Region	Central city wants to merge with	Suburban municipalities wanting merger with central city	Suburban municipalities not wanting merger with central city
Oslo			
Bergen	Vaksdal, Osterøy, Samnanger		Vaksdal, Osterøy, Samnanger
Stavanger	Sandnes, Sola, Randaberg, Rennesøy, Finnøy	Rennesøy, Finnøy	Sandnes, Sola, Randaberg
Trondheim	Malvik, Klæbu, Melhus, Skaun	Klæbu	Malvik, Melhus, Skaun
Drammen	Lier, Øvre Eiker, Nedre Eiker, Svelvik, Sande	Svelvik	Lier, Øvre Eiker, Nedre Eiker, Sande
Kristiansand	Søgne, Songdalen, Vennesla, Iveland, Birkenes, Lillesand	Songdalen	Søgne, Iveland, Vennesla, Birkenes, Lillesand
Fredrikstad	**Fredrikstad**: Råde, Hvaler		Råde, Hvaler, Rakkestad
	Sarpsborg: Råde, Rakkestad		
Tønsberg	Nøtterøy, Tjøme, Re	Re	Nøtterøy, Tjøme
Skien	**Skien**: Porsgrunn, Bamble, Kragerø, Drangedal, Siljan		
	Porsgrunn: -		
Haugesund	Sveio, Karmøy, Tysvær, Bokn, Vindafjord, Utsira		Sveio, Karmøy, Tysvær, Bokn, Vindafjord, Utsira
Ålesund	Skodje, Sandøy, Haram, Ørskog, Sula, Giske, Hareid, Stordal, Sykkylven	Skodje, Sandøy, Ørskog	Haram, Sula, Giske, Hareid, Stordal, Sykkylven
Hamar	Ringsaker, Løten, Stange		Ringsaker, Løten, Stange
Tromsø	Karlsøy, Storfjord, Lyngen		Karlsøy, Storfjord, Lyngen

Sandefjord	**Sandefjord**: Andebu, Stokke **Larvik**: Lardal	Andebu, Stokke, Lardal	
Arendal			Froland, Grimstad, Vegårshei, Risør, Gjerstad, Tvedestrand
Gjøvik			Østre Toten, Vestre Toten
Molde	Aura, Eide, Gjemnes, Midsund, Nesset, Rauma	Nesset, Midsund	Aura, Eide, Gjemnes, Rauma
Bodø	Gildeskål, Rødøy, Saltdal, Røst, Værøy, Steigen		Gildeskål, Rødøy, Saltdal, Røst, Værøy, Steigen
Moss	Rygge, Råde	Rygge	Råde
Lillehammer	Gausdal, Øyer, Ringebu		Gausdal, Øyer, Ringebu