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Norwegian local public finance in the 1930s and beyond

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The evolution of the welfare state in the twentieth century has changed local public finance considerably. This article investigates determinants of local public spending in Norway since the 1930s with an emphasis on the fiscal year 1934–35. We document huge variation in local government spending in 1934–35. The disparities initiated several reforms in the 1930s with the aim of reducing the inequality. The changes in regional policy over time are illustrated by correlation coefficients between municipal spending and private income. The correlation is strongly positive in 1934–35, but is reduced over time, and has been negative since the 1970s. We find that the variation in spending between local governments is reduced over time mainly for two reasons. First, while the elasticity of municipal spending with respect to private income is fairly constant over time, the variation in private income has become smaller. Second, grants from the central government have become a larger part of the local governments' budgets and are to an increasing degree used for redistributional purposes.

1. Introduction

The development of the Western welfare states during the twentieth century has involved a steady growth of public sector spending and changes in public sector institutions. In an international perspective, the Nordic countries have chosen to provide a large share of public services at the local government level.[1] Thus, the economic history of the Nordic welfare states is closely related to the evolution of the local public sector. The driving forces

[1] For Norway, the local government share of GDP expanded from about 5 per cent in the 1900s to about 9 per cent in the 1930s and 17 per cent in the 1980s (Borge and Rattsø 1999b). In terms of employment, the local governments employed about 8 per cent of the workforce and 55 per cent of public sector employees in the 1960s. In the 1980s, these shares had increased to about 18 and 70 per cent respectively (source: NOS National Accounts). For the Scandinavian countries in 1990, the local government spending share of general public sector spending was 60 per cent in Norway, 68 per cent in Denmark and Finland, and 71 per cent in Sweden (source: United Nations National Accounts Statistics, 1994).

behind the growth of the local public sector have been both local politics and central regulation. Kjellberg (1981) describes the Norwegian national policy towards local governments as gradually changing from *laissez faire* (non–interference) in the late nineteenth century to centralised control after World War II.

The interwar period was characterised by great regional variation in economic conditions, including local public finance, and political concern at the central level about the disparity. The first attempts to reduce the discretion of the local governments were made at the start of the twentieth century. Nevertheless, the regional disparity in local public finance increased during the interwar period to an unacceptable level for the majority of the people, mainly because of financial crises in several local governments (low service level combined with high debt and high local income tax rate). In the official history of the Norwegian local governments, Næss *et al.* (1987, ch. 4) denote the 1930s as the period of great disparity. The motivation for several new types of regulation was to reduce the inequality. In the 1930s, income redistribution was introduced as an explicit criterion in the grant system. This was the beginning of the process towards a high degree of redistribution between local governments, including both changes in the legal and financial systems. The two–sided role of the local governments emerged. In the first place, they performed the role of political institutions with autonomous and electoral accountability. At the same time, they became a part of the national public administration. Since the 1970s, local public finance in Norway has been extremely centralised. The central government decides in reality both the income tax rate and the tax base, leaving little discretion to the local governments in determining their income and spending levels.

This article discusses the development of Norwegian local public finance during the twentieth century with an emphasis on the 1930s. The reason for focusing on the 1930s is the intense federal debate about local public finance in the interwar period, which in turn initiated several institutional changes that are described below. The new regulations established in the 1930s have been maintained and they still represent the main foundations of central government policy towards local governments. The institutional changes following the Second World War have mainly changed local government discretion in the same direction.

We ask to what extent the disparity in local public spending has changed since the 1930s. As expected we find that the disparity has been reduced to a large degree during the period. We then investigate whether this development is due to central government policy, changed basic local government behaviour, or other factors. This question is discussed by means of a comparative analysis, in which we compare the years 1965, 1980 and 1995 to the fiscal year 1934–35. Much emphasis is put on analysing the fiscal year 1934–35 in order to establish a benchmark for the succeeding development in the variation between local governments, both in terms of local

government spending and private income. This also enables us to discuss determinants of local government spending within an institutional setting with much larger local autonomy than in the modern European welfare state, and to use these determinants as a benchmark for local government behaviour.

Section 2 discusses the evolution of local public finance during the twentieth century. We document the huge regional variation in the interwar period, and compare this disparity to the post-World War II experience. Section 3 discusses theoretical models of local government behaviour underlying empirical studies of local public finance. The data for 1934–35 are described in Section 4, while Section 5 discusses determinants of municipal spending in this year. The regression analysis clearly indicates that, in economic terms, private income is the most important determinant of municipal spending. Even though local public services are income inelastic, the great variation in private income implies that the fiscal base was the most important factor behind the spending variation across local governments. The comparative analysis in Section 6 reveals that, surprisingly, the determination of municipal spending changes little over time. This analysis makes it possible to identify the sources of reduced inequality. The evidence indicates two major sources of the reduced variation across local governments since the 1930s. First, the variation in private income has been reduced. Second, the grant policy has changed. Central government grants have become a larger part of local governments' budgets, and grants have been used for redistributional purposes to an increasing degree. Section 7 concludes.

2. The evolution of local public finance in Norway

Up to 1964, the legislation differed in urban and rural municipalities. Urban municipalities were cities, with a small acreage and dense population. The minimum standards set by the central government were in general highest for the cities, while central government grants were highest in the rural municipalities. In the following, we distinguish between these two types of municipalities.

Table 1 compares municipal spending shares for different local public services in the fiscal years 1900, 1934–35 (July 1934 through June 1935), 1965, 1980 and 1995.[2] The table indicates that the growth in local government spending during the twentieth century had a minor effect on the composition of local public spending. Some changes occurred from 1900 to 1934–35. In 1900, the spending share on infrastructure was higher while health care was not much developed. The significant increase in spending on health care can be attributed to several factors; a growth in services offered, the introduction of new services, and an extension of the health care

[2] We use current municipal spending in this article, which excludes investments and debt charges. See Table 4 for definitions of the variables used in this section.

definition. First, Næss *et al.* (1987, ch. 3) claim that the treatment capacity of the local government hospitals more than doubled during the first two decades of the century, and at the same time the quality improved. Second, facilities for care for the elderly were established, and new social security schemes directed towards the disabled, widows and single mothers were introduced. The latter point also explains why the spending share on support of the poor is of the same magnitude in 1900 and 1934–35. Several of the cost items denoted as social security schemes and included as spending on health care in 1934–35 were earlier defined as support of the poor in the municipal accounts. In addition, schools started to offer free books and free meals for pupils from poor families. Support of the poor was an important political issue because individuals who received such support lost their rights to vote in the local elections, and they were obliged to repay the support (Næss *et al.* 1987, ch. 3). The introduction of new public sector activities to keep certain groups out of poverty was to some extent a result of changes in the national laws regulating health care, but mostly a result of the municipalities' own initiatives (see Hanssen *et al.* 2001). This development is connected to the political situation at the time. The socialist parties were gaining increased support but had still no realistic possibility of reaching government power at the national level. Instead they adopted a strategy of implementing welfare programmes in local governments where they had a strong position, hoping that these programmes would eventually become national policies. This strategy was denoted 'municipal socialism', see for example Seip (1949). In light of these changes, it seems more relevant to compare the sum of the spending shares on education, health care and support of the poor in 1900 and 1934–35. Then a pattern of increased spending on social services and reduced spending on infrastructure emerges.

Table 1. *Municipal current spending, percentage shares of services.*

	1900			1934–35			1965	1980	1995
	Urban	Rural	All	Urban	Rural	All	All	All	All
Administration	7.1	4.3	6.0	6.2	4.6	5.4	5.2	7.1	7.4
Churches and culture	4.9	5.7	5.2	6.7	3.3	5.1	4.2	6.5	5.9
Education	20.6	31.1	24.9	20.0	35.5	27.5	33.6	36.6	30.4
Health care	2.7	8.9	5.2	25.5	15.5	20.6	29.0	28.1	35.4
Support of the poor	16.5	23.4	19.3	19.7	21.1	20.4	3.4	1.3	3.4
Infrastructure	41.9	25.1	35.0	17.0	19.1	18.0	24.3	20.4	17.4
Police and prison	6.2	1.5	4.3	5.0	0.9	3.0	0.4	0	0

Note: Sources are NOS Municipal Finances for 1900 and 1934–35, NOS Public Sector Finances and Norwegian Social Science Data Services (NSD) for 1965, NOS Structural Data from the Municipal Accounts and NSD for 1980, and NOS Structural Data from the Municipal Accounts for 1995.

Table 2. *Municipal income, percentage shares of income sources.*

	1900			1934–35			1961	1980	1995
	Urban	Rural	All	Urban	Rural	All	All	All	All
Taxes	64.1	68.0	65.7	69.1	57.5	63.2	72.8	49.7	40.8
Grants	7.9	21.3	13.5	3.2	25.4	14.4	13.4	29.6	35.1
Sale	18.8	6.5	13.7	21.6	15.3	18.6	8.4	12.4	14.7
Capital income and other income	9.2	4.2	7.1	6.1	1.9	4.0	5.4	8.3	9.3

Note: See Table 1 for sources. Source for 1961 is NOS Public Sector Finances. 'Sale' includes user charges.

The composition of local government spending is remarkable similar in 1934–35 and the post-World War II period if we add the spending shares on health care and support of the poor. In 1934–35, about 20 per cent of municipal spending was devoted to support of the poor, while the figure was only 3.4 per cent in 1995. This difference reflects both the interwar recession and the creation of several new instruments to take care of people without a job. Health care services as care for the elderly and disabled have expanded considerably. The nearly constant spending shares are surprising due to the fact that the responsibility of several services has shifted between the three governmental levels (the municipalities, the counties and the central government) during the period. Primary and secondary education have always been the responsibility of local governments, but have been subject to central government regulation since the nineteenth century. In 1976, the responsibility for all upper secondary and vocational training was moved from the municipalities to the counties. On the other hand, primary and lower secondary education have expanded.

Table 2 compares the composition of local government income over time. The role of local taxes is reduced after the 1960s, while central government grants have increased. The evolution of the grant system reflects the development of the relationship between the central and local governments. As a broad description, the grant system of today started during the 1930s.

A system of direct support to the poorest local governments was introduced in 1930 when a specific unconditional grant was directed towards municipalities defined by the central government to be in a state of financial crisis. The grant was distributed according to suggestions from the county authorities and was mainly directed towards rural municipalities. The grant system also included several different matching grants schemes for specific purposes, but Næss *et al.* (1987, ch. 4) argue that to an increasing degree during the first part of the 1930s, all types of grants were affected by income equalisation objectives.[3] The matching grants mainly consisted of

[3] The grant system is described in Bahr (1937), Myhren (1977) and Næss *et al.* (1987, ch. 4).

reimbursement of outlays on teacher wages, support of poor and disabled people, and infrastructure maintenance. None of these grants had a fixed reimbursement rate, but were based on the grantors' judgment of the local governments' needs. For the cities, the grant in 1934–35 was mainly support of primary education.

The most important change between 1934–35 and 1965 was the development of a grant system based on objective criteria instead of individual judgements of the needs in each local government. According to Seip (1949), the starting point was the fiscal year 1935–36 when some of the grants became based on average private income, the unemployment rate and the number of citizens receiving financial support from the municipality. Nevertheless, in the 1960s the grant system was very fragmented with a lot of different grant schemes. The final important changes in the grant system occurred in 1982 and 1986 when a new unconditional grant, based on objective criteria such as population size and age composition, replaced about 50 different matching grant schemes.

Another channel of redistribution was introduced by the 'Tax Equalising Act' (*Skatteutjevningsloven*) of 1936. Under tax equalisation, some of the tax income in municipalities with large private income is transferred to municipalities with low private income. The largest growth in tax equalisation occurred in the period 1968–72 when it rose more than threefold in real terms, accounting for about 25 per cent of total central government grants in 1972.

Table 2 underestimates the increasing role of central regulation of local public finance because the discretion to set the tax rates has been reduced. Income taxes have always been the main tax source at the local level. Up to 1911, there were no restrictions on local government tax policy. The local governments could protect the inhabitants against national income tax by setting a low tax base and a high tax rate because the tax base was equal in local and central assessments. As a result of increased income needs for the central government, the national income tax rate increased around the turn of the century. To avoid strategic tax rate and tax base determination of local governments, the 'Tax Act' of 1911 set a maximum local income tax rate and a range for the tax base's share of assessed income.[4]

After 1911, the central government increased the maximum allowable income tax rate several times. In the 1930s, the maximum allowable income tax rate was 15 per cent, but it was possible to apply for a higher rate. The actual tax rates varied from 3 per cent to 28 per cent in the 1920s and 1930s, and in 1935–36, 77 per cent of the local governments had a tax rate above the maximum allowable rate. Huge variation in tax levels is likely to induce mobility. In the 1930s, it was regarded as an equity problem that some small cities with low tax rates attracted high-income people. Mean private income

[4] The development of the tax system is described in Bahr (1937), Myhren (1977) and Næss *et al.* (1987, ch. 4).

and the share of taxpayers in the population could be very high in these municipalities (Seip 1949). A minimum tax rate was introduced in 1955, implying a centrally determined range for the tax rate. However, since 1979, all municipalities have used the highest allowable tax rate (Borge and Rattsø 1999a). Local politics today is mainly concerned with the division of an exogenously given local government income amongst different services (Rattsø 1989).

Some local governments experienced a financial crisis in the early 1920s. The source of the crises was mainly high debt. Around the time of World War I, a large number of local governments raised loans to build hydro-electric power stations and transmission systems. The deflation thereafter increased the real value of the debt. In the fiscal year 1934–35, some local governments had a debt–expenditure ratio of 20, obviously making repayment hard. The unweighted mean ratios were 2.52 and 3.30 in rural and urban municipalities, respectively, while the figure was 0.77 in 1995. A 'tax-burden committee' giving a report in 1932 characterised 333 out of a total of about 750 local governments to be in a state of financial crisis (Myhren 1977). One hundred and sixty-six of these local governments had mainly a debt problem. For the other local governments, the main problem was a small fiscal base. How to treat local governments in financial difficulty was an important part of the debate on regional politics. At the same time, several local governments had a good financial standing and improved the quality of their public services.

Among the political parties in the national parliament there was a common understanding that the disparities were unacceptable. However, the parties did not agree on how to handle the problem. The socialist parties worked for increased economic support to municipalities in financial difficulty, while the non-socialist parties wanted stronger central control. At the time, the socialist parties were still in a minority in the national parliament, but had the majority in several local governments.[5] The 'Municipal Debt Act' of 1923 created the legal basis to put local governments under direct central government administration. This law was replaced by the 'Federal Administration Act' in 1928.[6] Federal administration is the most powerful tool for influencing local public sector outcomes. The law required that financial decisions in municipalities under federal administration had to be approved by the central government. The local governments could only make proposals (Bahr 1937). The number of municipalities under federal administration decreased rapidly under the first Labour party

[5] Næss *et al.* (1987, ch. 4) argue that the main factor behind the dispute was the socialist parties' fear of losing autonomy in the municipalities in which they had the majority. Increased central intervention would reduce the possibility of implementing their preferred policy.

[6] The 'Municipal Debt Act' and the 'Federal Administration Act' are discussed in Bahr (1937), Seip (1949) and Næss *et al.* (1987, ch. 4).

government from 1936,[7] probably both because of general economic growth and increased support of the municipalities.

Differences between local governments in political structure is another factor contributing to greater regional variation in the pre-World War II period than in the modern Nordic welfare state. In the 1930s, about 5 per cent of the local governments did not have representative democracy. Representative democracy, where the seats in the local council are divided between the political parties in proportion to their votes, gradually became predominant during the first part of the century. In the municipalities without representative democracy, there were personal elections. The candidates who got most votes were elected. Thus, the political parties were not represented in the local council. This is sometimes called majority elections (*flertallsvalg*), and in the following we will denote this system 'direct democracy'. Municipalities with direct democracy and municipalities under federal administration were mainly rural municipalities. In Section 5, we investigate whether behaviour differed between four different types of municipalities. We split our sample into urban municipalities and rural municipalities, and split rural municipalities into municipalities with representative democracy, direct democracy, and municipalities under federal administration.[8]

The variation in economic conditions across local governments is illustrated in Table 3. While data are available from the Norwegian Social Data Service for the period after 1965, data availability varies in the preceding years. The first fiscal year in which data are available for all local governments is 1934–35. This is also the last year before the introduction of the 'Tax Equalisation Act'.[9]

In 1934–35, current municipal spending *per capita* ranged from 614 to 7050 Norwegian Kroner (NKr) in 1999. This partly reflects the differences between urban and rural municipalities. At mean levels, spending was almost three times higher in the cities. The cities had more local public services, and the services had higher standards. For example, only urban municipalities provided secondary education, and they had a longer schooling time, both in terms of longer weekly hours and more weeks each year, in primary education. While all cities (except one) provided some kind of social security scheme, few rural municipalities did (Hanssen *et al.* 2001). In addition, costs of local public services are likely to have been higher in the cities. According to Falch (2001), teachers' wages were about 1.5 times higher in urban municipalities than in rural

[7] Not counting the Labour party government in 1929, which survived only for two weeks.

[8] Two urban municipalities were under federal administration. These municipalities will be excluded when we split the sample by municipality type.

[9] In addition, the fiscal year 1934–35 is interesting because, according to the unemployment figures in Grytten (1995), it was the start of the recovery from the recession.

Table 3. *Variation across local governments.*

	1934–35			1965	1980	1995
	Urban	Rural	All	All	All	All
Current municipal spending *per capita*						
Mean	4,080	1,548	1,883	9,081	17,867	30,650
CV	0.28	0.40	0.56	0.21	0.26	0.30
Minimum	1,642	614	614	3,724	11,300	19,408
Maximum	7,050	5,299	7,050	20,746	59,595	102,138
Private income *per capita*						
Mean	23,319	9,150	10,358	38,946	80,176	92,599
CV	0.31	0.54	0.63	0.25	0.18	0.13
Minimum	11,643	2,621	2,621	18,007	53,503	68,032
Maximum	46,161	36,723	46,161	74,766	129,265	150,301
Correlation coefficient between current municipal spending *per capita* and private income *per capita*	0.71	0.80	0.87	0.65	−0.08	−0.28
Observations	63	676	739	463	453	434
Actual number of local governments	65	684	749	466	454	435

Note: CV is the coefficient of variation, defined as the standard deviation divided by the mean. All values are measured in 1999 NKr. Source for the consumer price index is Statistics Norway. Sources for 1934–35 are given in Table 4. Source for 1965, 1980 and 1995 is the Norwegian Social Science Data Services.

municipalities. But even within urban and rural municipalities, municipal spending was 4.3 and 8.6 times higher, respectively, in the municipality with the highest spending compared to the municipality with the lowest spending. A possible explanation may be differences in the fiscal base.[10] Private income *per capita* varied to a huge extent, and since a redistributive grant system was not much developed, this would be expected to lead to disparities in local

[10] Another possibility is variation in the private supply of local public goods. Unfortunately, little information about the extent of private supply is available, probably because there never has been much private supply. The Norwegian tradition has been to include all inhabitants in similar public services. Education is the only local public service where we have found information on private supply. In 1934–35, 2.0 per cent and 0.8 per cent of the pupils in primary school were enrolled in private schools in the cities and the rural municipalities, respectively. The share in private schools fell to 0.4 per cent in 1971 (data for 1965 are not available), and has thereafter increased to 0.6 per cent in 1980 and 1.5 per cent in 1995.

government spending. A thorough test of this hypothesis requires that we control for other factors influencing municipal spending, which is done in Section 5. However, the extremely high correlation between municipal spending and private income clearly indicates that private income was an important source of the variation. The bivariate correlation coefficient is 0.87 for the whole sample.

The real value of municipal spending was almost 20 times higher in 1995 than in 1934–35. In addition, the spread of spending measured by the coefficient of variation was lower. The reduction in the number of municipalities over time probably contributed to lower variation, both because most of the smallest municipalities have merged with other municipalities and because cities have merged with surrounding rural municipalities. This is consistent with the fact that the variation in 1995 is in line with the variation between the urban municipalities in 1934–35, and slightly lower than the variation between the rural municipalities.

For private income, the variation is clearly lower in the post-World War II period. While income was almost 20 times higher in the wealthiest municipality compared to the poorest municipality in 1934–35, the corresponding figure was about two in 1995. It seems as if national politics has succeeded in equalising private income across regions. The most important difference in regional policy, however, emerges when we examine the correlation between municipal spending and private income. The literature available describes a smooth transition towards redistribution starting up in the 1930s. However, and surprisingly for us, the correlation between municipal spending and private income is of almost the same magnitude in 1965 as in 1934–35. The sign of the correlation coefficient changes between 1965 and 1980. The grant system in the modern Norwegian welfare state overcompensates for low private income.[11] The grants were too low and the variation in private income too high for such a redistribution to be possible in the pre-World War II period.

Following the referendum on Norwegian membership of the European Economic Community in 1972, the emphasis on regional policy increased. Næss *et al.* (1987, ch. 5) document that non–matching grants increased rapidly in this period. This seems to be a necessary element in achieving a redistribution of the size we document for 1980 and 1995.

3. Models of local government decision-making

An economic model of local government decision-making identifies who the decision maker(s) is(are), and describes the economic environment in

[11] Notice that private income itself does not influence the grant level in the 1990s. The negative correlation between municipal spending and private income is probably a result of the importance of population in the grant system. Small municipalities get higher grants *per capita*, and they are likely to have lower income *per capita*. The grant system is described in Norwegian Official Reports (1996:1).

which the decisions are taken. The economic environment is traditionally described by a budget constraint. Regarding the identification of the decision maker(s), however, different approaches are used in the literature. Inman (1979) distinguishes between two models, the median voter model and the dominant party model. Both models highlight the trade-off between private and public consumption. The median voter model is the dominant approach in empirical analyses of local public sector size. If decisions regarding the allocation of the budget to different services are ignored, there is only one single local decision; how to divide the private income into private and public consumption. With some additional technical assumptions, a majority-rule voting process gives an outcome in accordance with the optimum for the median voter. The median voter model is explored in, for example, Borcherding and Deacon (1972), Bergstrom and Goodman (1973) and Fisher (1996, ch. 2 and 3).

In the dominant party model, the incumbent political party determines the outcome of local politics by maximising a well–behaved objective function. The model differs from the median voter model to the extent that the preferences of the incumbent party differ from the preferences of the median voter. The data available in this article do not include characteristics of the political parties, nor of the median voter or other agents who may have power in decision-making. Thus, for our purpose, these two models, and any other model where the decision maker(s) have a well-behaved objective function, give similar empirical guidelines.

Ideally, one would like to disentangle the demand function from the cost function of public services. However, because it is impossible to measure the quantity and price of public services, one can never directly estimate the cost function. Indirect evidence can be gained from assumptions regarding the functional form of the demand and cost functions (Schwab and Zampelli 1987). Such an investigation is outside the scope of the present study. We will, like the vast majority of the literature, only consider a reduced form of the expenditure decision.

The outcome of local politics is restricted by a budget constraint.

$$tY_m + A_m + B_m = pG_m, \tag{1}$$

where t is the (mean) income tax rate, Y_m is pre–tax income *per capita* (subscript m denotes *per capita* values, that is, mean values in the municipality), A_m is a lump–sum grant from the central government, B_m includes all other income components (the most important components are user charges, wealth taxes, property taxes and profit taxes) and p is the price (that is, cost) of the local public sector service G_m.[12] The cost of the local service

[12] The consequences of using mean values in empirical studies based on the median voter model are discussed in Borcherding and Deacon (1972), Pommerehne and Frey (1976) and Romer and Rosenthal (1979a). For other decision-making models, the mean income level can be the relevant income measure.

generally depends on factor prices, population (if public sector services are not pure 'private' goods) and different socioeconomic characteristics.

Equation (1) implies that the local government has a balanced budget. This is a common simplification, and is justified in a long-run perspective. We will also simplify the analysis by only considering the two most important local government income sources; income taxes tY_m and grants A_m. A balanced budget constraint for the inhabitants says that after-tax income is equal to consumption of private goods X_m. It must be the case that $(1 - t)$ $Y_m = X_m$. Combined with Equation (1), it follows that the budget constraint of the local government can be written

$$Y_m + A_m = X_m + pG_m. \tag{2}$$

The utility level of the decision maker(s) is assumed to be positively related to both public and private consumption. When the decision maker(s) maximise(s) an objective function with respect to X_m and G_m, subject to the budget constraint in Equation (2), the outcome yields a demand function for local public services of the form

$$G_m = f(Y_m,A_m,p,Z). \tag{3}$$

Z is a vector of local socio-demographic characteristics that may influence the objective function of the decision-maker. The hypotheses from the model are positive effects of income and grants, and a negative effect of the cost of the local public service. The aim of the rest of this article is to estimate log-linear versions of Equation (3). However, because quantity and price cannot be measured separately, local public spending *per capita* pG_m is our empirical measure of the local public service level. Some of the variation in pG_m may reflect how population size and socio–demographic characteristics influence the cost *p*. Thus, we are not able to distinguish between demand and cost effects of these variables.[13]

The model presented is clearly a simplification of actual local politics, and does not take into account different institutional structures that are present in our sample. The model is most suited for the case of direct democracy and cases where one political party is in the majority, since bargaining between political parties may be important for the outcome under representative democracy. In the empirical part of the article, we will test for equal behaviour in municipalities with direct and representative democracy, which is then indirectly a test of the relevance of the model. Different behaviour in the two municipality types indicates that the model specified is not a good description of the decision-making in at least one of the municipality types. Regarding municipalities under federal administration, we expect behaviour to differ. If the central government does not want a dif-

[13] For the consequences of neglecting price effects, see for example Romer and Rosenthal (1979b).

ferent outcome compared to the case with local autonomy, there is no need for central intervention. Particularly, we expect the central government to use grants to set a minimum level of local public services independent of private income and debt.

The next two sections discuss variation between local governments and determinants of local government spending in the fiscal year 1934–35. In Section 6, we return to a comparative discussion.

4. Data for 1934–35

Table 4 describes our data for the fiscal year 1934–35. In addition to current municipal spending, which excludes investments and debt charges and is therefore the best measure of the local public service level, Table 4 includes the explanatory variables used in the empirical analysis. They can be divided into four groups; economic variables (private income, grants, and debt), structural variables (population, acreage, and taxpayers *per capita*), age composition (children under 7, pupils, and the elderly) and occupational composition (farm workers, farmers, fishermen, manufacturing and commodity trade workers, service industry workers, craftsmen, self-employed, and non-employed). Most of the data are collected from official publications (NOS) from Statistics Norway. Most rural municipalities were representative democracies.[14] Interestingly, municipalities under federal administration do not have lower municipal spending than other rural municipalities. However, on average, they have lower private income; debt *per capita* at the start of the fiscal year is almost three times as high as in the other rural municipalities; and the share of taxpayers is lower. Municipalities with direct democracies tend to be small with low municipal spending, low private income and low debt.

There are clear differences between urban and rural municipalities other than with respect to municipal spending, private income and acreage. In urban municipalities, debt *per capita* is higher, and there are fewer children and pupils *per capita*. Regarding the occupational composition, about 60 per cent of men older than 15 are employed in agriculture or fishing (farm workers, farmers and fishermen) in rural municipalities, compared with only 6 per cent in the cities. The main industries in the cities are the service industry and manufacturing and commodity trade.

The huge regional variation in the pre-World War II period can be illustrated by the occupational structure. In 16 per cent of the rural municipalities,

[14] In Table 4, the urban municipalities under federal administration are excluded. No rural municipality with direct democracy was under federal administration. One urban and eight rural municipalities are excluded due to missing data. In addition, one urban municipality is excluded because we are sceptical about the data. In particular, the share of taxpayers *per capita* is above unity, and private sector income is extremely high.

Table 4. *Data definitions, data sources and descriptive statistics, 1934–35.*

Variables, definitions and sources		Urban	Rural		
			Representative democracy	Direct democracy	Federal administration
Current municipal spending	Mean	155.7	59.6	45.5	62.0
Total spending *per capita* less deficit last year, taxes regarded as lost, interest payments, down payments, loans and money set apart for funds, divided by population size. Nominal values. *Source*: NOS Municipal Finances.	St. dev.	43.6	23.6	11.5	30.4
	Min.	62.6	23.4	25.9	27.6
	Max.	268.8	202.0	88.9	185.4
Private income	Mean	899.2	355.7	276.4	303.2
Calculated income *per capita* from the assessment. Nominal values. *Source*: Statistical Information(*Statistiske Meddelelser*).	St. dev.	270.3	192.3	96.2	164.6
	Min.	443.9	99.9	144.8	133.3
	Max.	1,760	1,400	577.6	850.8
Grants	Mean	9.6	15.3	11.7	19.7
The sum of total grants from the central government and the county *per capita*. Nominal values. *Source*: NOS Municipal Finances.	St. dev.	4.1	7.3	7.3	8.0
	Min.	4.2	2.2	2.8	8.8
	Max.	27.4	54.7	33.5	43.7
Debt	Mean	492.7	118.4	38.3	339.3
Calculated as debt *per capita* at the start of the fiscal year. Nominal values. *Source*: Statistical Information.	St. dev.	370.1	154.9	37.5	326.0
	Min.	29.0	0.0	0.0	18.0
	Max.	1,800	1,163	181.0	1,431
Population	Mean	12,807	3,013	1,084	3,798
Source: NOS Population Census 1930.	St. dev.	34,759	4,210	643	2,593
	Min.	442	331	270	867
	Max.	253,120	86,972	2,902	11,373
Acreage	Mean	5.1	451.3	364.8	533.6
Squared kilometres. *Source*: NOS Population Census 1930.	St. dev.	10.2	676.5	502.6	519.4
	Min.	0.15	1.6	0.48	27.8
	Max.	63.3	8,639	2,094	2,012
Taxpayers per capita	Mean	0.41	0.38	0.39	0.34
The number of taxpayers divided by population size. *Source*: Statistical Information.	St. dev.	0.08	0.07	0.07	0.05
	Min.	0.18	0.12	0.25	0.26
	Max.	0.66	0.78	0.52	0.44
Children per capita	Mean	0.13	0.16	0.16	0.17
Inhabitants below 15 in age not enrolled in a municipal primary school, divided by population size. *Source*: NOS Population Census 1930.	St. dev.	0.02	0.02	0.02	0.02
	Min.	0.07	0.07	0.12	0.14
	Max.	0.18	0.30	0.22	0.23
Pupils per capita	Mean	0.13	0.15	0.15	0.16
Enrolment in municipal primary school divided by population size. Primary school was a 7 years + compulsory school. The vast majority of the enrolled pupils were 7–15 in age. *Source*: NOS School Statistics 1934–35.	St. dev.	0.03	0.02	0.03	0.01
	Min.	0.08	0.04	0.10	0.13
	Max.	0.27	0.22	0.20	0.19

Table 4. *Continued*

Elderly per capita	Mean	0.05	0.06	0.07	0.05
Inhabitants above 70 in age divided by	St. dev.	0.02	0.02	0.02	0.02
population size. *Source*: NOS Population	Min.	0.02	0.02	0.02	0.02
Census 1930.	Max.	0.11	0.13	0.11	0.08
Farm workers	Mean	0.00	0.24	0.25	0.28
The share of men above 15 in age working	St. dev.	–	0.13	0.13	0.20
at others', farm, nursery, or forest	Min.	–	0.01	0.00	0.00
(*hus-menn, tjenere, andre arbeidstakere ved jordbruk og gartneri, skogsarbeidere, fløtere og lense-arbeidere*). *Source*: NOS Population Census 1930.	Max.	–	0.64	0.49	0.64
Farmers	Mean	0.02	0.24	0.29	0.15
The share of men above 15 in age working	St. dev.	0.01	0.11	0.13	0.09
at their own farm, nursery, or forest, plus	Min.	0.00	0.00	0.00	0.00
blue–collar workers at these places.	Max.	0.07	0.55	0.54	0.32
Source: NOS Population Census 1930.					
Fishermen	Mean	0.04	0.13	0.20	0.19
The share of men above 15 in age working	St. dev.	0.06	0.20	0.25	0.27
as fishermen or hunters. *Source*: NOS	Min.	0.00	0.00	0.00	0.00
Population Census 1930.	Max.	0.34	0.80	0.77	0.79
Manufacturing and commodity	Mean	0.28	0.11	0.04	0.12
trade workers	St. dev.	0.10	0.11	0.04	0.15
The share of men above 15 that are	Min.	0.07	0.00	0.00	0.00
blue–collar or white–collar workers in	Max.	0.51	0.66	0.22	0.64
manufacturing or commodity trade.					
Source: NOS Population Census 1930.					
Service industry workers	Mean	0.24	0.06	0.04	0.05
The share of men above 15 in age working	St. dev.	0.07	0.06	0.04	0.03
in banks, insurance, hotels, restaurants,	Min.	0.11	0.00	0.00	0.01
post, maritime transport, railway, or other	Max.	0.42	0.45	0.17	0.15
transportation, *Source*: NOS Population					
Census 1930.					
Craftsmen	Mean	0.15	0.06	0.04	0.06
The share of men above 15 in age working	St. dev.	0.04	0.04	0.03	0.03
as craftsmen. *Source*: NOS Population	Min.	0.08	0.00	0.00	0.01
Census 1930.	Max.	0.26	0.44	0.77	0.16
Self–employed	Mean	0.06	0.03	0.03	0.05
The share of men above 15 in age working	St. dev.	0.02	0.03	0.03	0.04
as self–employed in manufacturing or	Min.	0.03	0.00	0.01	0.01
commodity trade. *Source*: NOS Population	Max.	0.11	0.27	0.14	0.23
Census 1930.					
Non–employed	Mean	0.21	0.13	0.11	0.11
The share of men above 15 without an	St. dev.	0.04	0.04	0.03	0.04
occupation. *Source*: NOS Population	Min.	0.14	0.04	0.05	0.05
Census 1930.	Max.	0.39	0.41	0.18	0.22
Observations		61	605	35	36

Sources: The sources for municipality types are NOS Municipal Elections and *Stortingsmelding* 19 in *Stortingsforhandlinger* no. 2, 1936.

more than 70 per cent of men aged above 15 worked in agriculture (farm workers and farmers). More than 20 per cent were non-employed in 49 per cent of the urban municipalities and 4 per cent of the rural municipalities. In the most northern county, Finnmark, more than 50 per cent were fishermen or hunters in 65 per cent of the rural municipalities. The variation in occupational composition may explain a large part of the differences in private income. This is in particular likely if under-reporting of income is more common for some occupations (such as farming and fishing) than for other occupations. Thus, declared private income does not necessarily need to be the main source of local government spending variation.

5. Determinants of municipal spending in 1934–35

Table 5 reports the results from the regression analysis of the log of municipal spending *per capita* for the fiscal year 1934–35. In the first column we have included all municipality types. The effect of private income is strongly positive and highly significant with an income elasticity of 0.52. Since the income elasticity is below unity, the variation in local government spending is lower than the variation in private income. The importance of income can be illustrated by using the variation in the data. Keeping all other factors constant, an increase in the private income level of two standard deviations from the mean (that is 130 per cent) increases municipal spending by 70 per cent (that is 1.25 standard deviations). At mean values of municipal spending and private income in the sample, a rise in income of NKr 100 increases spending by NKr 9.

Table 5 also splits the sample into different municipality types. The income elasticity seems to be independent of municipality type. It is somewhat lower under direct democracy and somewhat higher under federal administration. However, since the number of observations in these cases is low (35 and 36, respectively), these estimates are not as precise as for the whole sample and for rural municipalities with representative democracy. Another type of behavioural difference between the municipality types may be indicated by the constant term. Do the spending levels, conditioned on the levels of the independent variables, differ across the municipality types? In the regression capturing all local governments, we include dummy variables for municipality types to test whether the spending levels differ (the omitted category is rural municipalities with representative democracy). We find that spending is 45 per cent higher in urban municipalities than in rural municipalities with representative democracy, all other factors equal. Even though there is a positive income effect and income is higher in urban municipalities, this cannot explain the whole gap between spending in urban and rural municipalities. Regarding federal administration, one might expect spending to be lower since such areas need federal assistance. On the other hand, the federal assistance may lead to a spending level equal to otherwise similar local

Table 5. *Sources of variation in local public services, 1934–35. Dependent variable is log of current municipal spending.*

	All	Urban	Rural		
			Represent. democracy	Direct democracy	Federal administ.
Log (Private income)	0.520	0.501	0.513	0.412	0.733
	(21.5)***	(3.68)***	(20.4)***	(2.94)***	(5.69)***
Log (Grant)	0.299	0.227	0.307	0.152	0.273
	(19.1)***	(4.31)***	(18.1)***	(2.12)**	(5.90)***
Debt*0.001	0.133	0.011	0.150	0.111	0.018
	(3.95)***	(0.23)	(3.08)***	(0.16)	(0.34)
Log (Population)	0.041	0.057	0.024	−0.000	−0.022
	(3.82)***	(1.79)*	(1.99)**	(0.00)	(0.87)
Log (Acreage)	−0.009	−0.009	−0.010	0.017	0.027
	(1.56)	(0.30)	(1.64)	(0.47)	(1.52)
Log (Taxpayers *per capita*)	−0.159	−0.213	−0.159	−0.020	−0.222
	(3.99)***	(1.68)*	(3.70)***	(0.12)	(1.74)*
Log (Children *per capita*)	−0.207	−0.560	−0.125	−0.553	−0.023
	(4.15)***	(3.79)***	(2.28)**	(1.45)	(0.13)
Log (Pupils *per capita*)	−0.153	−0.317	−0.093	−0.277	−0.028
	(2.63)***	(1.92)*	(1.34)	(0.74)	(0.14)
Log (Elderly *per capita*)	−0.014	−0.180	0.024	−0.586	0.026
	(0.45)	(2.50)**	(0.64)	(2.39)**	(0.21)
Farm workers	−0.123	–	−0.040	0.246	−0.204
	(1.47)		(0.43)	(0.31)	(0.84)
Farmers	−0.422	−0.829	−0.473	0.909	0.043
	(4.10)***	(0.55)	(4.23)***	(0.76)	(0.09)
Fishermen	−0.390	−1.105	−0.382	0.126	−0.263
	(5.28)***	(3.22)***	(4.91)***	(0.12)	(0.87)
Service industry workers	−0.517	−0.118	−0.373	−1.398	0.246
	(4.03)***	(0.43)	(2.75)***	(0.98)	(0.50)
Craftsmen	−0.642	0.172	−0.527	−1.330	−0.418
	(4.41)***	(0.29)	(3.58)***	(0.87)	(0.51)
Self-employed	−0.358	−2.229	0.111	−1.054	−1.522
	(1.44)	(2.07)**	(0.46)	(0.53)	(3.74)***
Non-employed	−0.362	−0.213	0.348	0.984	0.054
	(1.95)*	(0.45)	(1.75)*	(0.57)	(0.07)
Urban	0.454	–	–	–	–
	(11.5)***				
Direct democracy	0.031	–	–	–	–
	(1.05)				
Federal administration	−0.026	–	–	–	–
	(1.22)				
Constant	−0.598	−1.586	−0.110	−2.426	−0.920
	(2.11)**	(1.77)*	(0.35)	(1.37)	(0.86)
Observations	739	61	605	35	36
R^2	0.897	0.849	0.839	0.682	0.970

Notes: Estimation method is ordinary least squares where the standard errors are estimated using the heteroskedastic–consistent method suggested by White (1980). *t*–values are in parentheses. *, ** and *** denote significant effect at 10 per cent, 5 per cent and 1 per cent levels, respectively.

governments. The effect of the dummy variable for federal administration is negative and indicates 3 per cent lower spending. The results also indicate a slightly higher spending level in municipalities with direct democracy compared to municipalities with representative democracy.[15]

To make formal tests of the hypothesis of equal local government behaviour in different municipality types, we use the test for equality of several regressions suggested by Kmenta (1990, p. 421).[16] First, we cannot reject the hypothesis that the coefficients differ between municipality types even though we allow the constant terms to differ.[17] This seems to be due to different effects of debt and age composition in the urban municipalities. We believe that this result is due to different regulation of urban and rural municipalities, and that the urban municipalities offered some city–specific services. Second, we test for differences between rural municipalities with representative and direct democracies. These municipalities are equal in all aspects except for the political system. Now we cannot reject the hypothesis that the models are equal,[18] which indicates that the outcome is independent of the differences in the decision-making structure in the two municipality types. Third, we expect the behaviour in municipalities under federal administration to differ from the others because change in behaviour must be the rationale for federal intervention. However, we cannot reject the hypothesis of equal coefficients in all rural municipalities.[19]

[15] Notice that the effects of the dummy variables for federal administration and direct democracy are not significant at the 10 per cent level. However, if we exclude the urban municipalities under federal administration from the equation, the coefficient on the dummy variable for federal administration is significant at the 10 per cent level, and indicates 4 per cent lower spending in rural municipalities under federal administration than in rural municipalities with representative democracy.

[16] The test statistic is $((SSE_R - SSE_U)/r)/(SSE_U/v) \sim F(r,v)$, where SSE_R is the error sum of squares when equal effects in each municipality type is imposed, SSE_U is the error sum of squares when we allow for different effects in the different municipality types, v is the number of degrees of freedom in the 'unrestricted' model and r is the number of restrictions. The number of restrictions is equal to $(i-1)*K$, where i is the number of municipality types and K is the number of independent variables when we let the constant term vary across municipality types.

[17] For the null hypothesis of equal coefficients for all municipality types, the test statistic is $F(47,672) = 1.58$ when we allow the constant terms to differ and $F(50,672) = 5.03$ when we restrict the constant terms to be equal. Both test statistics are significant at the 5 per cent level.

[18] For the null hypothesis of equal coefficients for municipalities with representative and direct democracy, the test statistic is $F(16,606) = 1.41$ when we allow the constant terms to differ and $F(17,606) = 1.36$ when we restrict the constant terms to be equal. Both test statistics are insignificant at the 10 per cent level.

[19] For the null hypothesis of equal coefficients for all rural municipality types, the test statistic is $F(32,625) = 1.05$ when we allow the constant terms to differ and $F(34,625) = 1.10$ when we restrict the constant terms to be equal. Both test statistics are insignificant at the 10 per cent level.

The results for municipalities under federal administration are surprising. We expected that the central government used grants to set a minimum level of local public services independent of income and debt in these municipalities. Thus, the hypothesis was 'no effect of income, grants and debt'. In contrast to municipalities with representative democracy, we find no effect of debt. However, the income effect is significantly different from zero. Notice, however, that if our hypothesis is true, Table 5 reports an inverse grant equation. We have also estimated a grant equation. The effect of income in the grant equation is negative as expected, but it is also a strong determinant of municipal spending which indicates that the central government does not seek a given spending level in these municipalities. The adjustment seems to be more complex than simply a central intervention to secure a given minimum of local public services. However, we are not able to discriminate between different alternatives to simple intervention. We cannot rule out that the interaction between the central level and the local councils was important for the outcome, and we cannot reject the hypothesis that the federal intervention had no effect.

The effect of grants is positive in all equations. One implication is that grants can be used to achieve equalisation. If the central government compensates regions with low private income, the government can achieve municipal spending of similar size as in wealthier regions. To get an idea of whether grants were used for equalisation purposes, Table 6 reports bivariate correlation coefficients between grants and some other independent variables. Grants are negatively correlated with private income when we look at all local governments. However, this result is due to differences between urban and rural municipalities. Within the largest group, rural municipalities with representative democracy, the correlation is absent. Surprisingly, for rural municipalities under federal administration, the correlation is positive, and the correlation between grant and debt is negative. For the cities and rural municipalities with direct democracy, the correlations are in accordance with our expectations.

Even though elements in the grant system in the 1930s had the aim of reducing inequality, significant effects in this direction seem to have arisen only after World War II. Most of the grants to urban municipalities in the 1930s were in support of primary schools. The educational service was the local public service with the highest central regulation. Accordingly, the central government supported the school system. Thus, there is a high correlation between grants and pupils *per capita*. This correlation is smaller for rural than for urban municipalities because the grant system was more developed and more complex in rural municipalities. Regarding occupational structure, there is some evidence of lower grants in municipalities with a high share of men in high-income occupations. Grants are negatively correlated with the share of farmers and service industry workers.

Table 6. *Correlation coefficients for grants, 1934–35.*

	All	Urban	Rural		
			Repre-sentative democracy	Direct democracy	Federal administra-tion
Private income	−0.16	−0.35	−0.02	−0.47	0.32
Debt	−0.01	0.21	0.08	0.50	−0.17
Pupils *per capita*	0.22	0.38	0.15	0.34	0.13
Farm workers	0.18	–	0.08	0.12	0.06
Farmers	−0.06	0.07	−0.18	−0.04	−0.16
Service industry	−0.19	−0.06	−0.07	−0.29	0.44

Since interest payments and debt instalments are not included in our expenditure measure, we expect local debt *per capita* at the start of the fiscal year to have a negative effect on municipal spending. In addition to current spending, the tax income must finance debt charges. However, we find a positive effect of debt. Local governments with high debt have higher current spending.[20] We speculate that high debt reflects higher demand for local public services.

There is a negative effect of taxpayers *per capita* as expected. For given mean private income, more taxpayers *per capita* implies lower income per taxpayer. The result may also reflect a lower need for public support among taxpayers than among other inhabitants. Transfers to the poor accounted for a large part of the spending as seen in Table 1, and the number in poverty is likely to be negatively correlated with the share of taxpayers. We also include three measures of the age distribution. The public services directed towards the elderly were not much developed compared to the modern welfare state. This may explain the negative (but mostly insignificant) effect, which is in contrast to studies of later periods, see for example Bergstrom and Goodman (1973), Pommerehne and Frey (1976), Borge (1995) and Aronsson and Wikström (1996). The degree of centralisation may also contribute to the different results. In the pre-World War II period, an unfavourable age composition was not compensated *via* the grant system to the same degree as in later decades. The negative effect of pupils *per capita* (although only significant for the cities) is surprising, while for children under 7 *per capita*, the negative effect is as expected, since no services were directed towards this age group.

[20] Since the debt is equal to zero in some local governments, it is not included in logarithmic form. The estimated coefficient is a quasi–elasticity. When debt *per capita* increases by NKr 100, our result implies that municipal spending increases by 1.5 per cent, that is NKr 0.9 at the mean value of municipal spending.

The occupational composition has an important impact. One interpretation of the results is that people employed in high-income occupations demand lower local public spending than people employed in low-income occupations. Compared with manufacturing and commodity trade workers, farmers, employees in service industries, craftsmen and self-employed all demanded about 40–60 per cent lower spending. In contrast to this interpretation, however, the shares of fishermen and the non-employed have the same effect. Only farm workers had an effect close to that of manufacturing and commodity trade workers. It may, however, be difficult to disentangle the effect of occupational composition and ideology. Since a large share of the manufacturing and commodity trade workers voted for the Labour party, ideological differences may explain our results.

6. A comparative analysis

To compare local government behaviour in different time periods and under different degrees of local autonomy, we have estimated similar local government spending equations for the fiscal years 1934–35, 1965, 1980 and 1995. Comparative descriptive statistics are presented in the Appendix Table. As a result of the merging of local governments and population growth, mean population size has increased. A more comprehensive income tax system has increased the number of taxpayers *per capita*, and the share of the elderly has increased. The comparative regression results are presented in Table 7. In order to make the spending equations comparable over time, some minor changes were made to the specification in the previous section.[21] The changes in the specification do not change the major features of the model.

The effect of income is remarkably similar over time. The income elasticity is almost identical in the first year (1934–35) and the last year (1995) of the analysis. The elasticity varies between 0.53 (1934–35) and 0.73 (1980). The results are close to several studies of local governments in the US using data for the 1960s as summarised by Inman (1979). For example Bergstrom and Goodman (1973) find an income elasticity of 0.64. For Swiss municipalities with representative democracies, Pommerehne (1978) finds income elasticities in the range 0.4–1.0 in different specifications. Using Swedish data from 1990, Aronsson and Wikström (1996) report an income elasticity of 0.82. For fee income in Norwegian local governments, Borge (1995) find an income elasticity of 0.38. Altogether, the reaction to changes in private income seems to be quite independent of country, time period and institutional structure.

[21] Debt is excluded from the regression, the occupational groups farmers and farm workers are merged, the occupational groups service industry workers, craftsmen and self–employed are merged, and we do not distinguish between representative democracy, direct democracy and federal administration.

Table 7. *Sources of variation in local public services, comparative evidence. Dependent variable is log of current municipal spending.*

	1934–35	1965	1980	1995
	All	All	All	All
Log (Private income)	0.527	0.572	0.730	0.547
	(21.7)***	(12.2)***	(6.49)**	(3.33)***
Log (Grant)	0.313	0.222	0.336	0.336
	(20.8)***	(8.59)***	(11.22)***	(5.41)***
Log (Population)	0.057	−0.046	−0.029	−0.092
	(5.34)***	(3.80)***	(2.19)**	(3.39)***
Log (Acreage)	−0.011	0.012	0.014	0.015
	(1.89)*	(2.02)**	(1.92)*	(2.16)**
Log (Taxpayers *per capita*)	−-0.156	0.075	−0.120	1.762
	(3.81)***	(1.76)*	(0.91)	(3.84)***
Log (Children *per capita*)	−0.203	−0.077	−0.052	0.412
	(3.96)***	(3.56)***	(0.85)	(3.82)***
Log (Pupils *per capita*)	−0.169	−0.204	−0.248	0.295
	(2.86)***	(3.81)***	(2.12)**	(2.70)***
Log (Elderly *per capita*)	−0.046	−0.103	−0.017	0.035
	(1.49)	(2.20)**	(0.38)	(0.67)
Farmers and Farm workers	−0.184	−0.422	0.354	−0.142
	(2.48)**	(5.58)***	(1.99)**	(0.86)
Fishermen	−0.367	−0.369	0.697	−0.370
	(4.95)***	(4.36)***	(2.28)**	(2.59)***
Service industry workers, Craftsmen and Self-employed	−0.503	−0.184	0.571	0.009
	(5.29)***	(1.89)*	(5.67)***	(0.09)
Non-employed	−0.355	−0.462	0.499	0.830
	(1.88)*	(1.43)	(1.89)*	(2.81)***
Urban	0.500	0.134	0.065	0.096
	(13.3)***	(5.33)	(2.80)***	(3.27)***
Constant	−0.932	−0.672	−2.317	2.581
	(3.51)***	(2.78)***	(1.56)	(3.35)***
Observations	739	463	453	434
R^2	0.893	0.686	0.694	0.715

Note: Estimation method is ordinary least squares where the standard errors are estimated using the heteroskedastic–consistent method suggested by White (1980). *t*–values are in parentheses. *, ** and *** denote significant effect at 10 per cent, 5 per cent and 1 per cent level, respectively.

There is also a stable effect of central government grants. The elasticity varies from 0.22 (1965) to 0.34 (1980 and 1995). The fairly constant effects of economic conditions are surprising given the changes in the institutional structure and central government regulation. To get an insight into how the grant system has changed, Table 8 presents correlation coefficients for grants. In the first part of the empirical period, grants became more tightly

related to the private income level. From 1934–35 to 1965, the bivariate correlation coefficient decreased from −0.16 to −0.69. Thereafter, the correlation was reduced, but it is still stronger than in the 1930s. The reduced covariance between grants and private income since the 1960s indicates that private income *per se* has been of reduced importance for redistribution.

The negative correlation between grants and population size reflects economies of scale in the production of local public services, which is compensated *via* the grant system. The growth in the correlation between grants and the share of elderly reflects the fact that care for the elderly has been of increased importance for local governments. The correlation between grants and the number of pupils is negative in 1980 and 1995, which must reflect a correlation between the number of pupils and other factors important for grants since the number of pupils has an independent positive impact in the rules determining total grants. In particular, the correlation between the number of pupils and the elderly is highly negative. The correlation with occupational structure has increased, while cities have always received lower grants.

For some variables, there are interesting changes in their effect on local government spending. The effect of children below seven years in age and elderly above 70 years in age has become larger, which reflects the development of kindergartens and municipal care for the elderly. The impact of occupational composition has become smaller, which is likely to reflect equalisation politics. The spending difference between urban and rural municipalities has declined, but it has not disappeared even though all local governments now supply the same services under similar regulations, in contrast to the pre-World War II period.[22] The fact that only densely populated areas are allowed to levy property taxes may contribute to the difference.

The evidence in this section indicates two important sources behind the reduced variation in local public sector service levels during the post-World War II period compared with the prewar years. First, while the elasticity of private income with respect to municipal spending is fairly constant over time, the variation in private income has declined. Thus, equalisation of private income across the country has contributed to more equal local public service levels across local governments. Second, changes in the grant policy have reduced inequality. While the elasticity of local government spending with respect to central government grants is stable over time, grants have become a larger part of the local governments' budgets. This has an equalising effect if grants are used for redistributional purposes. In the 1930s, a higher grant level in the rural municipalities than in the cities reduced the disparity in local government spending. On the other hand, there was only a weak correlation between grants and private income in the largest group

[22] Almost all urban municipalities in the 1930s merged during the 1960s with surrounding rural municipalities. Urban municipalities in 1965–1995 are defined as municipalities including a city.

Table 8. *Correlation coefficients for grants, comparative evidence.*

	1934–35	1965	1980	1995
	All	All	All	All
Private income	−0.16	−0.69	−0.52	−0.28
Population	−0.06	−0.31	−0.34	−0.26
Pupils *per capita*	0.22	0.51	−0.04	−0.14
Elderly *per capita*	−0.15	0.11	0.28	0.36
Farmers and Farm workers	0.08	0.07	0.27	0.23
Service industry workers, Craftsmen and Self–employed	−0.18	−0.21	−0.42	−0.35
Urban	−0.22	−0.13	−0.28	−0.17

of municipalities (rural municipalities with representative democracy). In addition, the evidence indicates that grants have been used for redistributional purposes to an increasing degree. Grants have become more closely targeted towards local governments with low private income and a 'costly' population structure (few inhabitants and a large share of the elderly).

7. Conclusion

This article shows that the composition of local government spending during the twentieth century in Norway changed, first of all because health care increased. In the first part of the twentieth century, the spending share on infrastructure fell, while between the 1930s and the 1990s, support of the poor declined. The shares of expenditure on other local public services, primarily education, have been almost constant. The changes on the income side of the local government budgets have been greater. The share of local income taxes has declined, and the local government discretion to set income tax rates has been eliminated. Thus, due to equalisation policies after World War II, the correlation between local government spending and private income has changed from being strongly positive to being negative. We have documented that the major change occurred between 1965 and 1980, achieved by a combination of strict restrictions on local freedom to set the tax rate, and high central government grants towards low-income areas. In this way, municipal spending was held down in regions with high private income, while grants were used to increase spending in regions with low private income.

The regional variation in the 1930s was partly due to the occurrence of different municipality types. Municipal current spending was three times higher in urban municipalities than in rural municipalities. In addition, some municipalities were under federal administration and some had a

non–party system. Both the abolition of the distinction between urban and rural municipalities and the evolution towards representative democracy in each local government have reduced the variation between local governments over time.

In the empirical analysis of the fiscal year 1934–35 we find small differences in local government behaviour across municipality types. The income elasticity was about 0.5 in all municipality types. Because of the huge variation in private income, private income was the most important factor behind the disparity in municipal spending. The positive effect of grants may have worked in the other direction, even though grants were too low to have had a major effect on the distribution of municipal spending. However, the evidence indicates that grants were set in a limited redistributive way even though rules and institutions for redistribution from rich to poor local governments were introduced in the 1930s. These new institutions seem to have made a major impact only after the 1960s.

The effect of private sector income on local government spending was similar in the post-World War II period and in 1934–35. This adds to the evidence in the literature that the income effect is independent of the institutional setting. Thus, the marked decrease in regional disparity in private income has strongly reduced the disparity in local government service levels. To fully understand the causes of reduced regional inequality, one must therefore have some idea of why private income levels have converged over time. The neoclassical economic growth model predicts that income *per capita* in different countries (or regions) converges because poor countries have higher marginal products of capital. Several empirical papers support this view, see for example Barro (1991). Persson (1997) shows that *per capita* income in Swedish counties converged during the twentieth century. This has, however, often been a political goal, and particularly so in Norway. Thus, it is hard to disentangle the effects of 'market forces' and various kinds of regional policy targeting low-income regions.

In the empirical analysis we also find that the effect of central government grants seems to be stable over time. Thus, the potential to use the grants for redistributional purposes has not changed. We have argued that redistribution through the grant system has increased for two reasons. First, central government grants have become a larger part of local government income. Second, the grants have been more closely targeted towards local governments with low private income and a 'costly' population structure.

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Appendix

Appendix Table: *Descriptive statistics.*

	1934–35	1965	1980	1995
	All	All	All	All
Current municipal spending	1,883 [1,122]	9,081 [1,943]	16,452 [4,277]	30,650 [9,173]
Private income	10,358 [6,499]	38,946 [9,825]	73,828 [13,276]	92,599 [11,721]
Grant	389 [193]	2,401 [1,164]	5,725 [3,684]	15,058 [7,084]
Population	3,785 [19,990]	6,704 [9,232]	8,033 [14,510]	8,906 [16,676]
Acreage	413 [644]	655 [841]	676 [838]	697 [834]
Taxpayers *per capita*	0.38 [0.08]	0.44 [0.10]	0.53 [0.04]	0.70 [0.03]
Children *per capita*	0.16 [0.02]	0.14 [0.05]	0.09 [0.02]	0.09 [0.01]
Pupils *per capita*	0.14 [0.02]	0.14 [0.02]	0.15 [0.02]	0.12 [0.02]
Elderly *per capita*	0.06 [0.02]	0.08 [0.02]	0.11 [0.03]	0.13 [0.03]
Farmers and Farm workers (share)	0.45 [0.24]	0.26 [0.16]	0.09 [0.06]	0.09 [0.07]
Fishermen (share)	0.13 [0.20]	0.08 [0.13]	0.02 [0.04]	0.03 [0.06]
Manufacturing (share)	0.12 [0.12]	0.27 [0.13]	0.24 [0.11]	0.27 [0.08]
Service industry workers, Craftsmen and Self-employed (share)	0.17 [0.12]	0.21 [0.08]	0.41 [0.09]	0.31 [0.09]
Non-employed (share)	0.14 [0.05]	0.18 [0.03]	0.24 [0.05]	0.31 [0.05]
Urban	0.09 [0.28]	0.10 [0.30]	0.10 [0.30]	0.10 [0.30]
Observations	739	463	453	434

Notes and sources: See Table 1 for sources for 1934–35. Source for 1965, 1980 and 1995 is the Norwegian Social Science Data Services. Mean values with standard deviations in brackets. Units for the variables are defined in Table 4.