Unequal Provision of Local Public Services under the Threat of Secession

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Abstract

This paper studies to what extent it is possible to discriminate between two municipality parts by unequal public service provision when there is a threat of secession. The objective of the local politicians is to maximize utility for only one part of a municipality. The discriminated part is small and politically marginalized, but has the option to secede. The power of the small part's population is in this way entirely exercised through the threat of secession. It becomes their guarantee against being taxed too heavily or against obtaining too little of public services. The case of three recent secession attempts in Göteborg, Sweden, is discussed in light of the model.

Keywords: secession, local public services

JEL classification: H29, H79

1 Introduction

People who are not satisfied with the levels of municipal taxation and local public spending are likely to "vote with their feet" and move to another municipality that offers a better mix, according to the classic paper of Tiebout (1956). However, if municipalities are stratified enough, dissentient residents could likewise prefer to break out of the municipality and form a new local jurisdiction.

Secession attempts of discontent municipality parts is a fact in Swedish municipalities. After two major amalgamation reforms that were completed in the 1970s and that reduced the number of municipalities from 2,500 to 278, applications from more than 40 municipality parts have been submitted, almost exclusively from formerly autonomous municipalities that were incorporated into larger ones. Thirteen "new" municipalities have so far regained local autonomy. The option of local secession thus exists, but an absolute majority of former municipalities has, nevertheless, not initiated any attempts to secede.

One possible reason for the infrequent incidence of secession attempts is discussed by Bolton and Roland (1997) and Persson and Tabellini (2000). They argue that a jurisdiction faced with a secession threat may gain from adjusting taxes and public spending to better correspond to the preferences of the people in the potentially seceding part. If the majority in a municipality part threatening to secede prefers a lower tax rate, the tax rate and size of the municipal sector should be lowered to prevent secession. The opposite strategy should be used if the secession threat comes from a municipality part that prefers a higher tax rate.

But an additional view of the problem emerges from some of the applications for municipality partitioning. A common complaint is that people in the concerned municipality part are unfairly treated compared to the rest of the municipality regarding deteriorating service levels, small resources given to schools, and poor infrastructure. These people do not necessarily want a different tax rate, but rather a more equal provision of local public goods and services.

Discrimination between municipality parts may be due to various reasons. Districts with social problems may receive more resources for schools and social services, but it is also possible that resources are allocated according to less noble objectives. In this paper, I study to what extent unequal distribution of public services is possible when there is a threat of secession.

It is reasonable to believe that municipal conflicts in Sweden often are due to differences in preferences regarding the size and composition of the local public sector, since the primary responsibility of the local public sector is to provide services. In the year 2000, 72 percent of all municipal expenses went to daycare, schools, and care for the elderly and the disabled, financed mainly by a linear income tax (Svenska Kommunförbundet, 2002; Statistics Sweden, 2001).[1]

The economic literature on secession and integration has, however, mainly focused on jurisdictions larger than municipalities, and, hence, partly on other sources of conflict. The common denominator for the contributions is the presence of a trade-off between the political benefits and economic costs associated with separation (see Bolton et al., 1996, for a literature overview and Alesina et al., 1995, for a general discussion on the costs and benefits of jurisdictional separation and unification). The cost side of secession is often assumed to be connected to population size. Smaller jurisdictions face higher per capita costs in pure public good production or, as in the work by Bolton and Roland (1997) and Alesina et al. (1995), increase trade barriers. A general feature when explaining the benefit side is that some intra-jurisdictional heterogeneity is present, which makes one or both parts better off if there is separation. Alesina and Spolaore (1997) assume distance to the government, both in preferences and spatially, to be the reason for secession, while Olofsgård (2001) assumes ethnic grouping to be the source. Bolton and Roland (1996) model different preferences in the composition of public goods to further secession, and Ellingsen (1998) discusses the conditions for integration when there are public goods with possibilities for neighboring regions to free ride.

The outline of the paper is as follows: The next section presents a simple model where individuals have preferences in private consumption and publicly provided local services and there is a fixed cost associated with running a municipality. Two municipalities of different sizes are amalgamated and constitute two distinct parts in the new municipality. Public services can be provided in different amounts to the two municipality parts; a possibility that is exploited by the big part, which dominates local politics. The discriminated municipality part is small and politically marginalized, but has the option to secede. The power of the small part's population is in this way entirely exercised through the threat of secession. It becomes their

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[1]Local taxes constitute 65 percent of the municipalities' incomes. The rates ranged from 17.3 to 23.6 percent for the year 2000, not including county taxes, which finance the health care sector.

guarantee against being taxed too heavily or against obtaining too little of public services. The set-up is largely based on the model by Bolton and Roland (1997). The main difference is that I allow public spending to be unevenly distributed between the municipality parts, a problem relating to the work by Buchanan and Faith (1987). They show that since the per capita cost for a pure public good decreases with population size, parts of tax revenues can be used for cash transfers to a politically dominating group as long as the exploited group does not make a credible secession threat.

The scope for favoring people in the politically dominating municipality part is discussed in Section 3. Three factors appear to be important: The big part obtains relatively more public services if (i) there are similar income distributions in the two municipality parts, (ii) the fixed cost of running a municipality is large, and (iii) the small part has a lower average income.

Section 4 analyzes when secession will occur. It shows that the first two factors that increase the possibility of discriminating against the small part also decrease the likelihood of secession.

Section 5 shows that a centrally implemented income equalization system of the type that exists in Sweden removes the role that average income has in the difference in provision of public services. While such a system has no effect on the likelihood of secession, it reduces the difference in public service provision between the two municipalities in case of secession.

Section 6 discusses the case of Göteborg, the second largest municipality in Sweden, where three municipality parts applied for secession in 1997.

Finally, Section 7 summarizes and concludes the paper.

2   The Model

We begin by considering two separate municipalities of different sizes. The big municipality, b, has a population of n_b, and n_s people live in the small municipality, s. People derive utility from private consumption, c, and from public services, g. Public services are of private good character and distributed equally among everybody in the municipality. To keep the model tractable we assume perfect substitutability between consumption and public services and that median utility in municipality j is

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$$U_j = c_j + g_j, \tag{1}$$

where $j = s, b$. Private consumption is constrained by disposable income, where the tax, t_j, is proportional, and w is pre-tax median income:

$$c_j = (1 - t_j)w_j. \tag{2}$$

The local government's provision of public services is constrained by tax revenues; y_j is average income in municipality j. Taxation is assumed to give rise to a dead-weight loss, denoted by $\frac{t_j^2}{2}$. In addition, there is a fixed cost, k, associated with e.g. administration costs, which is independent of population size. The publicly provided service is produced with linear technology. The municipality's budget constraint is

$$g_j = \left(t_j - \frac{t_j^2}{2}\right) y_j - \frac{k}{n_j}. \tag{3}$$

Since this is a one-dimensional problem, the equilibrium tax rate is preferred by the individual with median income. Substituting the constraints (2) and (3) into the utility function and optimizing with respect to t_j yields

$$t_j = 1 - \frac{w_j}{y_j}. \tag{4}$$

The tax rate is purely a function of the median voter's tax price. We assume that the income distribution is skewed to the left (which it almost always is) and thus that median income is lower than average income. This yields a positive tax rate, which is greater for more skewed – less equal – income distributions. We further assume that $g_j \geq 0$.[2]

Inserting Expression (4) to (3) gives the per capita provision of public services, g_j^{sep}, where the superscript emphasizes that the municipalities are run separately:

$$g_j^{sep} = \frac{1}{2}\left(1 - \frac{w_j^2}{y_j^2}\right) y_j - \frac{k}{n_j}, \tag{5}$$

where $\frac{\partial g_j^{sep}}{\partial w_j} < 0$, $\frac{\partial g_j^{sep}}{\partial y_j} > 0$, $\frac{\partial g_j^{sep}}{\partial n_j} > 0$ and $\frac{\partial g_j^{sep}}{\partial k} < 0$. If economic conditions are

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[2]A negative value could be interpreted as a head tax, which would be due to tax revenues being too small to cover the per capita cost of running a municipality, $\frac{k}{n_j}$. In this model, $g_j < 0$ is likely to occur if the population is very small or median income is very close to average income.

identical in the two municipalities, the big provides more public services per capita than the small, since the per capita cost of the fixed cost k is smaller in the big municipality. If the two municipalities are equally sized and have the same average income, but differ in income distributions, the municipality with the greater difference between median and average income provides more public services. And if the ratios between median and average income (the tax price) are the same, but average incomes differ, the municipality with the higher average income provides more public services.

Next, we turn to the case where the two municipalities are amalgamated – the small municipality is incorporated into the big municipality. Public services can now be provided in different amounts to the two municipality parts b and s. Since we no longer have a one-dimensional policy problem the median voter approach becomes problematic. We assume that the majority in the big municipality part is homogenous in income, and also constitutes a majority in the municipality as a whole.[3] This assumption makes the individual with a median income in the big part have a median income in the municipality. Since the majority in the municipality has identical preferences, the decisive voter regarding the tax rate and public spending has income w_b.

The preferred policy for individual w_b is given by maximizing utility (1) for $j = b$ subject to the private and public budget constraints. The private budget is now

$$c_j = (1 - t) w_j, \tag{6}$$

where t is the tax rate. The new municipality's budget is

$$\frac{n_b}{n} g_b + \frac{n_s}{n} g_s = \left(t - \frac{t^2}{2} \right) y - \frac{k}{n}, \tag{7}$$

where n is the population in the municipality, $n = n_b + n_s$, and y is average income, $ny = n_b y_b + n_s y_s$, and $g_b, g_s \geq 0$.

Since the decisive voter lives in the big municipality part, he does not obtain any utility from public services in the small part. The only reason g_s would be positive is if the small part had the option to secede and the decisive voter in the big part

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[3]This assumption is assured when $\frac{n_s}{n} < 1 - \frac{1}{2\alpha}$, where $\frac{n_s}{n}$ is the population share in the municipality living in the small part, and α is the share of the population in the big part with income w_b.

were better off if the municipality stayed united. We assume that the small part has the right to secede if its majority is in favor of secession, i.e. if the individual with median income in the small municipality part, w_s, is better off if with separated municipalities. Therefore, the decisive voter in the big municipality part will also consider the following utility constraint:

$$U_s^u = U_s^{sep} \text{ if } U_b^u \geq U_b^{sep}, \tag{8}$$

where superscripts sep and u indicate that the municipality parts are separated or united. If the median voter in the big part is equally or better off with a united municipality, the median voter in the small part has to be provided enough public services to fulfill Condition (8). We rewrite the condition by substituting Equations (1) and (6) for $j = s$ into (8) and rearranging. We obtain

$$g_s = U_s^{sep} - (1 - t)w_s \text{ if } U_b^u \geq U_b^{sep}. \tag{9}$$

On the other hand, if the median voter in the big part is better off if with separate municipalities, then no public services are provided to the small part:

$$g_s = 0 \text{ if } U_b^u < U_b^{sep} \text{ or if secession is not possible.} \tag{10}$$

As a benchmark, we start by considering the tax setting problem when there is no possibility of secession, and g_s correspondingly is set to zero as indicated by Condition (10). Thereafter, we study the case when secession is possible and prevented, and Condition (9) applies.

If the secession option does not exist, then the utility of the decisive voter is obtained by inserting the private and public budget constraints into (1) for $j = b$, yielding

$$U_b = (1 - t)w_b - \frac{n_s}{n_b}g_s - \frac{k}{n_b} + \frac{n}{n_b}\left(t - \frac{t^2}{2}\right)y. \tag{11}$$

Maximizing (11) with respect to t gives the equilibrium tax rate

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$$\hat{t} = 1 - \frac{n_b}{n}\frac{w_b}{y}. \tag{12}$$

If there is a secession option and the decisive voter is equally or better off when the parts stay united, Equation (9) is substituted for g_s into (11), yielding

$$U_b = (1-t)w_b - \frac{n_s}{n_b}\left[U_s^{sep} - (1-t)w_s\right] - \frac{k}{n_b} + \frac{n}{n_b}\left(t - \frac{t^2}{2}\right)y. \tag{13}$$

In this case, the equilibrium tax rate is

$$t = 1 - \frac{n_b}{n}\frac{w_b}{y} - \frac{n_s}{n}\frac{w_s}{y}. \tag{14}$$

Proposition 1. *If the small part has the right to secede and the majority in the municipality is equally or better off united, then the tax rate is lower than if there is no right to secede.*

Proof.

$$\begin{aligned}
t - \hat{t} &= 1 - \frac{n_b}{n}\frac{w_b}{y} - \frac{n_s}{n}\frac{w_s}{y} - \left(1 - \frac{n_b}{n}\frac{w_b}{y}\right) \\
&= -\frac{n_s}{n}\frac{w_s}{y} < 0.
\end{aligned}$$

$\square$

The result is due to the two regimes bringing about differing marginal benefits of taxation for the decisive voter w_b. While the marginal cost is the same in both situations, the marginal benefit is lower when the secession threat is prevented, since parts of the tax revenues are used for providing public services to the small municipality part.[4]

From (4) and (14) it follows that

$$t_s \lesseqgtr t \lesseqgtr t_b \ \text{ iff } \ \frac{w_b}{y_b} \gtreqless \frac{w_s}{y_s}. \tag{15}$$

If secession is possible and prevented, the equilibrium tax rate t lies between the two independence tax rates, t_b and t_s. For example, if we assume that there is a

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[4]Proposition 1 is in line with the findings of Buchanan and Faith (1987), who conclude that a secession threat sets an upper limit on taxation.

completely equal income distribution in the big part, $w_b = y_b$, but median income is smaller than average income in the small part, $w_s < y_s$, then $t_s > t > t_b = 0.$[5]

Condition (15) will be useful when interpreting the coming results.

3 Difference in Public Service Provision

In this section we study the scope of providing more public services to the big rather than to the small municipality part. Only the case when secession is possible but prevented is considered throughout the analysis.

From (1)–(3) and (9) we find the public service provision in the small part to be:

$$g_s = (t - t_s) w_s + \left(t_s - \frac{t_s^2}{2} \right) y_s - \frac{k}{n_s}. \tag{16}$$

By rearranging the municipality's budget constraint (7) and inserting (16) we see that the provision of public services in the big municipality part becomes

$$g_b = \frac{n}{n_b} \left(t - \frac{t^2}{2} \right) y - \frac{n_s}{n_b} \left(t_s - \frac{t_s^2}{2} \right) y_s - \frac{n_s}{n_b} (t - t_s) w_s. \tag{17}$$

The difference in provision of public services is given by subtracting Equation (16) from Equation (17), and using the expressions for t and t_s from Equations (14) and (4), yielding

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\begin{aligned}
g_b - g_s &= \frac{n}{n_b} \left[\left(t - \frac{t^2}{2} \right) y - \left(t_s - \frac{t_s^2}{2} \right) y_s + (t_s - t) w_s + k \left(\frac{1}{n_s} - \frac{1}{n} \right) \right] \\
&= \left(t - \frac{t^2}{2} \right) (y_b - y_s) - \frac{n_b y_b^2 y_s}{2ny^2} \left(\frac{w_s}{y_s} - \frac{w_b}{y_b} \right)^2 + \frac{k}{n_s}.
\end{aligned}
\tag{18}
$$

Equation (18) highlights three terms affecting the difference in public service provision. The first term is the difference in per capita tax revenues between the municipality parts. The scope of providing more public services to the big part decreases (increases) if average income in the small municipality part is higher (lower) than in the big municipality part.

If average income is the same in the two parts, but median income differs, the

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[5]To assure non-negative amounts of the publicly provided service, we here disregard the fixed cost, k.

two parts contribute equally to public sector in per capita terms. However, the degree of redistribution is not the same in the united municipality as it would be in the small municipality if there were separation. The small part is compensated for this difference through the second term. From Condition (15) it follows that this term is zero if $t = t_s$, and the small part will obtain more of public services as the absolute tax difference increases (e.g. the more the income distributions differ between the municipality parts).

The third term shows that even if both average income and median income are the same in the two parts, the big part obtains more public services than the small part. The fixed cost, k, is entirely imposed on the people in the small municipality part.

A population increase in the small municipality part affects three of the variables; the population size will necessarily increase, while the effect on the tax rate and average income depends on the differences in median and average income between the municipality parts; $\frac{\partial t}{\partial n_s} > 0$ if $w_b > w_s$ and $\frac{\partial y}{\partial n_s} > 0$ if $y_s > y_b$. The partial effect of a population increase in the small municipality part is

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\begin{aligned}
\frac{\partial (g_b - g_s)}{\partial n_s} = & \frac{n_b y_b (n_b w_b + n_s w_s)}{n^3 y_s y^3} (y_b - y_s) \left(\frac{w_b}{y_b} - \frac{w_s}{y_s} \right) \\
& + \frac{n_b^2 y_b^2 y_s}{2n^3 y^3} \left(\frac{n}{n_b} y_s + y_s - y_b \right) \left(\frac{w_s}{y_s} - \frac{w_b}{y_b} \right)^2 - \frac{k}{n_s^2}.
\end{aligned}
\tag{19}
$$

The effect of an increase in n_s on the difference in tax revenues – the first term in Equation (18) – is positive if the municipality part with the higher average income also has the smaller tax rate if there is separation, i.e. the greater ratio between median and average income. The effect on the compensation term – the second term in Equation (18) – is positive if $\frac{y_b}{y_s} < 2 + \frac{n_s}{n_b}$. For this term to be negative, the big part needs to have more than twice the average income of the small part.

Consider the special case where the small municipality part is relatively wealthy, $y_s > y > y_b$, and prefers a lower tax rate, $t_s < t < t_b \left(\frac{w_s}{y_s} > \frac{w_b}{y_b} \right)$. From Equation (18) we see that the first term is negative; the small part obtains more public services since it contributes more to tax revenues per capita. A population increase in the small municipality part results in a decreasing tax rate, and the difference in per capita tax revenues also decreases. Since the tax rate t becomes more similar to t_s,

the small part gets smaller compensation through the second term. The first two terms in Equation (19) are for this case positive. The last term is negative since the per capita cost of k decreases when the population size in the small part increases.

The partial effect of a population increase in the big municipality part is

$$\frac{\partial \left(g_b - g_s \right)}{\partial n_b} = - \frac{n_s y_s \left(n_b w_b + n_s w_s \right)}{n^3 y_b y^3} \left(y_b - y_s \right) \left(\frac{w_b}{y_b} - \frac{w_s}{y_s} \right) \tag{20}$$
$$- \frac{n_s n_b y_b^2 y_s}{2 n^3 y^3} \left(\frac{n}{n_b} y_s + y_s - y_b \right) \left(\frac{w_s}{y_s} - \frac{w_b}{y_b} \right)^2.$$

The two terms are reversely signed compared to Equation (19), and there is no effect on the last term in (18).[6]

The following proposition summarizes the main results from this section:

Proposition 2. *If secession is possible but obviated, the difference in public service provision between the big and the small municipality parts is decreasing in $\left| \frac{w_s}{y_s} - \frac{w_b}{y_b} \right|$, increasing in k, and for any given level of $\left| \frac{w_s}{y_s} - \frac{w_b}{y_b} \right|$ increasing in $y_b - y_s$.*

4   Secession

If the small municipality part demands too much public services in relation to the extra tax revenues it generates, it is beneficial for the majority in the big part to split the municipality so that no public services are provided to the small part. In this section we examine the conditions for such an outcome. We start by looking into the problem of the median voter in the small part. Thereafter, we study the problem of the median voter in the big part.

If the median voter in the big part is better off if the municipality separates, then Condition (10) applies; there will not be any public service provision to the small part. The net utility of separation for the median voter in the small part is then

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[6]More comparative statics are presented in the Appendix.

$$U_s^{sep} - U_s^u = (1 - t_s) w_s + g_s^{sep} - \left(1 - \hat{t}\right) w_s$$
$$= \left(\hat{t} - t_s\right) w_s + g_s^{sep}, \tag{21}$$

where $\hat{t}$ and t_s are defined in (12) and (4). For Expression (21) to take a negative value, t_s must be greater than $\hat{t}$, and g_s^{sep} has to be very small. However, in the following analysis we will only consider the case when the small part's majority gains from secession if they do not obtain any public services. Setting $g_s = 0$ is thus treated as a means for the big municipality part to trigger secession.

If the municipality separates, the median voter in b will obtain utility U_b^{sep} and if the municipality stays united, he will obtain utility U_b^u.
The net benefit of separation is

$$U_b^{sep} - U_b^u = (1 - t_b) w_b + g_b^{sep} - (1 - t) w_b - g_b, \tag{22}$$

where t_b is defined in Equation (4), g_b^{sep} in (5), t in (14) and g_b in (17). If $U_b^{sep} - U_b^u > 0$, no public services will be provided to the small part and the municipality will break up. By substitution we obtain

$$U_b^{sep} - U_b^u = \frac{n_s y_s y_b}{2ny} \left(\frac{w_s}{y_s} - \frac{w_b}{y_b}\right)^2 - \frac{k}{n_b}. \tag{23}$$

Comparing Equations (23) and (18) shows that the direct effect related to differences in average income is totally regulated through the difference in public service provision and does not affect the likelihood of secession.

The first term in (23) is similar to the second term in (18) and can be interpreted in the same way; if there is a positive tax rate difference, $t \neq t_s$, then the small part has to be compensated for the difference in redistribution level. This compensation is costly since it decreases the amount of public services to the big municipality part.

The second term shows that the fixed cost has a negative impact on the net utility of separation. This is because as long as the municipality stays united, the small part contributes to the fixed cost. If there is no fixed cost to run a municipality, the majority in b is never better off keeping the municipality united.

From Equation (23) it follows that

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$$\frac{\partial \left(U_b^{sep} - U_b^u\right)}{\partial n_s} = \frac{n_b y_b^2 y_s}{2n^2 y^2} \left(\frac{w_s}{y_s} - \frac{w_b}{y_b}\right)^2 \geq 0. \tag{24}$$

As the population in the small part grows larger in absolute terms, the secession outcome becomes more likely. This is because a growing population in the small part decreases the difference between t and t_s and, hence, increases the difference between t and t_b. Since any differences in average income are directly regulated though different levels of public service provision, an increase in $|t - t_b|$ moves the median voter in the big part further away from her preferred level of redistribution.

The effect of a change in n_b is

$$\frac{\partial \left(U_b^{sep} - U_b^u\right)}{\partial n_b} = -\frac{n_s y_b^2 y_s}{2n^2 y^2} \left(\frac{w_s}{y_s} - \frac{w_b}{y_b}\right)^2 + \frac{k}{n_b^2}. \tag{25}$$

The sign of the effect is ambiguous. The first term is negative and indicates the gain of staying united when the population in the big part increases. A growing population in the big part decreases the difference between t and t_b, and thus moves the level of redistribution closer to the preferred level for the median voter in the big part. The second term is positive, showing that the per capita cost of k decreases as the population increases.[7]

The main results from this section give the following proposition:

Proposition 3. *The likelihood of secession is increasing in* $|\frac{w_b}{y_b} - \frac{w_s}{y_s}|$, *decreasing in* k, *and increasing in* n_s.

5   An Income Equalization System

Equity in local service provision is an explicit objective for the Swedish government. Funds are redistributed from municipalities with higher average income than the national average to municipalities with lower income through an income equalization system.[8] Such a system does not only have an effect on differences in public service provision among municipalities, but also on the differences within a municipality, since it changes the reservation utility (Equation [9]) for the small municipality part.

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[7]More comparative statics are presented in the Appendix.

[8]Further equalization is achieved by a cost equalization system, which redistributes funds from municipalities with lower structural costs to those with higher costs, based on 15 components.

Consider an income equalization system, such as the Swedish one, that is budgetary neutral for the central government and yields the same amount of public services for municipalities that choose the same tax rate and have equal population sizes.[9]

For simplicity we assume that average income in the united municipality equals the national average.[10] Municipality part j's budget constraint if there is separation (3) changes to

$$g_j^{sep} = \left(t_j - \frac{t_j^2}{2}\right)y_j - \frac{k}{n_j} + (y - y_j)\left(t - \frac{t^2}{2}\right), \qquad (26)$$

where the last term shows the redistribution of income between municipalities; g_j^{sep} increases for poor municipalities and decreases for rich municipalities. Since average income in the united municipality equals the national average, its budget is not affected. The new difference in service provision between the big and the small municipality parts is obtained by the difference between Equations (17) and (10), where we insert the Expressions (1), (2), (4), (14) and the new budget constraint (26):

$$g_b - g_s = -\frac{n_b y_b^2 y_s}{2ny^2}\left(\frac{w_s}{y_s} - \frac{w_b}{y_b}\right)^2 + \frac{k}{n_s}. \qquad (27)$$

Comparing Equation (27) to Equation (18) shows that the income equalization system removes the direct effect of more public service provision to the municipality part with the higher average income. The other two effects remain; the small municipality part still pays the whole fixed cost k but is compensated for any differences between t and t_s.

The income equalization system does not alter the secession problem of the median voter in the big part. Using the big part's new budget constraint in case of separation (26), and the new utility constraint that has to be considered by the median voter in the big part ([9] and [26]), gives the same expression for $U_b^s - U_b^u$ as in Equation (23). This result is due to the fact that in case of separation, both municipalities' budget constraints change. If the small municipality part has a higher

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[9]To equalize average income across municipalities is not an objective for a social planner since the utility function is linear. This exercise is merely done for illustrating some of the effects that an income equalization system has on the problem at hand.

[10]The result does not depend on this assumption.

average income than the big part, the income equalization system results in an increase in g_b^{sep} and a decrease in g_s^{sep}, where the latter effect affects g_b positively via the utility constraint (9). The opposite applies if the big municipality part has a higher average income than the small part. In this way, the effects of the income equalization system on U_b^u and U_b^{sep} are exactly the same.

Proposition 4. *An income equalization system does not affect the likelihood of secession, but results in an increase (decrease) in public service provision to the municipality part with the lowest (highest) average income.*

6 An Illustrative Example

In 1997, representatives from three municipality parts in Göteborg – the second largest municipality in Sweden – applied to the Legal, Financial and Administrative Services Agency (*Kammarkollegiet*) for investigations about local secessions. The applicants were concerned about the declining level of public services and pointed out that the resources allocated to their municipality parts were the lowest in the municipality.

The three parts – Askim, Torslanda and Älvsborg – are the wealthiest of the 21 municipality parts in Göteborg. Average income is high, and the shares of unemployed and social benefit recipients are low. The representatives from the three rich parts claimed to accept that resources should be allocated based on needs and not on tax revenue contribution, but not to such a great extent.

The investigations, carried out by the Swedish Association of Local Authorities (*Svenska Kommunförbundet*), pointed out that in the current equalization system among municipalities, tax bases and structural costs are of nearly no importance; all municipalities face the same economic conditions. Hence, if the municipality parts were to break out, they would become net contributors to the equalization system, since incomes were higher and structural costs lower than the national averages. However, all three parts would be better off financially as independent municipalities anyway, especially the two with the highest average incomes, Askim and Älvsborg. The investigations showed that the allocation of public funds within Göteborg favored the poorer municipality parts to the degree that if the three rich parts seceded, the tax rate would have to be raised by about 0.6 percentage points to keep the per

capita public consumption unchanged. In all, after considering non-economic factors as well, the investigator assessed that a partition of the municipality could be considered if supported by public opinion (Svenska Kommunförbundet, 1997).

Referenda were held in September 1998, at the same time as the elections for the Riksdag and the municipal council. The majorities in the three applying parts were pro-secession, but only about 12 percent of the voters in the rest of the municipality said yes. The municipal council of Göteborg decided not to recommend a partition and based on this, the secessions were denied, first by the Legal, Financial and Administrative Services Agency (*Kammarkollegiet*), and second, after appeals against the verdicts, by the central Social Democratic government.

The Göteborg case shows that when the local government provides more public services to some municipality parts, the neglected parts may prefer separation. Although independence involves new costs, it does provide the benefit of better preference correspondence between local politicians and the people.

7 Summary and Conclusions

In this paper I have looked into how local public services are allocated within a municipality when politicians care only about the well-being of the population in one part of the municipality, while the other part has the right to secede.

The model presented is simple and assumes perfect substitutability between private and public consumption, thus ignoring possible interaction and income effects. The strength of such a simplifying assumption is, however, that the mechanisms at work are straightforward to identify and interpret, and comparisons with earlier work are easily made.

The results show that the right to secede sets serious limits on politicians behavior. The marginalized part obtains more public services the higher its average income, and the greater the differences in income distributions between the municipality parts.

These effects are the same that Bolton and Roland (1997) and Persson and Tabellini (2000) find when studying the likelihood of both secession and accommodating policy when there is no discrimination between the two parts. The same effects are thus at work, whether allocation of public services are allocated in a discriminatory manner or not.

However, the difference in average income does not matter for the likelihood of secession in the model presented in this paper. Despite the political dominance of one of the municipality parts, all differences in average income is entirely regulated through the allocation of public services.

An income equalization system that redistributes income from rich to poor municipalities has no impact on the likelihood of secession, but removes the importance of average income in the intra-municipal allocation of public services. The scope of providing less services to a marginalized poor part is in this way decreased, while it becomes easier to give less services if the municipality part is rich.

I would assume that differing service levels are often used to redistribute resources from richer to poorer municipality parts, as in the Göteborg case discussed in this paper. Since the inter-municipal income and cost equalization system makes economic conditions the same in rich and poor municipalities, secession would not result in the three parts benefiting from increased tax bases. Nevertheless, secession became desirable as public service resources were too scarcely allocated to the rich parts compared to the rest of the municipality.

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Appendix

Comparative Statics for $g_b - g_s$ (Section 3)

$$\frac{\partial \left(g_b - g_s \right)}{\partial w_s} = \frac{n_s}{ny} \left(1 - t \right) \left(y_s - y_b \right) - \frac{n_b n y_b^2}{n^2 y^2} \left(\frac{w_s}{y_s} - \frac{w_b}{y_b} \right) \tag{28}$$

$$\frac{\partial \left(g_b - g_s \right)}{\partial w_b} = \frac{n_b}{ny} \left(1 - t \right) \left(y_s - y_b \right) + \frac{n_b n y_b y_s}{n^2 y^2} \left(\frac{w_s}{y_s} - \frac{w_b}{y_b} \right) \tag{29}$$

$$\frac{\partial \left(g_b - g_s \right)}{\partial y_s} = - \left(t - \frac{t^2}{2} \right) + \frac{n_b w_b y_b}{ny^2} \left(\frac{w_s}{y_s} - \frac{w_b}{y_b} \right)$$
$$+ \frac{n_b y_b^2}{n^2 y^2} \left(\frac{n_s y_s}{y} + \frac{1}{2} \right) \left(\frac{w_s}{y_s} - \frac{w_b}{y_b} \right)^2 - \frac{n_s}{ny} \left(y_s - y_b \right) \left(1 - t \right)^2 \tag{30}$$

$$\frac{\partial \left(g_b - g_s \right)}{\partial y_b} = \left(t - \frac{t^2}{2} \right) - \frac{n_b w_s y_b}{ny^2} \left(\frac{w_s}{y_s} - \frac{w_b}{y_b} \right)$$
$$+ \frac{n_b^2 y_s y_b^2}{n^2 y^3} \left(\frac{w_s}{y_s} - \frac{w_b}{y_b} \right)^2 - \frac{n_b}{ny} \left(y_s - y_b \right) \left(1 - t \right)^2 \tag{31}$$

Comparative Statics for $U_b^{sec} - U_b^u$ (Section 4)

$$\frac{\partial \left(U_b^s - U_b^u \right)}{\partial w_s} = \frac{n_s y_b}{ny} \left(\frac{w_s}{y_s} - \frac{w_b}{y_b} \right) \tag{32}$$

$$\frac{\partial \left(U_b^s - U_b^u \right)}{\partial w_b} = \frac{n_s y_s}{ny} \left(\frac{w_b}{y_b} - \frac{w_s}{y_s} \right) \tag{33}$$

$$\frac{\partial \left(U_b^s - U_b^u \right)}{\partial y_s} = \frac{n_s y_s y_b \left(2 n_s w_s y_s + n_b \left(w_s y_b + w_b y_s \right) \right)}{2 n^2 y_s^2 y^2} \left(\frac{w_b}{y_b} - \frac{w_s}{y_s} \right) \tag{34}$$

$$\frac{\partial \left(U_b^s - U_b^u \right)}{\partial y_b} = \frac{n_s y_s y_b \left(2 n_b w_b y_b + n_s \left(w_s y_b + w_b y_s \right) \right)}{2 n^2 y_b^2 y^2} \left(\frac{w_s}{y_s} - \frac{w_b}{y_b} \right) \tag{35}$$