

Economic and political determinants of fee income in Norwegian local governments*

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Abstract. This paper presents an empirical analysis of the determinants of fee income in Norwegian local governments. The point of departure is a representative voter model emphasizing the effects of pure economic variables. The benchmark model is extended by including two aspects of the political system: ideology and strength. It is evident that increased socialist influence increases the size of the local public sector, while a strong political leadership has an advantage in opposing pressure to increase spending.

1. Introduction

Norwegian local governments increased fee income sharply during the 1980s. This development is a result of both higher user fees and the increased production of services subject to such charges. Economists typically claim that user charges improve efficiency, arguing that the price mechanism is the best way of rationing scarce resources. This argument also applies to publicly-provided private goods such as kindergartens, care for the elderly, and garbage collection. The general public has been more reluctant to applaud the increasing reliance on user charges. A common viewpoint is that fee income is just another tax introduced by politicians and bureaucrats to increase the size of the public sector. In the present paper we make no attempt to analyze whether or not increasing user charges improves efficiency. Our purpose is to provide a positive analysis of the economic and political determinants of fee income.

The modelling is inspired by the Norwegian institutional context. Due to the

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centralized system of financing, fee income can be treated as the major tax instrument available to the local authorities. A representative voter model emphasizing the role of demand variables such as private income, the economic situation of the local authority, and sociodemographic factors, serves as a benchmark. The benchmark model is extended by including variables describing the local political system. The local authorities are organized as representative democracies, and are an important element of the Norwegian democratic system. The national parties are key players, and although the local political system is designed to promote consensus, the national struggle between the socialist camp and the non-socialist camp is evident at the local level as well. We analyze if and how the political system affects the local decision to tax. Two aspects of the political system are captured: ideology and strength. The hypotheses are that socialists prefer a larger local public sector than non-socialists and that a strong political leadership has an advantage in opposing pressure from special interest groups to increase spending.

The rest of the paper is organized as follows: Section 2 discusses the empirical background. The benchmark model for the determination of fee income is presented in Section 3. Section 4 discusses the data and makes the model ready for empirical testing. The estimation results, based on a large panel data set, are discussed in Section 5. In Section 6 the benchmark demand model is extended by introducing political factors. Finally, Section 7 summarizes the main findings of the paper.

2. Empirical background

Local income tax and grants from the central government are the two main revenue sources of the Norwegian local authorities, while fee income ranks third in importance. The local income tax rate is severely restricted by the central authorities. In principle the municipalities can choose a tax rate between 12 and 13.5%, but during the period under study, all had chosen the maximal rate. Within this income-tax revenue sharing system, the revenues from the local tax base can be treated as exogenous from the point of view of the local authorities.¹

The centralized system of financing has motivated empirical analyses such as Rattsø (1989), Borge and Rattsø (1993a), and Borge, Rattsø and Sørensen (1994). These studies focus extensively on the expenditure side of the budgets, i.e., they analyze how a fixed total budget is allocated among different services. The claim is that the national government controls the revenues of each local authority through the grant system and income-tax revenue sharing. This assumption may be questioned because of the sharp increase in fee income during the recent years.

Table 1. Average free income 1980–90^a

Year	Fees per capita ^b	Share of exog. revenue (%)	Share of taxes (%)	Share of grants (%)
1980	810	7.6	13.0	26.3
1981	982	8.8	14.8	30.9
1982	1115	9.6	16.5	32.4
1983	1254	10.6	18.6	34.4
1984	1392	11.0	20.8	31.5
1985	1478	10.8	20.4	30.5
1986	1540	11.3	20.3	33.9
1987	1582	11.9	21.6	35.7
1988	2018	12.8	28.6	28.6
1989	2150	13.2	30.8	28.2
1990	2301	13.7	31.3	29.4

^a Unweighted averages based on data for 414 (out of 448) local governments.

^b Measured in real 1990 Norwegian kroner (NOK).

Source: The Central Bureau of Statistics.

Table 1 documents the increasing reliance on user charges during the period under study. Fee income per capita (measured in real terms) had nearly tripled in 1990 compared to 1980. The increase from 810 NOK to 2310 NOK represents a real annual growth rate of 11.1%. Part of this growth is due to a shift in the functional responsibility between the counties and the municipalities. In 1988 the responsibility for some health care institutions was transferred from the counties to the municipalities, bringing with it an increase in fee income by more than 25% in real terms.² However, the increase in fee income is huge even when this fact is taken into account. Fees per capita almost doubled from 1980 to 1987, a yearly real growth of 10.0%. After 1988 growth has been slower, an average of 6.8% per year.

During the 1980s fee income grew much faster than exogenous revenue (the sum of grants and income-tax revenue sharing). Exogenous revenue grew by 4.7% per year, and fee income almost doubled as share of the two main revenue sources from 1980 to 1990. Grants and revenue sharing showed varying growth patterns. While grants from the central government grew almost as fast as fee income (9.8% per year in real terms), income-tax revenue sharing only grew by 1.7% per year. As a result, fee income remained more or less constant expressed as a percentage of grants, while its share of income-tax revenue sharing increased from 13% in 1980 to more than 30% in 1990. Again, part of the trend is due to the shift in the functional responsibility between the counties and the municipalities. The national government compensated the local authorities for this increased responsibility by means of grants rather than by allowing the local authorities to tax the local tax base at a higher rate. As a consequence, fee income increased sharply as percentage of direct taxes from 1987

Table 2. Cross-section variation in fee income, 1990

Fees per capita:	0–1500	1500–2000	2000–2500	2500–3000	3000–4500
N ^a	33	97	145	94	45

^a The number of municipalities in each interval.

Source: The Central Bureau of Statistics.

to 1988, while it decreased as a percentage of grants. The clear message from Table 1 is that user charges have become a far more important revenue source for Norwegian local governments. A similar development for U.S. local authorities during the last three decades is documented by Netzer (1992).

As can be seen from Table 2, the cross-section variation is substantial as well. Maximum fee income per capita (4381 NOK) is more than four times the minimum (937 NOK). Approximately one third of the authorities have fee income per capita below 2000 NOK, one third are in the interval 2000–2500 NOK, and one third have fee income per capita above 2500 NOK.

3. A model for the determination of fee income

The key assumption of this paper is that user fees are fiscally motivated, i.e., their purpose is to raise revenue in order to finance the production of local public services. The assumption that user charges only have a revenue-raising effect seems reasonable for the services provided by Norwegian local governments for which there is either demand surplus (kindergartens, care for the elderly) or demand is compulsory (garbage collection). User charges are to little or no extent motivated by a desire to clear the market for publicly-provided private goods. Consequently, we treat fee income as the major local tax instrument available to the local authorities.

The spending and taxing decisions are closely related through the local government budget restriction. In a single-service-single-tax jurisdiction, increased expenditure translates directly into higher taxes. Consequently, the spending equation captures all information about the taxing decision.³ The special school districts in the U.S., in which a single service is financed by property-taxation, is an example of such a system. Innumerable researchers have used data for these districts to estimate expenditure equations based on the median voter approach. See Inman (1979a), Wildasin (1986: Ch. 3) and Rubinfeld (1987) for surveys of this literature.

The relationship between spending and taxation is less clear when the community provides several services and/or several tax instruments are available. First, increased spending in one sector may be partly financed by tax increases and partly by cutbacks in other sectors. Second, a combination of tax instru-

ments may be used to increase aggregate taxation. Feldstein and Metcalf (1987), Holtz-Eakin (1988) and Inman (1979b, 1989) are examples of studies that analyze both the aggregate level of taxation and the choice between several tax instruments.

Norwegian local governments are multi-purpose authorities which provide services such as primary education, health care, kindergartens, cultural services, garbage collection, and, subject to minor legal regulations, they are free to allocate their budget among these services. However, the revenue side of the budget is severely restricted by the central government, implying that identifying the determinants of fee income also provides information about total expenditure.

The point of departure is a representative voter model emphasizing the role of demand variables. The local decision-making process is described as if the utility function of the pivotal voter is maximized subject to the relevant resource constraint. The approach has proved to be a useful benchmark for both theoretical and empirical work (Wildasin, 1986: Ch. 3). We assume that the preferences of the pivotal voter can be captured by the following separable utility function:

$$U = u_1(x_1; YO) + u_2(x_2; CH, EL) + u_y(y; \gamma) \quad (1)$$

where x_1 is the per capita service production of services provided free of charge, x_2 the per capita provision of services subject to user charges and y the level of private consumption. The u -functions are increasing and concave in their arguments (x_1 , x_2 , and y respectively).

Kindergartens, primary education, and care for the elderly are among the services provided at the local level. Since these services are directed towards specific client groups, the age composition of the population will affect the demand for local public services. As documented by Rattsø (1989), Borge and Rattsø (1993a), and Borge, Rattsø and Sørensen (1994), increased shares of children (CH), youths, (YO), and elderly (EL) increase the demand for kindergartens, primary education, and care for the elderly, respectively.⁴ According to national law, the local authorities are not allowed to charge for educational services, while user fees are widely set for child-care services and care for the elderly. Consequently, we assume that YO increases the marginal utility of services provided free of charge and that CH and EL increase the marginal utility of services subject to user charges. Finally, γ is a shift parameter that increases the marginal utility of private consumption.

The users are charged a fee (f) per unit of x_2 . According to national law, this user fee can not exceed the average production cost. If the user fee should exceed the average production cost, the regional commissioner (*fylkesmannen*) can deny to approve the municipal budget and instruct the municipality to

reduce the user fee and the aggregate level of spending. However, we will argue that this constraint is not binding. First, on average the services subject to user charges are highly subsidized. Second, even if the user fee exceeds the average production cost for one or several services, it is not easy to detect because the average cost is difficult to observe and because it is not clear whether fixed costs should be included or not.

Let I be private disposable income per capita and $F = fx_2$ the payment of user fees per capita. I is measured net of income taxes to the national government, the county, and the local authority. The budget restriction of the representative voter then becomes:

$$I = y + F \quad (2)$$

Disposable income is spent on private consumption and payment of user fees to the local authority.

The municipal budget restriction can be written as:

$$c_1x_1 + c_2x_2 = G + T + F - E \quad (3)$$

where c_i is the constant unit cost of producing x_i ($i = 1, 2$), G is grant per capita and T is per capita revenue from direct taxes (income-tax revenue sharing). E represents compulsory expenditures such as interest payment and down payment on loans. Notice that the budget restriction allows increased production of services provided free of charge to be financed by increased fee income. As an example, the user charge for child-care services can be increased in order to increase educational spending. By combining (2) and (3) in order to eliminate F we get:

$$c_1x_1 + c_2x_2 + y = G + T - E + I \quad (4)$$

The local decision-making process is described as if the utility function of the pivotal voter is maximized subject to the budget restriction (4). The first order conditions are given by:

$$\frac{u'_1}{c_1} = \frac{u'_2}{c_2} = u'_y \quad (5)$$

The interpretation of (5) is straightforward: The utility gain of additional spending should be equalized across the three services x_1 , x_2 , and y . The first order condition and the budget restriction (4) determine x_1 , x_2 , and y as functions of $G + T + I - E$, CH , YO , EL , c_1 , c_2 and γ . With respect to the empirical analysis, we are particularly interested in how fee income is affected by changes in the exogenous variables, and fee income can be determined by using either

(2) or (3). When c_1 and c_2 are suppressed, the demand equations and the fee equation can be written as:

$$x_1 = x_1(G + T + I - E, CH, YO, EL, \gamma) \quad (6)$$

$$x_2 = x_2(G + T + I - E, CH, YO, EL, \gamma) \quad (7)$$

$$y = y(G + T + I - E, CH, YO, EL, \gamma) \quad (8)$$

$$F = F(G + T - E, I, CH, YO, EL, \gamma) \quad (9)$$

Consider first the effects of higher exogenous revenue ($G + T$) or lower compulsory expenditures (E) which improve the economic situation of the local authority. Such an improvement has a positive income effect that increases the demand for local public services as well as private consumption.⁵ The only way to increase private consumption is by reducing fee income. Consequently, fee income is a decreasing function of $G + T - E$. An increase in private disposable income also has a positive income effect that increases the demand for all three services. However, in this case, fee income increases in order to finance higher local public spending.

A higher share of youths increases the demand for services provided free of charge. The increased production of these services is partly financed by lower production of services subject to user charges and partly by higher fee income that reduces private consumption. Similarly, a higher share of children and elderly increase the demand for services subject to user charges. The increased service production is partly financed by lower production of services provided free of charge and partly by higher fee income. Finally, a positive shift in γ increases the level of private consumption at the expense of both local public services. Higher private consumption is possible only if fee income is reduced.

The predictions from the pure demand model can be summarized as follows: Fee income is a decreasing function of the economic situation of the local authority, and an increasing function of private income and the size of the client groups.

4. Empirical specification

The analysis is based on a panel data set for 414 (out of 448) Norwegian local governments covering the years 1980–90. Three modifications are made compared to the model discussed in Section 3. First, net interest payment (INT) and net down payment on loans (LOAN), both measured in per capita terms, are included to capture compulsory expenditures. Second, two sociodemographic

variables are included to capture structural differences across the communities: population size (POP) and settlement pattern (TD) measured as the average traveling distance to the center of the municipality. Third, the constant term is allowed to shift from year to year, i.e., time dummies are included. They capture the shift in the functional responsibility between the counties and the municipalities, a possible trend in the cost terms c_1 and c_2 , as well as the impact of possible left-out variables that vary over time. The empirical model is given by:

$$\log F_{it} = \beta_1 \log I_{it} + \beta_2 INT_{it} + \beta_3 LOAN_{it} + \beta_4 \log G_{it} + \beta_5 \log T_{it} + \beta_6 CH_{it} \\ + \beta_7 YO_{it} + \beta_8 EL_{it} + \beta_9 TD_{it} + \beta_{10} \log POP_{it} + \sum_{t=2}^T \mu_t D_t + \alpha_i + u_{it} \quad (10) \\ i = 1, \dots, N \quad t = 1, \dots, T$$

F_{it} is fee income per capita in municipality i in year t , etc. D_t is a dummy variable that equals 1 in year t and zero otherwise, u_{it} is a white noise error term and α_i is a community-specific term. The latter has the potential effect of capturing the impact of all omitted variables that vary across communities, but not over time, such as initial cost differences across communities.

Different assumptions are made about the community-specific term. The most restrictive version is to assume that the α_i -s do not vary across jurisdictions, which leads to the method of ordinary least squares (OLS). This approach utilizes all cross-section variation and all time-series variation in the data. However, in the literature on panel data (see Hsiao, 1986, for an overview), other models are often recommended. The most common alternatives, both of which take community-specific effects into account, are the fixed-effects model and the random-effects model.

The fixed-effects model assumes that the α_i -s are fixed and vary across the authorities. This can be handled in two ways: by including a dummy variable for each community or by redefining the variables as deviations from community-specific means. The model does not utilize any cross-section variation in the data, only time-series variation within each local authority. If the fixed-effects model is the right specification, the OLS estimates will be biased.

The random-effects model assumes that the α_i -s are community-specific error terms drawn from a common distribution. It is a key assumption that the community-specific errors are uncorrelated with the exogenous variables. The appropriate estimation method is the generalized least squares (GLS) method since error terms from the same community will be correlated. The method utilizes all the time-series variation and some of the cross-section variation. As a consequence, the method can be interpreted as a compromise between the OLS and fixed-effects. If the random-effects model is the right specification, the OLS estimates are inefficient but still consistent.

Table 3. Estimation results. Dependent variable is log of fee income per capita

	A	B	C	D
logI	0.64377 (9.45)	0.47159 (6.14)	0.46971 (5.89)	0.37727 (4.25)
INT	0.00033 (15.61)	0.00021 (14.42)	0.00012 (9.49)	0.00010 (7.75)
LOAN	0.00003 (1.36)	0.00002 (1.99)	0.00002 (3.27)	0.00002 (3.05)
logG	0.10308 (5.23)	0.11863 (7.13)	0.01328 (0.62)	-0.03658 (-1.45)
logT	0.29878 (8.12)	0.23490 (8.65)	0.14006 (4.20)	0.08164 (2.16)
CH	-0.00825 (-1.84)	-0.01209 (-3.11)	-0.00257 (-0.55)	0.01453 (2.58)
YO	-0.03550 (-7.46)	-0.02845 (-7.46)	0.01437 (4.11)	0.02815 (6.99)
EL	-0.00003 (-0.00)	0.01013 (1.93)	0.05245 (7.10)	0.06532 (7.01)
TD	-0.00215 (-4.68)	-0.00213 (-5.62)	-0.00134 (-1.38)	
logPOP	0.11006 (11.25)	0.09464 (11.72)	0.05629 (3.51)	
R ² _{adj}	0.4880	0.6053		
Community				
sp. terms	No	No	Random	Fixed
Time dummies	Yes	Yes	Yes	Yes
N	414	414	414	414
T	8	11	11	11

T-values in parentheses

In accordance with the discussion in Section 3, we expect β_1 , β_2 , β_3 , β_6 , β_7 , and β_8 to be positive, while β_4 and β_5 are expected to be negative. The population size and the population density are included to capture structural differences across communities. However, precise hypotheses are difficult to develop. Due to their limited time-series variation, these variables are not included in the fixed-effects model.

5. Estimation results

Table 3 shows the result of estimating various versions of equation (10). Because of the shift in the functional responsibility between the counties and the municipalities in 1988, we started out by estimating the model by OLS separately for the two periods 1980–87 and 1980–90. These results are shown in

columns A and B respectively. The results are strikingly similar, indicating that the time dummies are sufficient to capture the shift. Consequently, we can rely on the whole period 1980–90 in order to gain efficiency without biasing the results.

Higher private income was expected to increase the demand for local public services. When exogenous revenues are fixed, higher fee income is needed to finance the increased service production. The positive and significant coefficient is consistent with this view, and indicates that local public services on average are normal goods. The sign and significance do not change when the model is reestimated with random-effects (column C) and fixed-effects (column D). This result corresponds well to the findings of Inman (1989) who also documents a positive relationship between fees and private income.

The results with respect to the four variables describing the economic situation of the local authority are mixed. The two compulsory expenditure components, net interest payment and net down payment on loans, both come out as significant and with the expected positive sign. The sign and significance of the variables do not change when the model is reestimated with community-specific effects. However, the quantitative effect of interest payments is reduced when the cross-section variation is less utilized. In the absence of community-specific effects, the model predicts an increase in net interest payments by 100 NOK to increase fee income by 48 NOK, and a similar increase in net down payments to increase fee income by 5 NOK.⁶ With the fixed-effects model the first figure is reduced to 23 NOK. In any case, the results show that deficit financing leads to a substantial increase in user charges later on.

More grants from the central government or an increase in direct taxes were expected to reduce fee income. None of these predictions receive strong support, however. The results with respect to grants from the central government are mixed. In the absence of community-specific terms, we obtain a positive and significant coefficient, while the fixed-effects model gives a negative, but insignificant coefficient. However, the theoretical prediction that grants reduce the revenues from local revenue sources receives little support in other studies as well. Holtz-Eakin (1988), using data for the U.S. states, finds that grants increase both tax and non-tax revenue. Inman (1989) reports a negative, but insignificant, relationship between fee income and exogenous revenue in a sample of large U.S. cities. Our results with respect to income-tax revenue sharing are even more discordant. The effect is significantly positive in all equations estimated.

Although there tends to be a positive relationship between fee income and the two exogenous revenue components, the estimated coefficients imply that fee income makes up a smaller share of total revenue when exogenous revenue increases. The conditions under which this result hold is that $\beta_4 < G/(G + T)$

and $\beta_5 < 1 - G/(G + T)$ for grants and income-tax revenue sharing, respectively. The sample average of $G/(G + T)$ is 0.449, implying that both conditions are met for the average community.

Suppose that grants from the central government increase by 1000 NOK per capita. Using the fixed-effects model, the predicted reduction in per capita fee income is 11 NOK, implying an increase in total revenue ($G + T + F$) of 989 NOK. To compare the effect of grants and the effect of private income, it is convenient to rewrite the individual and the municipal budget restrictions in the following way:

$$(1 - t_L - t_O)R = y + F \quad (2')$$

$$c_1x_1 + c_2x_2 = G + t_L R + F \quad (3')$$

t_L and t_O are respectively the municipal income tax rate and the income tax rate to other levels of government (the counties and the national government). R is gross individual income. Then $(1 - t_L - t_O)R = I$ and $t_L R = T$, implying that (2') and (3') are identical to (2) and (3). Combining (2') to eliminate F gives:

$$c_1x_1 + c_2x_2 + y = G + (1 - t_O)R \quad (4')$$

It follows that an increase in gross individual income by $(1 - t_O)^{-1} \times 1000$ NOK should have the same effect as a grant increase of 1000 NOK. In the calculations we use $t_L = 0.135$ and $t_L + t_O = 0.45$, implying that an increase in G by 1000 NOK is comparable to an increase in gross individual income by 1460 NOK. Then local tax revenue and private disposable income increase by 197 (0.135×1460) and 803 (0.55×1460) NOK, respectively. However, total revenue increases further because of the positive relationship between fee income and both T and I . The predicted increase in fee income is 5 and 14 NOK, respectively. Consequently, the predicted increase in total revenue is 216 ($197 + 5 + 14$) NOK, far less than the predicted revenue increase following a corresponding grant increase. The finding reflects the familiar flypaper effect (Gramlich and Galper, 1973), i.e., lump sum grants are more stimulative than private income.

The age composition of the population was included to capture shifts in the demand for local public services. According to the underlying model, the increased service production is partly financed by charging higher user fees. The fact that the share of elderly is positive and significant in equations B, C and D supports the model. However, the results for CH and YO are more mixed. Only in the fixed-effects model are all three variables significant and with the predicted sign. In this case the numerical impact of the age composition of the population is quite strong. An increase in CH, YO, and EL by one percentage point increases fee income by 1.5%, 2.8%, and 6.5%, respectively.

The population size and the settlement pattern were not included in the fixed-effects model due to their limited time-series variation. However, when the model is estimated by OLS and random-effects, it appears that large communities with high population density apply user fees more extensively than other communities.

6. Political factors

Over the last decade there has been a growing empirical literature analyzing the interaction between economics and politics. The central issue has been: How do political institutions affect the growth of the public sector and its response to economic shocks? Many researchers have analyzed the effect of national politics using time-series data for a single country or cross-country data. Among the most important contributions are those of Inman and Fitts (1990) and Roubini and Sachs (1989a, 1989b).

A parallel literature has investigated the effect of political institutions at the local level. An early contribution is Pommerehne (1978) who separates between direct and representative democracies when estimating the median voter model using data for Swiss municipalities. The U.S. literature has focused extensively on the effect of tax limitations such as California's Proposition 13, e.g., Shapiro and Sonsteli (1982). Recent contributions such as Abrams and Dougan (1986), Holtz-Eakin (1988) and Poterba (1993), which focus on the strength of the political leadership and partisan effects/ideology, are more closely related to the literature on national political institutions.

It is evident from the studies cited above that economic factors alone are insufficient to describe the behavior of the public sector. The political institutions matter. In the present paper two aspects of the local political system are captured. These are ideology and the strength of the political leadership.

In most areas of Norwegian politics the major rivalry is between the socialist and the non-socialist camps (Strøm and Leipart, 1993), and this national struggle is mirrored at the local level as well. However, the success of explaining the spending patterns of Norwegian local governments by political variables has so far been limited. We expect the reason for this lack of success to be that most of these studies assume a fixed municipal budget, while the main disagreement between socialist and non-socialists relates to the size of the local public sector. As discussed above, an equation for fee income captures information about the determinants of total expenditure, and will be a more efficient place to search for the effect of political variables.

We expect socialist voters to prefer a larger local public sector than the rest of the constituency, and that their representatives in the local council advocate this view. This argument is confirmed by the work of Hansen and Sørensen

(1988) who use survey data on local politicians to analyze expenditure preferences. They find that socialist representatives prefer a significantly larger local public budget than non-socialists. To what extent are socialists able to influence the policy outcome? It seems obvious that their influence is in some way related to numerical strength, i.e., their share of representatives in the local council. But what should the functional form of this relationship be? We think that the Norwegian institutional setting provides some guidelines. One important feature of the Norwegian system is that the majority coalition in the local council does not form a cabinet. Rather, an executive board with proportional representation from all major parties is established. Consequently, a minority party that holds a seat in the executive board is in a good position to influence the policy outcome by coalition building, logrolling or other means.

The discussion above implies that the formulation must allow socialist to influence the policy outcome even when in minority. A simple proposition is to treat influence as a linear function of numerical strength. Such a formulation implies that the size of the majority matters, e.g., that the influence of socialists is higher when they hold 75% of the seats compared to a situation where they hold 51%. However, this is not unreasonable since the reelection constraint is more binding in the latter case.

In the empirical analysis we simply introduce the share of socialists in the local council (SOC) as an independent variable.⁷ To check the sensitivity of the formulation, we also estimate the model with a dummy variable for socialist majority (SOCMAJ). The advantage of the majority dummy is that it can be related to formal voting theory. However, it may well be too crude since a party is likely to influence the outcome by coalition building and logrolling even when in the minority. Formally, higher socialist influence is interpreted as a reduction in the marginal utility of private consumption, i.e., a negative shift in γ . Consequently, we expect SOC and SOCMAJ to come out with positive signs.

Due to the possible adverse distributional implications of user charges, it is often claimed that socialists prefer to finance public spending by general taxation rather than charging for the services provided. If so, is it also true that socialists prefer lower user charges than do non-socialists? Within the Norwegian institutional setting, our answer is negative. Suppose that local public spending could be financed by both general taxation and user charges. Then, by setting a high local tax rate, it would be possible for socialist authorities to have both higher spending levels and lower fee income than non-socialist authorities. However, this is not an option when the local tax rate is decided by the national government. The lack of a general tax instrument is likely to reduce the spending difference between socialist and non-socialist authorities, but not to eliminate it. If this is the case, fee income will be an increasing function of socialist influence even when socialists dislike user charges.

A strong political leadership is often seen as a necessary condition to limit the growth of the public sector. A typical argument is that special interest groups lobby for the higher production of private services that are financed by general taxation. The users of a public service perceive a cost that is lower than the social cost, implying that the competition between the interest groups is likely to produce excessive spending levels. An important role of the political leadership is to internalize these externalities, and the ability to do so is assumed to depend on its strength. A strong political leadership has an advantage in opposing pressure to increase spending. On the other hand, a weak political leadership is more likely to accommodate such pressure.

Although increased local public spending must be financed by user fees rather than by general taxation, the argument above fits the Norwegian situation. First, private services such as primary education, kindergartens, and care for the elderly are important. Second, a successful action to increase spending, on, for instance, kindergartens is likely to be financed by a combination of cut-backs in other sectors and higher user charges, possibly also for child-care services. In any case, the users of kindergartens will only pay a part of the total bill, implying that they have an incentive to lobby for excessive spending levels.

In order to measure the strength of the political leadership, we construct two separate variables. Our first measure is inspired by the Norwegian institutional setting. As discussed above, all major parties are represented in the executive board. Consequently, the dispersion of power in the executive body is closely related to the party fragmentation of the local council. A fragmented local council will necessarily produce a weak executive board. We choose to measure fragmentation by the traditional Herfindahl-index (HERF). Let SH_p be the share of representatives from party p . Then the Herfindahl-index is defined as:

$$HERF = \sum_{p=1}^P SH_p^2 \quad (11)$$

The index takes its maximum value of 1 when a single party holds all the seats in the local council, while the minimum value of $1/P$ is attained when the seats are equally divided among the P parties. HERF is inversely related to party fragmentation and positively related to strength, and consequently, we expect it to have a negative impact on fee income. The weaker the political leadership, the higher is the level of spending, and a higher level of spending must be financed by fee income.

The second measure of political strength is based on a classification of political regimes developed by Kalseth and Rattsø (1994). It captures information about the number of parties in the ruling coalition and its numerical strength, and is similar to the index applied by Roubini and Sachs (1989a, 1989b). By utilizing information about the party affiliation of the mayor and the deputy

Table 4. Correlation matrix for the political variables

	SOC	SOCMAJ	HERF	POW	
SOC	1.0000				N = 414 T = 11
SOCMAJ	0.7867	1.0000			N = 414 T = 11
HERF	0.7029	0.6291	1.0000		N = 414 T = 11
POW	0.5522	0.6715	0.6843	1.0000	N = 347 T = 11

mayor as well as the party composition of the local council, the following variable can be constructed:

4. the mayor and deputy mayor are from the same party and their party is in a majority position;
3. the mayor and the deputy mayor are from different parties and, when combined, their parties are in a majority position;
2. the mayor and the deputy mayor are from the same party and their party is in a minority position;
1. the mayor and the deputy mayor are from different parties and, when combined, their parties are in a minority position.

The index is denoted POW and is positively related to the strength of the political leadership. Consequently, we expect POW to come out with a negative sign.

The four political variables are highly correlated because the socialist block is dominated by a single party, the social democrats, while the non-socialist block is more fragmented. A high share of socialists in the local council goes along with a strong political leadership, as documented by the correlation coefficients in Table 4.⁸ Despite this strong correlation between the measures of ideology and strength, the variation in the data should be sufficient to separate the effects.

Table 5 shows the effects of augmenting the benchmark demand model with political factors.⁹ The results of estimating the model by OLS with the two measures of political strength are shown in columns A and B, respectively. The results are encouraging. The message is the same whatever measure of strength is applied: Greater socialist influence contributes to a significant increase in fee income, while a strong political leadership contributes to a significant reduction in fee income. The estimated coefficients confirm the hypotheses that socialists prefer a larger public sector than do non-socialists and that a weak political leadership is more likely to accommodate pressure from special interest groups to increase spending.

The quantitative effects, however, vary across the specifications. According to equation A, fee income rises by 5.5% when the share of socialists increases from 40 to 60%. Moreover, the predicted difference between the strongest and

Table 5. The effect of political variables

	A	B	C	D	E	F	G
SOC	0.274 (6.14)	0.129 (2.98)	0.177 (3.48)	0.170 (3.53)		0.308 (4.54)	0.221 (2.59)
SOCMAJ					0.036 (2.38)		
HERF	-0.354 (-4.73)						
POW		-0.019 (-4.12)					
POW1			0.068 (4.09)				
POW2			0.052 (3.34)				
POW3			0.052 (1.74)				
POW4				-0.058 (-4.04)	-0.054 (-3.36)	-0.023 (-1.71)	-0.016 (-1.15)
R ² _{adj}	0.6079	0.6084	0.6113	0.6113	0.6106		
Community							
sp. terms	No	No	No	No	No	Random	Fixed
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	414	347	347	347	347	347	347
T	11	11	11	11	11	11	11

T-values in parentheses

the weakest authority in the sample is 22.7%.¹⁰ On the other hand, equation B predicts the difference between a strong (POW = 4) and weak (POW = 1) political leadership to be only 6%, and that fee income increases by 2.6% when the share of socialists increases from 40 to 60%.

The POW index is virtually a qualitative variable, and the functional form applied above may be questioned. Why should we believe that the difference between "one party, majority" and "two parties, majority" is the same as the difference between "two parties, majority" and "one party, minority"? It is obvious that such a formulation is very restrictive, and in a reply to Roubini and Sachs (1989a), Edin and Ohlsson (1991) show that the choice of functional form matters for the interpretation of the econometric results.

We follow the approach of Edin and Ohlsson in order to capture the qualitative nature of the POW index. Separate dummy variables for three of the four categories are included in the empirical model. The dummy variable for category j is denoted POW j ($j = 1, 2, 3, 4$), where POW j equals 1 if POW = j and 0 otherwise. The estimation results are shown in Table C where "same party/majority" (POW = 4) is used as reference. It is evident that political

strength is still an important determinant. All three dummy variables come out as significant with the expected positive sign. This is consistent with the view that the reference category "same party, majority" is in the best position to oppose pressure to increase spending. However, the interpretation of the results change. The main difference is now between communities with a majority party and all other communities, a view which is confirmed by a formal test. The restriction that POW1, POW2 and POW3 have equal coefficients is tested by an F-test, and the F-value of 1.09 gives a p-value as large as 0.34. When the restriction is imposed (column D),¹¹ it follows that local authorities with a majority party have 5.8% lower fee income than other authorities.

The finding that authorities composed of a majority stand out as particularly strong and that no differences exist among the three other categories is also documented by Kalseth and Rattsø (1994) in their analysis of administrative spending in Norwegian local governments. The result implies that there is no gain in strength by forming a majority coalition in authorities where no majority party exists. On the other hand, Edin and Ohlsson (1991) find no difference between governments formed by a majority coalition and governments formed by a majority party. The only difference they find is between minority governments and other types of governments. The explanation for this discrepancy may be found in the Norwegian institutional context. Edin and Ohlsson's interpretation of their finding is that negotiations within a government are easier to carry out than are negotiations in a parliament. However, no government or cabinet is formed within Norwegian local authorities, and when all major parties are represented in the executive board, a majority coalition has no formal organization at its disposal. Negotiations within the executive board are more or less identical to negotiations within the local council.

In column E the share of the socialists in the local council is replaced by a dummy variable for socialist majority as a measure of socialist influence, and with the result that the effects of ideology and strength are unaltered by this modification of the model. Moreover, when all four political variables SOC, SOCMAJ, HERF and POW4 are included in the same equation (not reported), SOC and POW4 remain significant, while SOCMAJ and HERF become insignificant. Thus, only SOC and POW4 are included when the model is reestimated with community-specific effects (columns F and G). Despite their limited time-series variation,¹² the political variables have substantial impact even when community-specific effects are included. With respect to the ideological variable, neither the sign nor the significance change when community-specific effects are taken into account. Rather surprisingly, the magnitude increases substantially compared to column D. The dummy variable for one-party majority remains significant (at the 5% level) in the random-effects model, but is insignificant in the fixed-effects model. In both cases the magnitude is substantially reduced compared to column D.

The finding that the size of the public sector is related to the ideological orientation of the electorate and the strength of the political leadership is in line with several recent studies. Abrams and Dougan (1986) and Poterba (1993) use data for U.S. state and local governments. Abrams and Dougan find that spending levels are high in liberal states and states with a high degree of inter-party competition. Poterba, analyzing the response to deficit shocks, finds that one-party states cut spending by greater amounts in response to such shocks.¹³ The cross-country analysis of Roubini and Sachs (1989b) indicates that general public spending is positively related to socialist influence and the dispersion of power in the ruling coalition. Finally, Borge and Rattsø (1993b), Henrekson (1988), and Inman and Fitts (1990) use time-series data for a single country. The two first studies document that socialist influence increases the size of the public sector, while Borge and Rattsø, and Inman and Fitts find that a strong political leadership reduces the size of the public sector.

7. Concluding remarks

The centralized system of financing in the Norwegian institutional context implies that the national government, through the grant system and income-tax revenue sharing, to a great extent controls the revenue side of the local budgets. The main revenue component controlled by the local authorities is fee income. Consequently, we analyzed fee income as the most important tax instrument available to the local authorities.

The point of departure was a representative voter model emphasizing the effect of pure demand variables. The overall results were quite supportive: as expected, higher private income and higher compulsory expenditures contribute to an increase in fee income. On the other hand, the main discordant result is the positive relationship between fee income and exogenous revenue sources, particularly income-tax revenue sharing.

The local authorities are an important part of the Norwegian democratic system, and the national struggle between the socialist and the non-socialist camp is mirrored at the local level. Two dimensions of the political system are captured in the analysis: ideology and strength. We expected socialists to prefer a larger local public sector than did non-socialists and that a strong political leadership would have an advantage in opposing pressure to increase spending. Consistent with several other studies of general as well as local public spending, both hypotheses receive strong support.

Notes

1. Prud'homme (1987: 1194) argues that it is not a local tax when the local government controls neither the base nor the rate of the tax. It is rather a national tax coupled with a grant from the central to the local government.
2. The municipalities are the objects of this study. The terms municipality, local authority, local government and community are used interchangeably.
3. We have implicitly assumed balanced budgets.
4. In contrast to the present analysis, these studies assume a fixed total budget.
5. The assumptions about the utility function of the pivotal voter imply that x_1 , x_2 , and y are normal goods.
6. Sample averages of 1990 are used in these calculations.
7. The social democratic party and all parties to its left are defined as socialist parties.
8. POW could only be calculated for 347 authorities. Thus, the correlation coefficients in the fourth line of Table 4 are based on 3817 (347×11) observations, while the others are based on 4554 (414×11) observations.
9. Neither the introduction of political variables nor the reduction of the sample from 414 to 347 local authorities has much impact on the coefficients of the benchmark demand variables. The complete estimation results can be obtained upon request.
10. The minimum value of HERF is 0.15 and the maximum value 0.79.
11. Notice that the inclusion of only POW4 automatically imposes the relevant restrictions.
12. The sample period comprises three election periods. The data is based on the local elections held in 1979, 1983 and 1987.
13. In this context a one-party state means a state where a single party controls both the state house and the governorship.

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Appendix

Data sources

To estimate the model we used the local government accounts, a databank of private income and taxes, a databank of sociodemographic variables and a databank of the party composition of the local council. On the basis of these sources the following variables have been constructed:

F	– fee income per capita, municipal enterprises are not included
G	– grants from the national government per capita
T	– revenues from the local tax base per capita
INT	– net interest payment per capita
LOAN	– net down payment on loans per capita
I	– after-tax income per capita
CH	– the share of the population below 7 years of age
YO	– the share of the population between 7 and 15 years of age
EL	– the share of the population above 80 years of age
DE	– population density measured as the average travel distance to the center of the municipality
POP	– the population size
SOC	– the share of socialists in the local council
SOCMAJ	– a dummy variable that equals 1 when there is a socialist majority in the local council
HERF	– the Herfindahl-index for party fragmentation based on a separation of the local council into 13 parties
POW	– an index measuring the strength of the political leadership, it takes a value of 1, 2, 3 or 4
POW _j	– a dummy variable that equals 1 if POW = j and 0 otherwise

F, G, T, INT, LOAN and I are measured in real terms. F, G, T, INT and LOAN are deflated by the national account's price index for local public consumption, while I is deflated by the consumer price index. The data are publicly available and can be obtained from the author.