Explaining the Development of Capital Asset Volume in Swedish Local Governments

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Abstract
This paper investigates explanations of variation in the development of capital asset volume between Swedish local governments, 1999–2008. As a pre-study, four case studies were performed, generating seven suggested explanatory factors. Hypotheses were generated by combining the suggested factors with a new political economy framework containing two general assumptions. A national dataset of Swedish local governments was used in a multiple linear regression analysis, which indicates that four significant explanatory factors explain 42 % of the variation.

Increasing capital asset volume could be explained by population growth, high per capita capital asset volume at the beginning of a period, high solidity at the beginning of a period, and increasing tariffs. Decreasing capital asset volume could be explained in the opposite way.

From a new political economy perspective, the major finding is that politicians tend to adjust the service capacity of capital assets to the population size of the municipality. They tend to use all available resources for their capital investment activities to maintain or improve the services provided by the capital assets, as long as doing so complies with sustainable economic conditions.

Key words: Capital assets, capital investments, new political economy, population growth, economic conditions, local government

Introduction
Capital assets in local infrastructure are of common concern to society. Local governments in Sweden make extensive capital investments. Considerable resources are used to renew, improve, and expand public service generated by capital assets. Capital investments, for example, are realised in buildings, streets, water and sewage infrastructure, waste disposal, parks, and broadband provision. These capital assets are important in developing municipalities, as they create the conditions people need in order to live and work. Public infrastructure investment has been shown to contribute to community growth (Kemmerling & Stephan, 2002; Stephan, 2003; Romp & de Haan, 2007). However, in some Swedish local governments, capital investment activities lead to increasing capital asset volume, while in others they lead to decreasing capital asset volume. What could explain such variation in the development of capital asset volume between local governments?

The volume of capital investments and, consequently, of capital assets in for-profit organisations is limited by profitability criteria (Dean, 1951). The level is determined by an organisation's cost of capital and economic objectives, such as solidity (Arwidi & Yard, 1985). Local governments are not-for-profit organisations whose task is to provide as good service as possible given available resources (Hofstede, 1981). Profitability criteria are subordinate, so variations in capital asset volume may be explained by other factors.

Access to monetary resources is a possible explanation, as it influences local government activities (Knutsson, Mattisson, Ramberg & Tagesson, 2008). When a local government achieves relatively good financial results, this leads to an increased volume of available resources, for example, with which to make capital investments. Strong financial conditions afford municipalities resources with which to expand their capital asset volume. However, Norrlid & Ehrnborg (2007) demonstrate that it is difficult to find structural explanations of why some Swedish local governments have strong finances, while other have weak finances.

Another important condition affecting local government activity is population size (Jörgensen, 2004), as it affects the financial manoeuvring room and need for services. Some local governments have to manage population growth, sometimes even explosive growth, while others have to manage population decrease. A challenge is to manage the capital investment process so that the development of capital asset volume corresponds to population changes.

As resource allocation in local government is somewhat dependent on political policy making and prioritising (Agyeman & Broadbent, 2005), studying political control could offer a way to understand variations in capital asset volume.

The literature suggests several possible explanations of variation in capital asset volume. However, the question remains as to how population, financial conditions, and political control jointly affect capital asset volume. Is seems justified to develop theory in this area and improve our knowledge of municipal capital asset management. This paper seeks to explain variations in the development of capital asset volume in Swedish local governments.

Method

The study was conducted in two steps: first, a pre-study of four cases was performed to derive possible explanatory factors; second, generalised explanations of those factors were formulated and investigated.

Pre-Study

The technical service administrations of four local governments were investigated inductively to generate possible explanations. Cases were selected to facilitate both theoretical and direct replication (Yin, 2003). Two local governments with decreasing and two with increasing capital asset volumes were chosen. Capital asset volume was measured at the government administration level, so assets in public companies owned by local government were not included. Asset development was measured between 1999 and 2008 using balance sheet data, specifically, data on tangible fixed assets. Asset development was measured as the percentage of real change, adjusted for inflation according to the official national KPI index. The case studies were conducted from 2007 to 2009, when interviews were held with responsible public officials and politicians. The analysis yielded several possible explanatory factors.

Study for Statistical Generalisations

The results of the case studies were combined with a theoretical framework to generate hypotheses about how the possible explanatory factors might explain the variation. Data were obtained from the national *Webor* database and from *Statistics Sweden.* Linear multiple regression was used to analyse the data; the hypotheses were tested using the regression model.

Pre-Study: Suggested Explanatory Factors

Results of the four cases are summarised in this section (see XX (2010) for a more detailed presentation). The case study results derived from a qualitative analysis of data from documents and interviews with politicians and public officials. The results identified factors that could conceivably explain the variation in capital asset volume. These factors include both population and financial conditions, as follows:

Population conditions

- Population growth
- Capital asset volume per capita at the beginning of a period

Financial conditions

- Financial results
- Solidity at the beginning of a period
- Taxable income development
- Tax rate development
- Tariff level development

A New Political Economy Framework

This study seeks to explain an economic phenomenon in politically controlled organisations without focusing on any particular theory. New political economy is therefore an appropriate approach for such a study, because it seeks to understand how politics and economics are interrelated (Verdier, 1994). Input

from various theories is used in seeking to understand economic decision-making in politically controlled organisations (see Besley, 2007). The new political economy position lies somewhere between a naïve desire to optimise and the overly pessimistic public choice approach (Besley, 2006). The present study does not seek to develop perfect, elegant, internally consistent theory; instead, the aim is to find and develop useful explanations that help us understand economic decision-making in politically controlled organisations (cf. Besley, 2007). When developing a framework for the study, the guiding principle was to find relevant assumptions that help us understand how economics and politics are interrelated. The framework comprises two assumptions; the relationships between these and existing theories will be presented in next section. The assumptions are as follows:

i. Politicians want to be re-elected and hence strive to attain determined goals.
ii. Politicians strive to attain sustainable economic conditions.

These assumptions may appear somewhat competing or overlapping. However, the aim is not to develop an internally consistent framework, but to find conceivable explanations.

Politicians Want to be Re-Elected and Hence Strive to Attain Determined Goals

Downs (1957) suggests that politicians want to be re-elected, and that legitimacy is important when it comes to being re-elected (Alesina, 1988). These conditions correspond to the arguments of Saint-Paul (2000) and Besley (2007), who claim that politicians can be expected to act in a way that maximises public benefits. This is because democratic political systems will elect competent politicians motivated to maximise public benefit (see Besley, 2006). If this principle applies throughout the political system, it should even condition policy making at the national level. Public policies could then be expected to be designed to maximise public benefit.

The law for local governments in Sweden (KL, 2 ch., 3 §) dictates that local governments may not make decisions that disadvantage their citizens, except under particular circumstances. Local governments are even forbidden to manage their business activities to earn profit (KL, 2 ch., 7 §). Accordingly, politicians have clear instructions to act in a way that creates public benefits. However, the precise interpretation and specification of what constitutes public benefits is up to politicians, so policy goals could be expected to reflect their interpretations of public benefits.

Politicians are also responsible to voters (Aars & Fimreite, 2005). Politicians know that voters could hold them accountable for the promises made when campaigning. If a politician wants to be re-elected, he or she must at least attempt to attain determined goals. Performance measurement and accountability have become common in the public sector (Hood, 1995; Humphrey, Miller & Scapens, 1993). Gray, Owen & Adams (1996) argue that politicians must demonstrate that they have acted in line with their campaign promises. So, if politicians' goals reflect their interpretations of what constitutes public benefit, and if politicians are expected to strive for public benefit, then they could be expected to strive to attain determined goals.

Politicians Strive to Attain Sustainable Economic Conditions

The law for local governments in Sweden (KL, 8 ch., 1 §) dictates that local governments must maintain sustainable economic conditions. Responsible administration of shared resources improves the preconditions for generating public benefits in the long run. Ignoring demands for sustainable economic conditions could certainly bring short-term public benefits, but will be punished in the long term. Accordingly, politicians are limited in how they can act to attain determined goals and generate public benefits: their actions are limited by the requirement to maintain sustainable economic conditions.

This assumption recalls Tiebout's (1956) assertion that politicians strive to attain balance between the capacity to provide service and population size. Such a balance implies cost-efficient operations, which must be regarded as consonant with sustainable economic conditions.

Hypotheses

Population-Related Hypotheses

The framework stipulates that politicians want to be re-elected and hence strive to attain determined goals. The lowest common denominator for these goals should be the provision of adequate service for local inhabitants. The case studies suggest that population development interacts with the development of capital asset volume, though the results do not indicate how this interaction occurs. How does a politician act to attain determined goals given a certain population size?

Population growth could conceivably lead to increasing demand for service and consequently an increasing need for capital assets to produce the service. The relationship is nevertheless ambiguous. Ladd (1992, 1994) finds no clear pattern for the relationship between population growth and volume of public expenditure. However, her results suggest that population growth is related to greater growth in capital investment volume. This leads to the first hypothesis:
H1 *Development of capital asset volume is positively related to development of population size.*

Ladd (1992) suggests that sparsely populated areas can attain service delivery goals for an increasing population without a corresponding increase in capital asset volume. What does this mean for investment activities? A large capital asset volume per capita should imply no need for additional capital assets, even if the population increases. Population growth should instead bring the service delivery capacity to a more optimal level, at which the cost per capita is lower. This corresponds to the assumption that politicians strive to attain sustainable economic conditions. This leads to the second hypothesis:
H2 Development of capital asset volume is negatively related to capital asset volume per capita at the beginning of a period.

Finance-Related Hypotheses

The case studies also suggest that financial factors explain variations in capital asset volume. The framework assumes that politicians strive to attain determined goals because they want to provide public benefits and be re-elected. It could then be assumed that politicians will use the available financial resources to attain the determined goals. However, politicians must avoid excessive use of financial resources, because politicians are also assumed to strive to attain sustainable economic conditions. This means that politicians could be expected to use the available financial resources, while considering the financial conditions needed to achieve sustainable economic conditions. This argument could be used to predict how financial factors could explain variations in the development of capital asset volume.

Financial results are a potentially decisive factor. The law for local governments stipulates that any municipal deficit must be recovered in three years (KL, 8 ch., 5a §). Deficits exert pressure on operational activities and could imply pressure on expenditures for maintenance, depreciation, and interest, while surpluses will lead to less financial pressure and better liquidity. That could be assumed to increase the financial manoeuvring room and in the long run increase the capital asset volume. Accordingly, the third hypothesis is as follows:
H3 *Development of capital asset volume is positively related to financial results.*

Capital assets are not financed solely by previously generated surpluses. Ladd (1992) finds that an increasing capital asset volume often leads to increasing borrowing, which leads to future interest costs. To maintain sustainable finances, borrowing and future interest costs cannot be allowed to increase out of control. Less borrowing allows greater future latitude to take out new loans. High solidity implies the possibility of borrowing more resources and increasing the capital asset volume. Low solidity makes it more difficult to finance new capital assets by borrowing. This leads to the fourth hypothesis:
H4 *Development of capital asset volume is positively related to the solidity at the beginning of a period.*

Alesina & Perotti (1994) indicate that increasing capital asset volume tends to be financed by increasing taxes. Whether the increased outlays call for higher taxes, or higher taxes amass resources that are then used to finance more outlays, is unknown. However, tax revenues depend on both the tax rate and the inhabitants' taxable income. The case studies suggest that tariff level could be an explanatory factor. Capital assets (at least in Sweden) are often financed by a tariff system. Higher tariff levels lead to more financial resources that can be used to increase the capital asset volume. The case studies indicate that tax rate, inhabitants' taxable income, and tariff levels contribute to explain variation in capital asset volume development. Public income increases if any one of these factors increases, and the resources gained can be used to increase capital asset volume. Conversely, a decrease in any one of these factors could be assumed to lead to a decrease in capital asset volume. Accordingly, the fifth, sixth, and seventh hypotheses are as follows:
H5 *Development of capital asset volume is positively related to development of inhabitants' taxable income.*
H6 *Development of capital asset volume is positively related to tax rate.*
H7 *Development of capital asset volume is positively related to tariff levels.*

Operationalisation of Variables

Dependent Variable
1. Capital asset volume development
Independent Variables
2. Population growth
3. Capital asset volume per capita year 1999
4. Financial results per capita
5. Solidity year 1999
6. Taxable income per capita development
7. Tax rate development
8. Tariff level development

Table 1: Variables

The variables included in the hypotheses are summarised in Table 1. A period of nine years was estimated to constitute an appropriate period over which to study capital asset development. This should be compared with the period of seven years used by Ladd (1994) to study population growth. To include several elections, the 1999–2008 period was chosen. Financial data were adjusted to inflation according to the KPI index.

Local governments in Sweden are of various sizes. So as not to disturb the comparison, it is necessary to adjust some of the variables according to population size. For this reason, the development of several variables was transformed into percentage change terms.
Capital asset volume development: the study is delimited to the capital assets included in the balance sheet. The real change from 1999 to 2008 was measured as a percentage change.

Population growth was measured as the percentage population change over the period.

Capital asset volume per capita year 1999 was measured in thousands of Swedish crowns (TSEK).

Financial results per capita is measured before extraordinary entries. The variable is adjusted by population size, to prevent population size from disturbing the comparisons. To measure the entire period, average financial results per capita over the period were used in the variable.

Solidity year 1999 was computed from the official financial statements and is computed as the equity share of total assets. All commitments included in the financial statements are considered. However, pension commitments not included in the financial statements are not considered.

Taxable income per capita development was measured as the real percentage change over the period. Tax rate development was measured as the change in percentage points over the period.

Tariff level development was measured as the real percentage change over the period.

Results

Preparatory Analysis Results

There are 290 local governments in Sweden. To analyse all the relationships implied by the hypotheses, only governments possessing a complete dataset for all variables were included in the analysis. Complete datasets were available for 287 governments. Scatter plots indicated that the variables were appropriate for linear regression analysis (see Appendix). An initial regression residual analysis indicated some influential outliers to be removed from 15 cases (cf. Aczel & Sounderpandian, 2009). The following analysis was based on the remaining 272 local governments possessing complete datasets.

Variable	Mean	Standard deviation	Range	KS-test Statistics	KS-test p-value
Dependent					
1. Capital asset volume development	5.2%	27.9 p.p.	-72 – 95%	0.040	0.200
Independent					
2. Population growth	0.5%	7.1 p.p.	-16 – 23%	0.062	0.013
3. Volume of capital assets per capita year 1999	TSEK 25.3	TSEK 8.7	TSEK 5–77	0.114	0.000
4. Financial results per capita	SEK 378	SEK 477	SEK -2247 – 1951	0.049	0.042
5. Solidity year 1999	13.6%	23.9 p.p.	-73 – 72%	0.052	0.053
6. Taxable income per capital development	29.0%	5.2 p.p.	18 – 46%	0.058	0.033
7. Tax rate development	0.37 p.p.	.50 p.p.	-0.71 – 2.40 p.p.	0.166	0.000
8. Tariff level development	-8.3%	27.1 p.p.	-79 – 80%	0.079	0.000

p.p. = percentage points; TSEK = thousand Swedish crowns; ch. = changes

Table 2: Descriptive Statistics (n=272)

Table 2 presents descriptive statistics for the variables. Independent variables with distributions that differ too much from that of the dependent variable will not help explain variation in the dependent variable. The distribution was estimated by analysing frequency diagrams using a normal curve, using skewness measures, comparing means with trimmed means, and using the Kolmogorov-Smirnov (KS) test (see Table 2). The KS test results do not indicate a perfectly normal distribution; however, the test is considered too sensitive for large samples, like the one studied here (Djurfeldt & Barmark, 2009). In addition, the central limit theorem implies that it is possible to compromise on the requirement for normally distributed variables if the sample is sufficiently large (i.e., $n > 30$) (cf. Aczel & Sounderpandian, 2009). All in, the variables were estimated to be normally distributed to an extent that makes multiple regression analysis meaningful.

Correlations

Variable	1.	2.	3.	4.	5.	6.	7.	8.
1. Capital asset volume development	1.00							
2. Population growth	.555**	1.00						
3. Volume of capital assets per capita year 1999	– .397**	–.425**	1.00					
4. Financial results per capita	.306**	.417**	–.182**	1.00				
5. Solidity year 1999	.209**	–.092	.181**	.170**	1.00			
6. Taxable income per capita development	– .032	–.009	–.022	–.036	.030	1.00		
7. Tax rate development	.062	.074	.010	–.197**	.072	.188**	1.00	
8. Tariff level development	.314**	.195**	.059	.059	.240**	.022	.007	1.00

Pearson* $p < .05$ (two-tailed); ** $p < .01$ (two-tailed); $n = 195$

Table 3: Correlation Matrix

Table 3 shows the correlation matrix for the variables analysed. The Pearson correlation test was used. The dependent variable Capital asset volume development displays a positive correlation ($p < .01$) with the independent variables *Population growth, Financial results per capita, Solidity year 1999,* and *Tariff level development.* The variable also displays a negative correlation ($p < .01$) with *Volume of capital assets per capita year 1999.*

Regression

Table 4 presents the results of a multiple linear regression analysis including the seven suggested independent variables. The adjusted R^2 value indicates that the model explains 42 % of the variation in capital asset volume development. The regression model is very strongly significant ($p < .001$; two-tailed).

Four of the seven variables possess significant explanatory value ($p < .01$): *Population growth, Capital asset volume per capita year 1999*, and *Tariff level development* are very strongly significant ($p < .001$), while *Solidity year 1999* is strongly significant ($p < .01$). Three variables possess no significant explanatory value. Multicollinearity diagnostics indicate that the highest variance inflation factor (VIF) value is 1.569; this indicates some multicollinearity between the independent variables, but it is lower than the limit value of 2.5 suggested by Djurfeldt & Barmark (2009, p. 114). The value of tolerance is not lower than 0.637, which is higher than the lowest limit of 0.5 (Djurfeldt & Barmark, 2009, p. 114).

Variables		Coefficient	p	Std. ß	Tolerance	VIF
Constant	b_0	.327	.000***	-	-	-
2. Population growth	b_2	1.334	.000***	.340	.637	1.569
3. Capital asset volume per capita year 1999	b_3	–.009	.000***	–.282	.758	1.319
4. Financial results per capita	b_4	.000	.131	.081	.748	1.338
5. Solidity year 1999	b_5	185	.002**	.159	.863	1.158
6. Taxable income per capita development	b_6	–.282	.272	–.052	.961	1.040
7. Tax rate development	b_7	.029	.288	.052	.887	1.127
8. Tariff level development	b_8	.229	.000***	.222	.896	1.116
R^2 value		.433		R^2 adjusted		.418
F value		28.836		*p* =		.000
Standard deviation from estimate		.213		*n* =		272
Residual, KS-test (with Lilliefors correction) *p* =		0.200				

Table 4: Results of Multiple Linear Regression 1 (method: enter)

The regression model including the seven independent variables seems to be useful in explaining the dependent variable *Capital asset volume development.* To investigate what effects the non-significant independent variables have on the model, an additional regression analysis was conducted excluding those variables. The second regression model is presented in Table 5. The adjusted R^2 value indicates that even this model explains 42 % of the variation in capital asset volume development. The regression model is very strongly significant ($p < .001$; two-tailed). The model is just slightly different compared to the previous model presented in Table 4. This is because the VIF values for the removed variables are relatively close to one, which means that they have relatively little influence on the explanatory value of the significant variables (see Aczel & Sounderpandian, 2009). For example, is the importance of the variable *Population growth* some higher, which could be explained by the relatively strong correlation with the removed variable *Financial results per capita* (see Table 3). This is also indicated by the lower VIF value in Table 5. All four variables possess significant explanatory value ($p < 0.1$): *Population growth, Capital asset volume per capita year 1999,* and *Tariff level development* possess very strong significance ($p < .001$), while *Solidity year 1999* is strongly significant ($p < .01$).

VIF values above one indicate some multicollinearity in this model, which means that the regression coefficients are somewhat inflated. However, the relationships between the independent variables'

Variables		Coefficient	p	Std. ß	Tolerance	VIF
Constant	b_0	.270	.000***	-	-	-
2. Population growth	b_2	1.486	.000***	.378	.756	1.323
3. Capital asset volume per capita year 1999	b_3	–.009	.000***	–.280	.761	1.313
5. Solidity year 1999	b_5	.202	.001**	.173	.896	1.116
8. Tariff level development	b_8	.222	.000***	.215	.901	1.110
R^2 value		.425		R^2 adjusted		.417
F value		49.400		*p* =		.000
Standard deviation from estimate		.213		*n* =		272
Residual, KS-test (with Lilliefors correction) *p* =		0.200				

Table 5: Results of Multiple Linear Regression 2 (method: enter)

explanatory values remain unchanged as long as all variables have VIF values of the same magnitude (jmf Aczel & Sounderpandian, 2009), as in this regression model. The presence of multicollinearity may thus be considered acceptable.

Result Discussion

The regression model presented in Table 5 was used to test the hypotheses.

Population-Related Explanations

The hypotheses include two explanations related to population. *H 1* predicts a positive relationship between development of capital asset volume and the development of population size. The regression model indicates very strong statistical significance ($p < .001$). Each percentage change in population implies a 1.49 percentage point change in capital asset volume in the same direction. The result supports the hypothesis.

H 2 predicts a negative relationship between development of capital asset volume and the capital asset volume per capita at the beginning of a period. This negative relationship seems to be very strongly statistically significant ($p < .001$). When capital asset volume per capita at the beginning of a period is SEK 1 000 higher or lower, the capital asset volume changes by 0.009 % over the period in the opposite direction, according to the regression model. The result supports the hypothesis.

The results indicate that population change is associated with an even greater change in the volume of capital assets, which develop in the same direction. This finding is consistent with the results of Ladd (1992, 1994), who finds that the investment volume increases faster than population, possibly because housing areas for new inhabitants are built on the outskirts of population centres. Connections to the existing capital asset network, such as water, sewage, and road infrastructure, will then imply a high marginal cost and be relatively resource demanding (see Tagesson, 2002).

The volume of capital assets per capita at the beginning of a period also turns out to be an explanatory factor. Although this result supports Ladd (1992), who proposed that an existing excess capacity in fixed assets can be used if the population increases. In that case, an equal increase in fixed assets is not necessary to maintain service levels, although the service demand increases with population growth.

Population growth and volume of capital assets per capita at the beginning of a period seem to be relevant explanations. The results confirm that population development is an essential condition for local government operations (see, e.g., Jörgensen, 2004).

Finance-Related Explanations

The hypotheses also include finance-related explanations. *H 3* predicts a positive relationship between development of capital asset volume and financial results. The correlation matrix indicates a statistically significant relationship ($p < .01$) between the variables. However, the financial results variable is not significant in the regression model ($p > .05$), so the hypothesis must be rejected. The variable does not add any explanatory value not included by the significant variables.

The correlation matrix (see Table 3) could help explain why the financial results variable is not significant in the regression model. A local government facing population growth often has surplus financial results and a relatively low capital asset volume per capita at the beginning of a period. This implies that the cost of capital (i.e., depreciation and interest) will be relatively low, contributing to a financial surplus compared with a local government with a high capital asset volume per capita and high and burdensome cost of capital. So, the financial results variable obviously does not help explain variations in capital asset volume, on top of those variables with stronger explanatory value.

H 4 predicts a positive relationship between development of capital asset volume and solidity at the beginning of a period. This relationship seems to be strongly statistically significant ($p < .01$). When solidity at the beginning of a period is one percentage point higher/lower, the capital asset volume changes by 0.20 % in the same direction over the period. The result supports the hypothesis that solidity at the beginning of a period is an explanatory factor.

When the solidity is high at the beginning of a period relative to that of other local governments, the volume of capital assets increases more than when it is low relative to that of other local governments. This can be explained by the fact that there is scope to fund additional investments by taking out new loans. The solidity at the beginning of the period provides a measure of the fiscal space available for new ventures when the period starts.

H 5 predicts a positive relationship between development of capital asset volume and development of inhabitants' taxable income. However, the results do not indicate any such relationship ($p > .05$), so the hypothesis must be rejected. One possible reason for this is that local governments in Sweden are part of a common system to equalise tax incomes to some extent. Therefore, increased taxable income does not increase the scope to fund additional investments for every local government.

H 6 predicts a positive relationship between the development of capital asset volume and of tax rate. There is no statistically significant relationship between those two variables ($p > .05$), so the hypothesis must be rejected. Tax rate development could reasonably be thought to be relevant to the availability of resources. However, it is not related to how much is spent on capital investments, possibly because resource allocation is a matter for politicians. Obviously, politicians do not make decision in such a systematic way that there is a statistical relationship.

H 7 predicts a positive relationship between the development of capital asset volume and of tariff levels. In contrast to the two preceding hypotheses, the results support this prediction, and there is a very strong statistically significant relationship between capital asset volume development and tariff level development ($p < .001$). When the tariff level changes one per cent, the capital asset volume changes 0.23 percentage points in the same direction.

The tariff level development indicates how much the politicians decided to strengthen the financial space created by a certain solidity level, by increasing tariff revenues received continuously by local governments during the period. The link between tariff level development and volume of capital assets can be understood from the fact that a significant proportion of local government investments is made in technical services, which are largely financed by tariffs in Sweden.
To sum up, the regression model supports four of the seven hypotheses. The regression model including the four variables helps explain 42 % (R^2 adjusted) of the variation in capital asset volume development (Table 5).

Understanding Variations in Capital Asset Volume Development
The volume of capital assets increases when population size increases. At the same time, the increase is smaller if the capital asset volume is relatively high at the beginning of a period. If service capacity in the form of capital assets is not adjusted to population increase, it will be difficult for politicians to attain determined goals for service quantity and quality. This finding agrees with those of Ladd (1992), who demonstrates that existing excess service capacity could be used when the population increases. In this case, the change in capital asset volume would not have to be as large as if there were no excess capacity. The result supports the assumption, based mainly on the arguments of Saint-Paul (2000) and Besley (2006, 2007), that politicians strive to attain determined goals. The assumption is also supported by the implication that politicians let the capital asset volume increase when the solidity is relatively high at the beginning of a period. There is thus willingness to make more capital investments if the solidity is high and to use the financial manoeuvring room to create assets that can provide public benefits.

However, findings about the relationship with solidity also say something about politicians' efforts to attain sustainable economic conditions, as politicians are unwilling to increase the capital asset volume if the solidity is relatively low. It should be mentioned that the average local government solidity is 13.6 % in Sweden in 1999; some local governments even have negative solidity. It is from this relatively low level that the variation occurs. To some extent, local governments accommodate themselves to their solidity condition; however, they are quick to spend more resources on capital assets as soon as their solidity becomes even slightly higher.

The hypotheses about inhabitants' taxable income, tax rate, and tariff level are also based on the assumption that politicians strive to attain sustainable economic conditions. Though one might expect such hypotheses to produce equivalent results, that is not the case. The tax rate does not have to be justified by a certain level of activity, so an increase in either taxable income or tax rate does not necessarily imply an increase in resources available for capital investments. Local government has many other priorities that also demand resources, so politicians could well choose to allocate resources for other activities.

Capital asset volume development is therefore not directly related to taxable income development or tax rate development. Alesina & Perotti (1994) find that public capital assets are generally financed by taxes. This is not the case in Swedish local governments, where the capital asset volume development could be explained by the tariff level development, as municipal infrastructure is financed largely by tariffs. Local infrastructure constitutes much of the total capital asset volume, which could explain the findings. The tariff level is determined by the need for financial resources relating to existing capital assets and future capital investment activities.

Concluding Remarks

Explanatory Factors

Four of the variables suggested by the case studies help explain variation in the development of capital asset volume between Swedish local governments during a period. Increasing capital asset volume could be explained by population growth, high per capita capital asset volume at the beginning of the period, high solidity at the beginning of the period, and increasing tariffs.

Decreasing capital asset volume during a period could be explained by the opposite conditions: decreasing population, high per capita capital asset volume at the beginning of the period, low solidity at the beginning of the period, and decreasing tariff levels.

Understanding Capital Asset Volume Development in Local Governments

The findings help us understand the decisive factors for the development of capital asset volume. As capital assets are important for local community welfare (see Kemmerling & Stephan, 2002; Stephan, 2003; Romp & de Haan, 2007), it is essential to understand how conditions differ between local governments. This understanding makes it possible to design policies and regulations if deemed necessary to create similar conditions for all local governments, which is a political aim.

In line with Knutsson et al. (2008), access to monetary resources is found to be a decisive factor affecting capital asset volume development in local governments. As in for-profit organisations (see Arwidi & Yard, 1985), resource availability determines the extent of capital investments. Another important factor in the local government context is population development, though this is not always aligned with the need for new capital assets. Even municipalities with decreasing populations may need greater volumes of capital assets to deliver new services, such as broadband, to their inhabitants.

The new political economy assumptions applied here were somewhat useful in seeking to understand and explain the development of capital asset volume in local governments. The results suggest that the most important insight into political decision-making concerning long-term capital investments and the

development of capital asset volume is as follows: Politicians tend to adjust the service capacity of capital assets to the population size of the municipality. They tend to use all available resources for their capital investment activities to maintain or improve the services provided by the capital assets, as long as doing so complies with sustainable economic conditions.

Further Research

The investigated population- and finance-related factors do not explain all the variation in capital asset volume development. The remaining variation may, for example, result from political actions. These action may to some extent be systematic, or result from local conditions to which local governments must react (cf. Fjertorp, Larsson & Mattisson, 2012). Political factors could be investigated in further studies, to understand why some local governments have increasing, others decreasing, volumes of capital assets.

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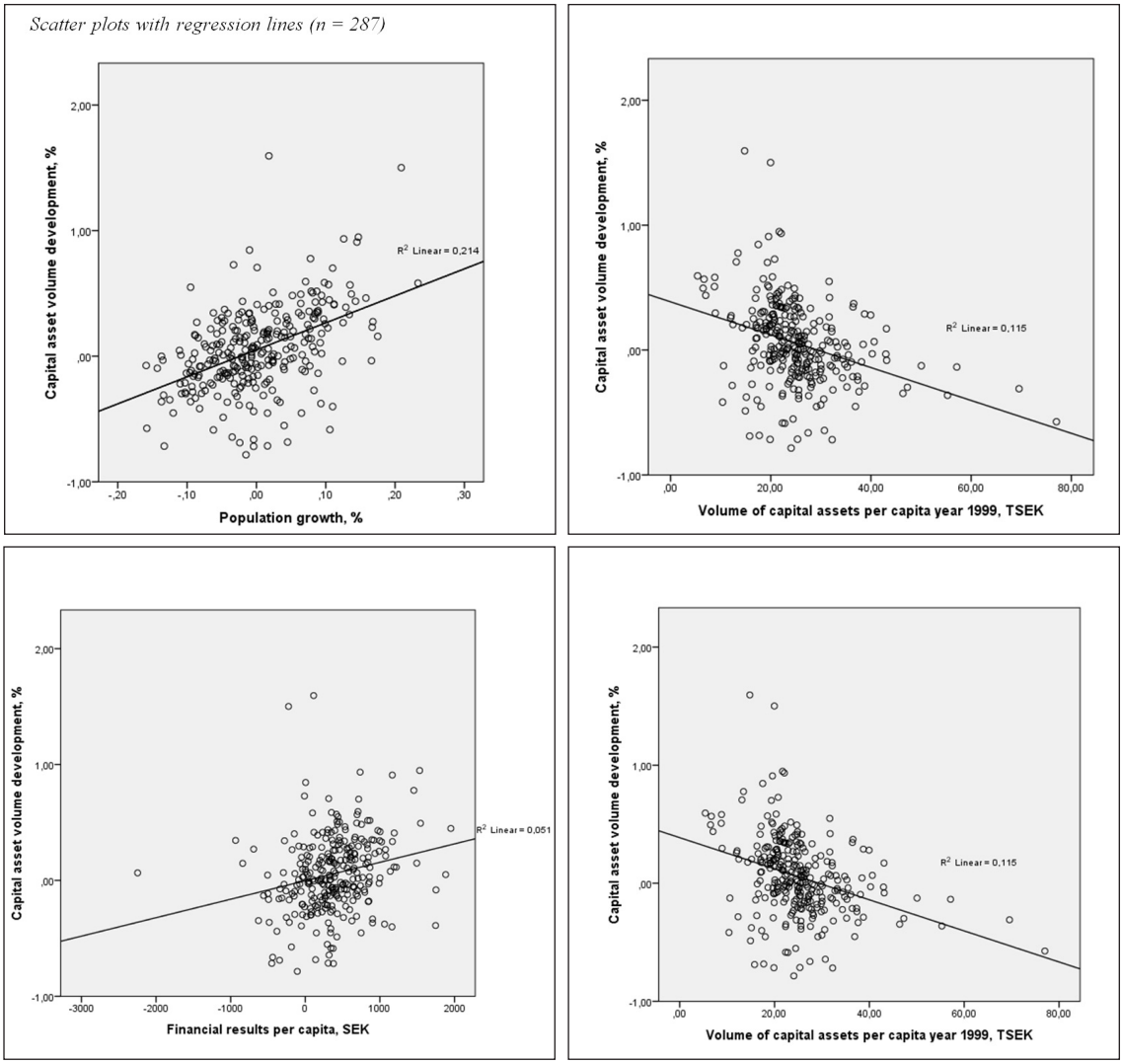
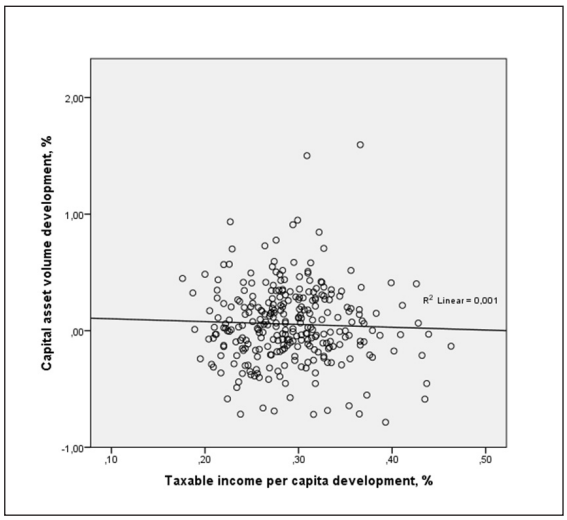
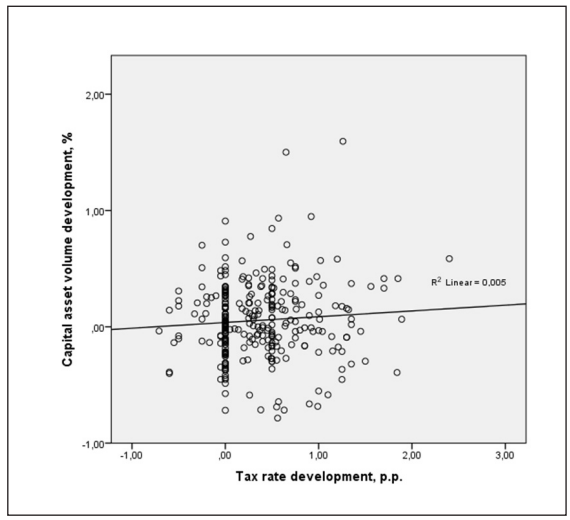
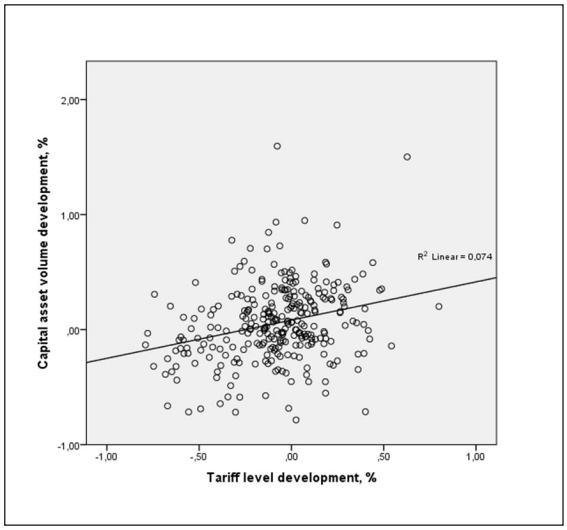
Appendix

Scatter plots with regression lines (n = 287)




Capital asset volume development, %
2,00
1,00
,00
-1,00
,10
,20
,30
,40
,50
Taxable income per capita development, %
R² Linear = 0,001


Capital asset volume development, %
2,00
1,00
,00
-1,00
-1,00
,00
1,00
2,00
3,00
Tax rate development, p.p.
R² Linear = 0,005


Capital asset volume development, %
2,00
1,00
,00
-1,00
-1,00
-,50
,00
,50
1,00
Tariff level development, %
R² Linear = 0,074