Capital expenditure deviations in a fragmented municipal context – the case of the Swedish municipal water and sewerage sector

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Abstract

Purpose – The aim of this paper is to explore whether and how external, political, financial and governance factors influence capital expenditure deviations in the Swedish municipal water and sewerage sector and to capture the consequences of municipal organisational fragmentation.

Design/methodology/approach – Panel data analysis of 238 municipalities and 1,190 observations of capital expenditure deviations over five years (2013–2017).

Findings – Apart from a low overall on average execution rate of 69%, the Swedish municipal water and sewerage sector seems generally sensitive to external stakeholder pressure for budget compliance, but not to the political power situation. Further, political signalling incentives generally do not influence capital expenditure deviations in the contexts of municipal corporations and cooperations, which supports the idea that these governance forms insulate the organisation from general stakeholder pressure and political control.

Practical implications – The practical implication is that large and constant capital expenditure deviations call for change in regulation and governance of the municipal sector. However, in countries such as Sweden, where externalising services to municipal corporations and cooperations is significant, this discussion needs to address the consolidated level of the municipality. Otherwise, a large share of the investment budget will be unscrutinised. More closely related to the Swedish water and sewerage sector, the risks associated with a constantly low execution rate should be analysed and addressed.

Originality/value – First, this paper contributes to the knowledge of aggregated capital expenditure deviations in general and specifically within the municipal water and sewerage sector. Second, analysing the municipal governance landscape adds further insights and suggestions on why budget performance varies. The results especially highlight that the governance forms of corporations and cooperations change the relation to political signalling incentives.

Keywords Municipalities, Accountability, Deviation, Budget, Investment, Water

Paper type Research paper

1. Introduction

The need for investment in water and sewerage systems is increasing in many Western countries, driven by aging assets, changing environmental requirements and population changes (Pot, 2019). In Sweden, the municipalities are responsible for water and sewerage operation, and for them this is a challenge since Swedish national estimations indicate that the annual investment level needs to increase with 40% compared to present level (Malm *et al.*, 2017). This is also difficult for Swedish municipal water and sewerage organisations

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since they struggle to carry out investments according to budget (Haraldsson, 2019). The risk is that insufficient investment levels might lead to future problems with supply interruptions, contaminated drinking water and various environmental impacts (Malm *et al.*, 2017). Substantial expenditure overruns, on the other hand, might impair the economy and may threaten to postpone other necessary investments. Large deviations may also threaten the credibility of the budget. As recognised in past research, municipal capital expenditures are hard to plan, and large deviations often occur (Cantarelli *et al.*, 2008; Benito *et al.*, 2015), but quite surprisingly the volume of municipal budget deviation research regarding capital expenditures is scant (Johansson and Siverbo, 2014; Benito *et al.*, 2015). This paper contributes to the limited research on capital expenditure deviations by assessing whether and how external, political, financial and governance factors influence capital expenditure deviations in the Swedish municipal water and sewerage sector.

That realised expenditures deviate from budgeted capital expenditures may have many different reasons. Deviations might, for example, depend on poor project designs, incomplete estimations, scope changes, uncertainty, inadequate procurement and so on. A challenge for water and sewerage organisations is that the utilities are long-lived assets located mainly underground, which make reinvestment needs hard to identify and investment decisions very uncertain regarding the future. A further difficulty is that the responsible organisation does not fully control how much and when to invest since this is dependent on other community-building plans and the societal development in general. The industry itself also points out that there is a lack of organisational capacity and a lack of competence in a number of functions that are central for the execution of investment projects (Malm *et al.*, 2017). However, municipal investment budgets are not set or executed in a political and institutional vacuum. Past research has identified that capital expenditure deviations systematically vary in relation to municipalities political, financial and external context (Cantarelli *et al.*, 2008; Benito *et al.*, 2015). However, these studies have addressed individual investment budget overruns (Cantarelli *et al.*, 2008) or general capital expenditure deviations in municipalities (Benito *et al.*, 2015) and not capital expenditure deviations in the municipal water and sewerage sector.

In the municipal sector, the capital expenditure budget can be seen as the political ambition and promise to the constituents about future welfare and can significantly influence living conditions, economic development and sustainability. This is why the capital expenditure budget is an important political signal of future priorities and welfare. In this paper, it is suggested that there are two, potentially opposing, political signalling behaviours: the ambition to signal *the competence to provide public goods and the competence of financial control*. The dominant theoretical view is that budgeted or actual investment expenditures can be politically used to *signal competence,* as in the political ability to provide public goods and services, in order to gain the approval of the constituencies (Rogoff, 1990; Drazen and Eslava, 2010). There is, however, a potential risk because large budget surpluses or overruns challenge the other budget virtue at play, that of budget compliance. Constant budget deviations signal insufficient budget discipline and incompetence, indicating that the politician is not in control (Johansson and Siverbo, 2014; Serritzlew, 2005). Minimising budget deviations might therefore be a viable strategy in order to *signal financial competence* (Ferreira *et al.*, 2020). As suggested by the research of Drazen and Eslava (2010), voters might potentially reward politicians who increase investment spending, but only to the extent that they do so without running large deficits.

Based on the premise that capital expenditure deviations evolve in relation to the external, political and financial situation of the municipality, an important aspect of this paper is that this context is now increasingly complex due to organisational change. Most Western societies have undertaken institutional and managerial reforms with the objective of increasing effectiveness, efficiency and economy at the municipal level, a development that has also influenced the water and sewerage sector. The Swedish water and sewerage sector

has not been fundamentally reformed or privatised. It has long been a municipal monopoly, financed by user charges instead of taxes (Haraldsson and Tagesson, 2014). But the Swedish water and sewerage sector has been extensively influenced by local governance decisions on organisational form (Haraldsson and Tagesson, 2014). Public corporations and cooperative arrangements are now conventional and popular municipal governance options for Swedish water utilities. It has been argued that this type of organisational development has led to a more diversified and fragmented organisation of public services delivery, which challenges the traditional accountability mechanisms within the public sector and reduces the publicness of these organisations (Saliterer and Korac, 2013). With increased decentralisation of responsibilities, budget decisions and their execution are moved to the local unit and potentially become less influenced by political interest. The underlying argument is that municipal governance decisions on organisational form can alter, replace or introduce new institutional, political and economic forces that might influence and shape budgeting practices and hence also capital expenditure deviations. This has not yet been investigated in municipal budget deviation research before. By addressing the Swedish water and sewerage sector, this research investigates if chosen governance form influences capital expenditure deviation and if external, political and financial factors influence capital expenditure deviations differently depending on the context of governance form. Against this background, this research will contribute to our understanding about how external, political, financial and governance factors influence capital expenditure deviations in the Swedish municipal water and sewerage sector characterised by organisational fragmentation.

The rest of this paper is structured as follows: Section 2 briefly describes the context of the Swedish municipal water and sewerage sector and municipal budgeting. In Section 3, the theory and expectation are developed. Section 4 describes the method. Section 5 presents the results and Section 6 provides concluding remarks and a discussion.

2. The Swedish water and sewerage sector and municipal budgeting

At the local level, Sweden has a two-tier system, with 290 municipalities and 21 county councils. The empirical context of this thesis is the 290 municipalities and their different organisations for delivering water and sewerage services. Sweden has a total population of about 10.2m, and the average size of a municipality is about 33,000 inhabitants. The largest municipality has approximately 974,000 inhabitants, and the smallest has fewer than 2,500. The power of municipalities is based on representative democracy; elections at the local level are direct and held every four years, at the same time as the national elections are held. Swedish municipalities are responsible for carrying out a wide range of services, including elderly care, schools and cultural services. Relevant for this paper is that municipalities have the principal responsibility for the water and sewerage services.

The business is characterised by its capital intensity as it requires significant investment to build, maintain and develop systems and works. The turnover within the sector is approximately EUR 2bn annually, and the yearly investment level is about EUR 1.6bn, which constitutes 10% of the total municipal investments. Unlike other municipal activities, the water and sewerage operation is mainly financed by fees. As a fee-funded service, the municipal water and sewerage sector is regulated by the cost price principle (no profit allowed) and is required to have a separate economy from (1) other municipal services and (2) from other municipalities water and sewerage economy regardless of how the operation is organised (Haraldsson and Tagesson, 2013). There are many laws regulating the production of water and sewerage services, but there is no regulatory agency that assesses the performance.

As stated in the introduction, the Swedish municipalities have, traditionally and by law, a large degree of freedom as to how they organise their services. This organisational freedom

has resulted in variations regarding the organising of the municipal water and sewerage services. Based on a recent survey (Haraldsson, 2019), we know that approximately 50% have retained the traditional public administration. The other 50% have implemented corporations, federations or joint committees.

Regarding the organisational choice of municipal corporation, Haraldsson (2019) finds that 27% of the municipalities owns a corporation (stand-alone or in cooperation with other municipalities) to deliver water and sewerage services, which means that approximately 73% do not own a corporation related to the water and sewerage service. In Sweden, important arguments for implementing municipal corporations have been to stimulate professional governance and to facilitate the recruitment of required skills (Thomasson, 2013). It has also been suggested that by corporatising the service, the focus on its operations, investments and finances will improve (Thomasson, 2013). The corporation is a private legal form, and the municipal corporation is therefore a separate legal entity. The governance of the corporation takes place in accordance with the rules specified in the Swedish Companies Act. The change to a municipal corporation affects the role of politicians and the relationship with the users. When an activity is in the form of public administration, politicians are ultimately responsible for the budget, goals and activities. Upon corporatisation, this responsibility is transferred to the corporation's board and CEO (Thomasson, 2013). The role of municipal politicians is reduced to governing the corporation through ownership directives. A distance between politics and management arises (Thomasson, 2013). Another consequence is that the citizen becomes customer to the corporation, with the effect that accountability will be claimed at the direction of the professional management and not directly at the political level. As Grossi and Thomasson (2015) also point out, municipal corporations tend to emphasise professional accountability and customer orientation over political accountability and citizen interest. Over the last decade, there has also been an increase in the number of cooperative arrangements between municipalities. Today, about 26% of the municipalities are involved in a cooperative arrangement (through joint committees, municipal federations or corporations), implying that 74% of the municipalities do not cooperate (Haraldsson, 2019). The arguments for municipal cooperations within the Swedish water and sewerage sector can be summarised with reference to economies of scale, organisational strength and better potential for regional solutions to problems (Thomasson, 2013). As stated earlier, it is only possible to cooperate organisationally; you cannot merge water and sewerage collectives. There are mainly three regulated forms of cooperation: joint committees, municipal federations and corporations. There are only three joint committees in Sweden, so the form of cooperation is marginal. The municipal federation is, in terms of governance and transparency, largely similar to a municipality; it is governed by the Local Government Act and by a political council. The political council of the federation assembles politicians from the various cooperating municipalities. The council is, like an ordinary municipality, responsible for budget, goals and activities. The political influence is therefore more formal compared to the corporate form of cooperation. However, both solutions for cooperation, the corporation and federation, imply a political distance from the home municipality and complex governance characterised by negotiation between the cooperating municipalities (Thomasson, 2013). Importantly for this paper, the choice of organisational form also influences the relation to the regulation and practice of Swedish municipal budgeting.

According to the Municipal Act, the executive committee of the municipality must present a draft budget for the next calendar year before the end of October. The municipal council should then adopt the budget before the end of November. The budget must contain a plan for activities and economic management during the fiscal year and indicate the rate of taxation and funding allocations. The budget is to be divided into a budget for operational (current) expenditures and capital expenditures. The plan must also show how expenditures are to be financed and what the economic status is expected to be at the end of the fiscal year.

According to legislation, budgeted income must exceed expenditure unless an exceptionally strong financial position is invoked by the assembly. The budget is not audited; rather, the monitoring and follow-up of the budget are based on the information presented in the annual report. The budget legal requirements only apply to public administrations and municipal federations, not at the consolidated level of the municipality nor to individual municipal corporations. Municipal corporations are not formally required to have a budget, but it is standard practice for municipal corporations to let the board decide on an investment budget before the new year begins. Thus, if a municipality chooses a corporation for its water and sewerage service, then it will be the corporation board that decides the budget and controls its execution. Likewise, if a municipality chooses a municipal federation as governance form to cooperate with other municipalities, then it is the council of the federation that decides the budget and controls its execution. Both corporations and federations are also less restricted by the municipalities' financial policies concerning restrictions on borrowing (Thomasson, 2013). However, some municipalities have voluntarily introduced processes where the investment budgets of the whole consolidated municipality are approved by the municipal council (Haraldsson, 2019). This is however very uncommon.

3. Capital expenditure deviations in a fragmented municipal context

Past research on budget deviations is based on the relationship between the political ambition to *signal competence* (efficiency in running the municipality) and the political, financial and institutional context (Benito *et al.*, 2015). The theoretical argument, rooted in public choice theory and agency theory, is that politicians act strategically and opportunistically based on self-interest (Jensen and Meckling, 1976) with the goal of getting re-elected and staying in power (Downs, 1957). If information asymmetry exists, politicians can gain advantages through signalling competence (true or not) to their potential voters (Veiga and Veiga, 2007). In the context of budgeting for capital expenditures, politicians can opportunistically use the budget, the realised expenditures or the level of deviation to signal competence (Rogoff, 1990; Drazen and Eslava, 2010; Benito *et al.*, 2015). The dominant theoretical view is that the level of budgeted or actual investment expenditures can be politically used to signal the political ability to provide public goods and services (Rogoff, 1990; Drazen and Eslava, 2010). But when the political organisation is under tighter stakeholder control, minimising budget deviations might be politically emphasised in order to signal economic competence (Lago-Peñas and Lago-Peñas, 2008). Thus, it is expected that capital expenditure deviations might be influenced by two different signalling motives: the desire to signal *the competence to provide public goods and* the desire to signal *the competence of financial control*. As past research indicates, budgets are not set or executed in a vacuum; rather, they are influenced and shaped by institutional, political and economic forces (Benito *et al.*, 2015).

The novelty of this paper is the consideration of organisational governance form. Municipalities in Sweden have chosen several different organisational solutions (traditional public administration, municipal corporation, municipal cooperation, see Section 2 of this paper) to deliver the water and sewerages services to its fee-paying citizens. The point of departure is that municipal organisational governance form can alter, replace or introduce new institutional, political and economic forces (see Haraldsson and Tagesson, 2014; Haraldsson, 2017), which in this paper are expected to influence and shape budgeting practices and hence also capital expenditure deviations. The influence of governance forms could be directly in the sense that governance form explains (as independent factor) capital expenditure deviation in the Swedish water and sewerage sector, but also indirectly. Indirectly since other factors (external, political, financial) might influence capital expenditure deviation differently depending on the different contexts of the alternative governance forms. Against this background the theory is structured around four attributes. The first three, namely the attributes of the municipal external environment, the political

situation and financial situation, essentially cover factors used in previous municipal budget deviation research (Mayper *et al.*, 1991; Serritzlew, 2005; Benito *et al.*, 2015). Attributes of different governance forms are added to this structure in order to also include municipal organisational choice (public administration, corporation and cooperation).

3.1 Attributes of the external environment

The *size of the population* is an important factor in past budget deviation research in general (Mayper *et al.*, 1991; Serritzlew, 2005; Benito *et al.*, 2015). Since the municipal inhabitants might be voters, taxpayers, fee payers and service users, politicians view them as among the most important stakeholders (Haraldsson, 2017). Pursuing this argument, agency theory makes a link between the number of citizens and the level of pressure on the political organisation (Bolívar *et al.*, 2013). Bigger municipalities also have stronger professional administrations (Johansson and Siverbo, 2009) that might enable them to professionally programme budgets realistically. Both these aspects imply the tendency to minimise budget deviations. *Theoretically, it is expected that municipal size will be negatively associated with capital expenditure deviations (H1).*

However, bigger size might also increase the complexity of the municipal organisation (Collin *et al.*, 2017), which potentially could make it more difficult to programme and execute investments. It should also be added that Benito *et al.* (2015) found that bigger municipalities were associated with higher capital expenditure overruns compared to smaller ones, but this was in a more general municipal budget context in Spain. Against this background it should be emphasised that municipal size might stand for many different aspects of the behaviour and characteristics of municipalities (Johansson and Siverbo, 2009; Collin *et al.*, 2017) and should therefore be interpreted with caution (Haraldsson and Tagesson, 2014).

Tax base. The influence of the municipal population depends not only on the number of inhabitants but also on their socio-economic status. Studies have shown that interest in municipal decisions is dependent on income level of the inhabitants (e.g. Jensen and Payne, 2005); the idea is that higher-income citizens (higher tax base) pay more taxes and thus expect to receive better services and more information about the use of taxes paid. One response to increased demand for efficiency and accountability is to demonstrate responsible use of voter-supplied resources (e.g. Ward *et al.*, 1994). *It is therefore expected that tax base will negatively influence capital expenditure deviations (H2).*

In a similar vein, in municipalities with relatively higher *tax rates or fee levels*, the inhabitants potentially put stronger pressure on the political system by demanding accountability (Ward *et al.*, 1994). The arguments are that higher tax rates affect the relative financial impact on taxpayers (Collin *et al.*, 2017) and citizens may also perceive a high tax level as an indicator of slack (Johansson and Siverbo, 2009). Higher levels of tax rate may therefore result in greater efforts from citizens to hold municipalities accountable for budgetary deviations (e.g. Johansson and Siverbo, 2009). Since the decision on the municipal tax rate is in the hands of the municipal politicians, they may feel the need to convince voters that the money is being used responsibly and deliver on budget. *Thus, the level of tax rate is expected to negatively influence capital expenditure deviations (H3).*

Fee levels for water and sewerage services differ among Swedish municipalities. Compared to the tax level, the fee is directly related to water and sewerage service and its users. A high fee level can therefore create a strong need for responsible politicians to signal economic control when investing in water and sewerage assets. *It is therefore expected that the fee level negatively influences capital expenditure deviations (H4).*

3.2 Attributes of the political situation

Theories about the political business cycle posit that voters' interest in politics and the politicians' opportunistic budget behaviour are influenced by the proximity to the *election*

year (Benito *et al.*, 2015; Serritzlew, 2005). The literature suggests that ruling politicians will exploit asymmetric information and try to signal competence through either promised spending or executed spending (Serritzlew, 2005). Capital expenditures involve a timing problem in that they require planning and there are typically long time lags before the start of construction. To attract voters, it is possible to promise investment in election years, but if the strategy is to make investments visible to voters, then it requires implementation earlier in the political business cycle (Veiga and Veiga, 2007). There is evidence of increased investment spending before the election (Drazen and Eslava, 2010), which in the case of municipalities in Spain materialised as increased budget overruns (Benito *et al.*, 2015). Benito *et al.* (2015) therefore suggest that budgets are more effectively enforced when the election is far away. *It is therefore expected that capital expenditure deviations are positively influenced by the period before an election is coming up (pre-election and election year) (H5).*

An important aspect of municipal democracy is who governs. Coupled with spending and budget control, research has taken an interest in the question of whether ideology matters. *Political party preferences*, left wing or right wing, might be associated with different political budget strategies. It is commonly assumed that left-wing parties favour public spending increases while right-wing parties aim to reduce budgets (Veiga and Veiga, 2007). Past research has not been able to verify that political ideology influences capital expenditure deviations (Benito *et al.*, 2015) but in Sweden, Johansson and Siverbo (2009) empirically demonstrated that right-wing rule emphasised financial control. Against this background, *municipalities governed by right-wing rule are expected to negatively influence capital expenditure deviations (H6).*

When elections do not result in one dominant winner, municipalities may end up with a majority coalition government or one that must govern in a politically competitive minority environment. In the case of a *majority coalition*, different parties have different ideologies and struggle to have their special issues addressed. This so-called war of attribution suggests that more ruling parties will introduce their issues into the capital expenditure budget in order to satisfy their electorate, which expands the budget. Serritzlew (2005) also suggests that negotiation and disagreement may result in lax control. Expanding budgets and lax control result in larger capital expenditure deviations. *It is therefore expected that a coalition rule positively influences capital expenditure deviations (H7).*

If there is a *ruling minority*, the situation is different, as a minority rule implies a competitive situation (Baber, 1983). Baber (1983) argues that in competitive situations, requirements for monitoring increase, the ruling parties may want to signal to voters and stakeholders that they are responsible and credible. Also, the opposition is very active since the ruling minority is weak. The ruling politicians therefore want to appear accountable and deliver on budget in order to avoid criticism. *Thus, a minority setting is expected to negatively influence capital expenditure deviations (H8).*

3.3 Attributes of the financial situation

Financial condition is another basic factor influencing the need to signal accountability (Bolívar *et al.*, 2013). Financial distress can attract political attention and greater external control, which puts pressure on the organisation. Financial distress is strongly suggested to induce a need to signal financial credibility vis-à-vis external stakeholders (Baber, 1983). *Against this background, it is expected that financial distress is negatively associated with capital expenditure deviations (H9).*

3.4 Attributes of different governance forms

When the water and sewerage service is run in the traditional municipal structure (public administration), it works under administrative law and governed by a political committee. The budget of the water and sewerage service will be politically scrutinized and weighted

against other municipal services, such as local roads, parks, schools and houses for the elderly. This changes when the service converts to a *municipal corporation*. Compared to public administration, the municipal corporation can be described as a more politically stand-alone organisation (Argento *et al.*, 2010). It is the board of the corporation that decides upon the budget and goals of the corporation (Bel *et al.*, 2013; Thomasson, 2013). The more independent status of municipal corporations is also associated with a stronger professional control and more specialised organisation (Voorn *et al.*, 2017; Thomasson, 2013), which imply that the budget process and budget execution are under greater professional control. With less political control, greater autonomy emphasised professional and a more specialised organisation; *it is expected that municipal corporations will be negatively associated with capital expenditure deviations (H10).*

Cooperation among public sector organisations is increasingly important in the management of resources in welfare systems (Bel *et al.*, 2013). In general, and in Sweden, cooperative organisations have a more independent status in relation to the owning municipalities (Voorn *et al.*, 2017; Thomasson, 2013). Characteristic of the governance form is that organisational mergers among municipalities imply regionalisation and a multiple "ownership" structure. From a steering perspective, the horizontal control relationships add to the traditional vertical control, which increases the complexity (Voorn *et al.*, 2017). Municipal cooperations induce principal–agent problems by increasing the distance between municipal politicians and the body in charge of production. Further, a multiple ownership structure might also result in negotiations and conflicts between the owners who might have different goals regarding the water and sewerage service. Both these aspects, distance and conflict, result in weaker political influence and control (Bel *et al.*, 2013; Thomasson, 2013). Further, cooperation also results in bigger, stronger and more specialised organisations, which tends to strengthen the power of the professionals. Against this background, it is expected that budgets are set more independently and professionally in municipal cooperations. *Thus, municipal cooperations will be negatively associated with capital expenditure deviations (H11).*

The two previous hypotheses (H10 and H11) argue that the municipal choice of governance form influences capital expenditure deviations within the Swedish municipal water and sewerage sector as independent factors. But it is also a change of institutional context, which implies that the external, political and financial factors might influence capital expenditure deviations differently. Since both municipal corporations and cooperations are more independent, professionally stronger and distanced from political direct rule, it becomes more difficult for the politicians to influence budget levels and budget execution. The further politics is distanced from service provision, the less political signalling transpires. In fact, one argument for the choice of corporation and/or cooperation as governance form for the water and sewerage service in Sweden is to strengthen professional control and reduce the political, as the business is not considered as politically interesting (Thomasson, 2013). In effect, it is possible that factors that influence political signalling incentives will not be significant when the water and sewerage service is externalised from the traditional public administration context. *In the context of municipal corporations and cooperations, it is expected that the factors associated with the attributes of the external environment, the political situation and the financial situation of the municipality will not influence capital expenditure deviations (H12).*

4. Method

In order to analyse the factors that affect capital expenditure deviation, a panel data regression method is adopted, which is consistent with previous research (Benito *et al.*, 2015). The data cover a period of five years (2013–2017).

4.1 Data collection and variables

There is no database from which to retrieve budgeted and/or accounted capital expenditures (see the dependent variable below) for the Swedish municipal water and sewerage sector, nor is there a complete database on how the municipal water and sewerage service is organised. Since there are different organisational forms, the budget and expenditure data were first retrieved from the different organisations (public administration, single corporation, cooperative organisation) and then allocated to the respective municipality for measurement. Because there is a legal requirement for a separate economy for each municipality's water and sewerage collective, the cooperative organisations have their budget broken down by owner municipalities. This made it possible to allocate the budget and output to individual municipalities even though they run the water and sewerage service in cooperation. Technically the data were collected from annual reports and through e-mail correspondence and phone calls. This is also why only five years' worth of data are included in the data set.

There are 290 municipalities in Sweden. The data collection resulted in a complete data set regarding budgets and output of 241 municipalities. The three largest municipalities in Sweden (Stockholm, Gothenburg and Malmö) were excluded, since they are in many ways structurally different due to their much larger size (Collin *et al.*, 2017). The analysis includes 238 of Sweden's municipalities, which comprise 82% of the total population.

The dependent variable is defined as:

$$\text{CAPDEV}_{i,t} = (\text{Accounted}_{i,t} - \text{Budgeted}_{i,t})/\text{Budgeted}_{i,t}$$

Accounted refers to total realised capital expenditures, and budgeted expenditures stand for the original budget (no amendments during the year are included). This is a conventional model for measuring budget deviation (Serritzlew, 2005; Benito *et al.*, 2015). The theoretical expectations are expressed in relation to absolute values of capital expenditure deviations, but in line with Mayper *et al.* (1991), the analysis includes both absolute values and real numbers. These measures are similar, but because positive and negative budget deviations offset each other, the absolute values better capture the magnitude of the average budget deviation disregarding the direction (Mayper *et al.*, 1991, p. 32). Thus, the purpose of measuring budget deviation in absolute numbers is to focus on budget compliance *per se*. The real number deviation addresses the sign of the deviation (Chatagny and Soguel, 2012, p. 324) and therefore indicates if capital expenditure deviations are systematically (positively or negatively) biased. The two measures complement each other.

4.1.1 Independent variables Attributes of the external environment: *Size of the population* (*POP*) measures the municipal size, which is the number of inhabitants in the respective municipalities each year (Source: Statistics Sweden). *Tax base* (*TAXBASE*) was measured as the sum of all inhabitants' income and benefits, divided by the number of inhabitants, which is similar to the measure used in Serritzlew (2005) (Source: Statistics Sweden). The *tax rate* (*TAXRATE*) was retrieved from Statistics Sweden. *Fee level* (*FEELEVEL*) was retrieved from the Nils Holgersson's study. This study is a yearly investigation of the municipal price levels, including the water and sewerage sector.

Attributes of the political and financial situation: In Sweden, elections are held every four years and the election year in the data set is 2014. As in previous research (Benito *et al.*, 2015), *the electoral cycle* is captured with dummy variables, where the year before election = 1 (*PREELEC*), Election year = 1 (*ELEC*) and the year after the election = 1 (*POSTELEC*). The ruling majority has been classified as *right-wing* (*RIGHT*) (=1) if conservatives and/or liberals rule, and indistinct majority is classified as a *coalition* (*COAL*) (=1). Further, *minority* (*MINOR*) (=1) measures whether or not the municipality was governed by minority rule. All the data on the political rule of Swedish municipalities were retrieved from the Swedish

Association of Local Authorities and Regions (Sveriges Kommuner och Regioner, SKR). The definition of the variables within the attributes of the political situation follows previous municipal research in Sweden (Haraldsson and Tagesson, 2014; Collin *et al.*, 2017).

The financial situation of the municipality was measured by consolidated solidity (*SOL*) (equity/total assets) and consolidated liquidity (*LIQ*) (current assets/current liabilities) (Source: Statistics Sweden). The consolidated level was used since the municipal corporations and cooperations are included at the consolidated level (Haraldsson, 2017).

Attributes of governance forms: *The legal form of corporation (CORP)* (= 1) constitutes the distinction between public administration and municipal corporation (own data collection). *Cooperation* (COOP) (= 1) constitutes the distinction between municipalities that cooperate with other municipalities and those that do not. Observe that municipal cooperation measures the municipalities involved in cooperation, not the number of water and sewerage organisations that are built on cooperation *per se*.

Finally, to control for inertia in capital expenditure deviations (Johansson and Siverbo, 2014; Benito *et al.*, 2015), the lagged dependent variable is included.

4.2 Econometric approach and model

A panel data approach has several benefits. Panel data provide greater variability, less collinearity, more information and more efficiency (Baltagi, 2014). The estimation technique used in this study is the *random effects model* (REM). A few arguments and tests are important as background to the choice of REM. When comparing the standard pooled OLS technique with the REM, the Breusch–Pagan Lagrange multiplier test indicated the appropriateness of the REM approach, since the null hypothesis was rejected ($p = 0.000$) (Baltagi, 2014). Past budget deviation research has opted for a fixed-effects model or generalised method of moments techniques (GMM) (Benito *et al.*, 2015). The subject analysis includes a relatively short time period (five years) and focusses on variables that are nearly time-invariant (e.g. governance forms), which does not work well with the fixed-effects model nor the GMM model (see Wooldrige, 2016; Chatagny and Soguel, 2012). However, to be able to choose between the fixed-effects approach and random-effects approach, the Hausman test (Baltagi, 2014) was performed without including the time-invariant variables. The Hausman test rejected the null hypothesis ($p = 0.7570$), which indicates that a random-effect model is favoured over its fixed counterpart. Against this background, the analysis performed with the REM technique and the econometric model is specified as follows:

$$\mathrm{CAPDEV}(A,R)_{jt} = \alpha + b_0\,\mathrm{CAPDEV}(A,R)_{it-1} + b_1\,\mathrm{POP}_{jt} + b_2\,\mathrm{TAXBASE}_{jt} + b_3\,\mathrm{TAXRATE}_{jt} + b_4\,\mathrm{FEELEVEL}_{jt} + b_5\,\mathrm{PREELEC}_{jt} + b_6\,\mathrm{ELEC}_{jt} + b_7\,\mathrm{POSTELEC}_{jt} + b_8\,\mathrm{RIGHT}_{jt} + b_9\,\mathrm{COAL}_{jt} + b_{10}\,\mathrm{MINOR}_{jt} + b_{11}\,\mathrm{LIQ}_{jt} + b_{12}\,\mathrm{SOL}_{jt} + b_{13}\,\mathrm{CORP}_{jt} + b_{14}\,\mathrm{COOP}_{jt} + \mu_{it}\,(\mu_i + \nu_{it})$$

The model stipulates that capital expenditure deviations (CAPDEV) are dependent upon POP, TAXBASE, TAXRATE, FEELEVEL, PREELEC, ELEC, POSTELEC, RIGHT, COAL, MINOR, LIQ, SOL, CORP, COOP and the last year's deviation (lagged CAPDEV). In the model, α refers to the intercept, b refers to the regression coefficient and μ equals the composite error term. The model is applied with CAPDEV(A,R) and CAPDEV(A,R)$_{it-1}$ expressed in absolute values (A) and real numbers (R). The model is further applied to the following sub-samples:

(1) Total sample: All 238 municipalities and 1 190 observations over five years.

(2) Public administration sample: Only municipalities that have not implemented corporations or cooperations; 143 (60% of 238) municipalities and 715 observations over five years.

(3) Corporation sample: Only municipalities owning water and sewerage corporations; 63 (26% of 238) municipalities and 315 observations over five years.

(4) Cooperation sample: Only municipalities involved in municipal cooperation (through federation, joint committees or corporation); 61 (26% of 238) municipalities and 305 observations over five years.

The data of organisational forms corresponds relatively well with previous findings in Haraldsson (2019). The share of corporations is 26% (compared to 27%) and the share of cooperative arrangements is 26% (compared to 26%), but there is a slightly higher proportion of traditional public administration (60% compared to 50%). Observe that there are overlaps, 29 of the 61 municipalities cooperate through jointly owned corporations.

Panel data sets can be influenced by problems of serial correlation and heteroscedasticity. Diagnostic tests have therefore been applied to check the validity of our model. The null hypothesis of the residuals being homoscedastic was not rejected according to the LR-test ($p = 0.1169$), implying no heteroscedasticity. As common when working with panel data, the model has problems with serial correlation since the Breusch–Pagan LM for serial correlation indicated serial correlation ($p = 0.000$). Serial correlation is where error terms in time t are related to the previous ($t-1$) period's error, which might lead to unreliable hypothesis testing/false significant correlations. To deal with this problem, the analysis is applied with clustered-robust standard errors to control for any serial dependence in the data (Petersen, 2009). Also, including the lagged dependent variables helps to defend the existence of serial correlation in the model (Baltagi, 2014). The robustness of the models has also been analysed (see Section 5).

5. Analysis

As shown in Table 1, the average capital expenditure deviation is −31% in real numbers, and 43% in absolute values. Thus, it is a quite low execution rate, 69%, within the sector. There are examples of municipal organisations that do not perform at all, while others overspend by almost 500%. However, it is clear that Swedish municipal water and sewerage organisations do not execute capital expenditures at budgeted levels or above, since 86% of the cases result in a budget surplus (see factor POSCAPDEV in Table 1). Further, all the years together (2013–2017) have resulted in budget surpluses at the aggregated level (see Table 1 Capital expenditure deviation (CAPDEV) – Real values).

Table 1 further displays that the average number of inhabitants is 29,281; the smallest municipalities have 2,516 inhabitants and the largest have 219,914. The average tax base is 94%, but there are large variations between municipalities. The municipal tax rate is between 17.4 and 24%, with an average value of 21.5%. Fee level is SEK 63.6 per square metre of living area. The consolidated solidity of Sweden's municipalities is on average 35.7%, and the municipalities generally have quite strong liquidity (average 104.6%).

Regarding election year (see Table 1), the data include two years that lies before an election (2013 and 2017), one election year (2014) and one post-election year (2015). Subsequently, one year is in between the year after and the year before an election (2016). Regarding the political situation, the political rule changed after the election in 2014. After the election, the number of right-wing rules decreased and the number of coalitions increased. Because of this change, the number of minority rules also increased. However, seen over the whole period, 34% of the deviations observed are related to right-wing political rule, which is exactly the same percentage as left-wing rule. In 32% of the cases there is a coalition rule, and there is minority rule in 31% of the cases. As an important background to this study, Swedish municipal water and sewerage service is influenced by organisational change. Municipalities using a municipal corporation to deliver water and sewerage services constitute 26% of the

Variables Continuous	No. obs	Mean	Max	Min	Std. dev
Capital expenditure deviation (CAPDEV)					
(1) Real values	1,190	−0.310	4.900	−0.991	0.450
(2) Absolute values	1,190	0.425	4.900	0.000	0.343
Number of inhabitants (POP)	1,190	29,281	219,914	2,516	31,344
Tax base (TAXBASE)	1,190	94.0	178.3	72.3	12.0
Tax rate (TAXRATE)	1,190	21.5	24.0	17.4	1.2
Fee level (FEELEVEL)	1,190	63.6	133.0	24.5	16.9
Solidity (SOL)	1,190	35.7	85.6	−1.1	12.0
Liquidity (LIQ)	1,190	104.6	556.6	22.1	55.4

		Yes		No	
Categorical	No. obs	No. obs	%	No. obs	%
Positive capital expenditure deviation (POSCAPDEV)	1,190	161	0.14	1,029	0.86
The year before election (PREELEC)	1,190	476	0.40	714	0.60
The election year (ELEC)	1,190	238	0.20	952	0.80
The year after election (POSTELEC)	1,190	238	0.20	952	0.80
Right-wing (RIGHT)	1,190	408	0.34	782	0.66
Left-wing (LEFT)	1,190	408	0.34	782	0.66
Coalition (COAL)	1,190	374	0.32	816	0.68
Minority (MINOR)	1,190	332	0.28	858	0.72
Municipal corporation (CORP)	1,190	315	0.26	875	0.74
Municipal cooperation (COOP)	1,190	305	0.26	885	0.74

Table 1.
Descriptive statistics

observation, the rest (74%) use a public administration or municipal federation. The same share, 26%, cooperate with other municipalities while 74% do not. Notice that almost none of the included municipalities changed organisational form during the measured time period, hence the time-invariant characteristic of the governance variables.

As can be seen in Table 1, the standard deviation of CAPDEV is problematic due to outliers. To give outliers a lower weight in the analysis, the analysis is based on capital expenditure deviations after winsorising at 95% (statistical process to replace extreme values with a smaller data value) (also applied by Benito *et al.*, 2015). Further, the variables POP and TAXBASE have great variability, a coefficient of skewness outside the span of −1 and 1 and a kurtosis coefficient outside the span between 2 and 4. This endangers the assumption of normality. As in previous research in Sweden, these variables were transformed by natural logarithm (Collin *et al.*, 2017).

In the Appendix, Table A1 displays the correlation matrix based on absolute values. The results indicate the following correlations individually. The number of inhabitants (LOGPOP) has a negative influence on absolute capital expenditure deviations (significant at the 1% level). During the political business cycle, it seems that absolute deviations decrease in the year before elections (sig. at 1% level) and increase in election years (sig. at 10% level). Minority rule is negatively correlated (sig. 10% level) with absolute capital expenditure deviation, and liquidity is positively correlated at the 5% level. The correlation matrix does not indicate a possible multicollinearity problem between the variables, since none of the pairwise correlations is close to 0.8. An additional collinearity test (see Table A1) confirmed that the VIF values for the variables do not exceed the threshold of 2.5 (Djurfeldt *et al.*, 2007).

Table 2 presents the panel regression models with absolute values and real numbers. First, it can be concluded that the major factors explaining capital expenditure deviations are found elsewhere, since all the models have an adjusted R-square between 0.09 and 0.24. It is

Table 2.
Results of panel-regression models (random-effects model) with absolute values and real numbers

	Dependent variable: CAPDEV(*A*) in absolute values				Dependent variable: CAPDEV(*R*) in real numbers			
		Sample contexts				Sample contexts		
Variables	Total	Public administration	Corporation	Cooperation	Total	Public administration	Corporation	Cooperation
C	1.6054** (0.5513)	1.9910** (0.6741)	3.2552** (1.2524)	2.1414† (1.2760)	−2.1591** (0.6745)	−2.8332** (0.7739)	−3.6954* (1.8539)	−2.3875 (1.4606)
LAGCAPDEV(*A*)	0.3032** (0.0360)	0.2705** (0.0489)	0.2942** (0.0563)	0.2742 (0.0667)				
LAGCAPDEV(*R*)					0.3603** (0.0354)	0.3185** (0.0470)	0.4209** (0.0700)	0.4129** (0.0620)
External environment								
LOGPOP	−0.0438** (0.0112)	−0.0248† (0.0149)	−0.0933** (0.0203)	−0.0431† (0.0242)	0.0164 (0.0139)	0.0089 (0.0171)	0.0242 (0.0296)	0.0136 (0.0257)
LOGTAXBASE	−0.0817 (0.0890)	−0.1650 (0.1074)	−0.2690 (0.1963)	−0.2617 (0.2132)	0.2238* (0.1043)	0.3188** (0.1191)	0.4912 (0.3027)	0.3402 (0.2353)
TAXRATE	−0.021* (0.0095)	−0.03* (0.0122)	−0.0235 (0.0180)	−0.0129 (0.0172)	0.0347** (0.0115)	0.0460** (0.0148)	0.0500 (0.0269)	0.0276 (0.0217)
FEELEVEL	−0.0005 (0.0005)	−0.0005 (0.0006)	−0.0033** (0.0009)	0.0005 (0.0013)	−0.0002 (0.0006)	0.0002 (0.0008)	0.0006† (0.0014)	−0.0011 (0.0015)
Political situation								
PREELEC	−0.0185 (0.0187)	−0.0158 (0.0257)	−0.0448 (0.0318)	−0.0251 (0.0350)	−0.0026 (0.0243)	0.0155 (0.0306)	0.0071 (0.0554)	−0.0346 (0.0439)
ELEC	0.0154 (0.0200)	0.0162 (0.0255)	−0.0353 (0.0412)	0.0477 (0.0408)	−0.0435 (0.0261)	−0.0359 (0.0323)	0.0238 (0.0577)	−0.0953 (0.0540)
POSTELEC	−0.0164 (0.0229)	−0.0056 (0.0298)	−0.0650 (0.0423)	−0.0064 (0.0427)	−0.0146 (0.0291)	−0.0035 (0.0375)	0.0002 (0.0649)	−0.0311 (0.0465)
RIGHT	0.0037 (0.0187)	−0.0181 (0.0239)	−0.0023 (0.0368)	0.0528 (0.0374)	0.0240 (0.0245)	0.0306 (0.0320)	0.0784 (0.0587)	−0.0152 (0.0500)
COAL	−0.0138 (0.0191)	−0.0319 (0.0252)	0.0058 (0.0331)	−0.0097 (0.0370)	0.0303 (0.0219)	0.0564† (0.0312)	0.0034 (0.0361)	0.0005 (0.0386)
MINOR	−0.0343* (0.0136)	−0.0457* (0.0209)	−0.0235 (0.0292)	−0.0284 (0.0308)	0.0473* (0.0194)	0.0707* (0.0281)	0.0136 (0.0412)	0.0141 (0.0328)
Financial situation								
LIQ	0.0001 (0.0001)	0.0001 (0.0002)	−0.0003 (0.0004)	0.0004 (0.0004)	−0.0001 (0.0002)	0.0000 (0.0002)	−0.0001 (0.0005)	−0.0003 (0.0004)
SOL	−0.0004 (0.0007)	0.0004 (0.0010)	−0.0015 (0.0011)	−0.0015 (0.0011)	0.0002 (0.0009)	−0.0001 (0.0012)	−0.0016 (0.0022)	0.0016 (0.0014)
Governance forms								
CORP	0.0094 (0.0191)			0.0564 (0.0418)	0.0297 (0.0229)			−0.0272 (0.0439)
COOP	−0.0103 (0.0174)		0.0795** (0.0301)		−0.0086 (0.0200)		−0.1015** (0.0365)	
N	1,190	715	315	305	1,190	715	315	305
R^2	0.1340	0.0934	0.2435	0.1889	0.1285	0.1095	0.1391	0.1725

Note(s): Total sample: All 238 municipalities and 1,190 observations over 5 years, Public administration sample: Only municipalities that have not implemented corporations or cooperations, 143 municipalities and 715 observations over 5 years, Corporation sample: Only municipalities owning water and sewerage corporations, 63 municipalities and 315 observations over 5 years, Cooperation sample: Only municipalities involved in municipal cooperation, 61 municipalities and 305 observations over 5 years
Significance: *Correlation is significant at the 0.05 level (two-tailed). **Correlation is significant at the 0.01 level (two-tailed). †Correlation is moderately significant at the 0.10 level
Within brackets: White period standard errors

likely that important factors that might further explain capital expenditure deviations are related to access to critical competence and to the process of coordination with community building planning. Second, in line with previous research, deviations seem to be persistent since last year's capital expenditure deviation largely explains the following year's deviation (see LAGCAPDEV(*A*) and LAGCAPDEV(*R*) Table 2). This confirms, as suggested by Benito *et al.* (2015), that the yearly budget is partly incremental. This is also likely in a capital investment context. Investments are hard to plan and often delayed. Since the execution rate in the Swedish municipal water and sewerage sector is low, it is also reasonable that several not executed investments are transferred to next year's budget. If there is a gap between budget level and capacity, this gap will persist or even worsen.

Turning to the *attributes of the external environment* (hypotheses H1–H4), the analysis with absolute values indicates that larger municipalities (see LOGPOP in Table 2) seek to minimise capital expenditure deviations, potentially due to stakeholder pressure and organisational capacity. In the total sample and the corporation sample, the relation is negatively significant at the 1% level, while it is less significant in the context of public administration and municipal cooperation (neg. correlated, sig. at the 10% level). In the analysis with real numbers, size of the population (LOGPOP) does not significantly influence capital expenditure deviations. However, the results partially confirm H1. Also, H2 is partially supported since significant results only appear in the real numbers model. The tax base (see LOGTAXBASE in Table 2) does not significantly influence capital expenditure deviation in absolute terms, but has a negative sign as expected in H2. In the analysis with real numbers, the factor has a positive sign in the total sample (sig. at the 5% level) and public administration sample (sig. at the 1% level). Thus, it seems that a higher share of resourceful citizens motivate the water and sewerage organisation to increase its execution rate, especially significant in a public administration setting. The factor does not significantly influence deviations in the corporate or cooperation setting. The factor tax rate (see TAXRATE in Table 2) has a similar effect, present in both absolute values and real numbers. Hypothesis H3 is partly confirmed since the tax rate has a negative influence on absolute capital expenditure deviations in the context of total sample (sig. at the 5% level) and public administration sample (sig. at the 5% level). In real numbers, the factor has the same effect (positive sign, sig. at the 1% level). Factor tax rate does not have a significant effect in the context of corporation or cooperation. This is reasonable for two reasons. The Swedish water and sewerage service is not financed by municipal taxes (Haraldsson and Tagesson, 2014), which implies less sensitivity to pressure related to the municipal tax level. This insensitivity is probably reinforced by the choice of organisational form. As expected in the theoretical section (Thomasson, 2013), the corporations and cooperative organisations may have distanced themselves from the tax-financed municipal organisation. In addition, the fee level (see FEELEVEL in Table 2) is associated with less absolute capital expenditure deviation in the corporation sample (sig. at the 1% level), with the same impact in the real numbers analysis (positive sign, sig. at the 10% level). Thus, the result confirms H4, but only in the corporation setting, which suggests that corporations are sensitive to direct stakeholder pressure more closely related to the service at hand. This fits well with the theory that suggests that corporations are more stand-alone, specialised and oriented towards its own "customers".

Within the factors related to the *attributes of the political situation* (hypotheses H5–H8) of the municipality, there are few significant correlations. In Sweden, the electoral cycle (see PREELEC, ELEC, POSTELEC in Table 2) seems not to influence capital expenditure deviations in the municipal water and sewerage sector. Further, right-wing rule (see RIGHT in Table 2) does not significantly influence capital expenditure deviations nor does coalition rule (see COAL in Table 2) (there is a weak significant positive correlation at the 10% level in the public administration sample, real numbers). So far, hypotheses H5, H6, and H7 are not

confirmed. There is, however, a minority rule effect (see MINOR in Table 2). Less absolute capital expenditure deviations are related to minority rule in the context of total sample (sig. at the 5% level) and public administration (sig. at the 5% level). The influence is the same in the real values analysis, where there is a positive correlation in the total sample (sig. at the 5% level) and public administration sample (sig. at the 5% level). Combining the analysis of absolute values and real numbers, politicians in a minority rule might signal competence by increasing the execution rate. Thus, H8 is confirmed but only in the total and public administrations sample, which again indicates that the corporations and cooperative organisations have distanced themselves from political influence.

The financial situation of the municipality in terms of solidity (see SOL in Table 2) and liquidity (see LIQ in Table 2) is fairly good among Swedish municipalities. This might explain why these factors do not significantly influence the relation between the capital budget and its execution. H9 is not confirmed.

In hypotheses H10 and H11, it was expected that the independent and professional status of the corporations and cooperative organisations would negatively influence capital expenditure deviations. However, when it comes to the *attributes of governance forms* (see CORP and COOP in Table 2), they do not significantly influence capital expenditure deviations, with the exception of municipalities that cooperate through corporations (pos. sig. at the 1% level in absolute values and neg. sig. 1% level in real numbers). Thus, the hypotheses H10 and H11 are mainly not confirmed. The result therefore indicates that the problem with large capital expenditure deviations is not solved or worsened by organisational form.

Regarding the last hypothesis, H12, the pattern of non-significant correlations supports the hypothesis. Only size (ses LOGPOP in Table 2) and the fee level (se FEELEVEL in Table 2) did significantly influence capital expenditure deviations in the context of corporation or cooperation. The influence of other external and political variables showed no significance. Thus, it seems that capital expenditure deviations within these governance forms for the Swedish water and sewerage service are not influenced by general stakeholder pressure or political incentives, which is in accordance with theory.

5.1 Robustness

In order to test the robustness of the results, several complementary analyses were performed (regression results available upon request). Performing the standard pooled OLS with robust standard errors yielded similar results in all the models with absolute values and real numbers. The main models with the total sample were also performed with extreme values. For the absolute values model, the lagged budget deviation variable had a weaker correlation. Further, election year was significantly negatively correlated with absolute budget deviation. In the real numbers analysis, factor minority lost its significance. The other variables showed similar correlations as in the winsorised model. The extreme values included in the data range from at the lowest −99% to plus 490% at the highest in capital expenditure deviation. Since these values are far from the average capital expenditure deviation, it is reasonable to winsorise the dependent variable to control for the effects of extreme outliers. Lastly, since the absolute value model does not recognise if there is a negative or positive budget deviation, a control variable for budget overruns was included. Similar results were obtained in all the models. The conclusion is that the results are robust since they are similar to those reported in the article.

6. Conclusions

The aim of this paper has been to explore whether and how external, political, financial and governance factors influence capital expenditure deviations in the Swedish municipal water

and sewerage sector. The conclusions are based on a panel data analysis of 238 municipalities and 1 190 observations over five years (2013–2017). The first conclusion is that the budget for capital expenditures is not realistic, since the average capital expenditure deviation is −31%.

The results of the study generate two overarching conclusions. First of all, the result showed that the attributes of the external environment (population size, tax base, tax rate, fee level) influence capital expenditure deviation within the Swedish water and sewerage sector, but the attributes of the political situation (election year, right-wing party rule, minority rule, coalition rule) do not. This particular branch of the Swedish municipal sector therefore seems sensitive to external stakeholder pressure for budget compliance, but insensitive to the political situation of the municipality. A plausible explanation might be that water and sewerage issues are not high up on the political agenda in Sweden. In Sweden, the water and sewerage service is funded by relatively low fee levels (Haraldsson and Tagesson, 2014), and investments in pipes and treatment plants are not as visible as, for example, schools and sports facilities (Veiga and Veiga, 2007). These two aspects probably make it more interesting to use capital expenditure deviations to signal the competence of *financial control* rather than the competence *to provide public goods*.

Secondly, the governance forms in this study did not significantly matter as explanatory factors for capital expenditure deviations, but at the same time they are essential for understanding capital expenditure deviations in municipal sectors as context. Since transforming the traditional public administration to municipal corporations and cooperations implies autonomy, professionalisation and specialisation, it was expected that these governance forms would be associated with low capital expenditure deviations. The results show that capital expenditure deviations are not significantly influenced by governance forms *per se*. However, it has also been argued that these governance forms reduce their publicness and distance themselves from political influence and control (Saliterer and Korac, 2013; Voorn *et al.*, 2017). Professional accountability becomes emphasised over political accountability (Grossi and Thomasson, 2015). Interestingly, the overall results also suggest that these contexts are insulated from stakeholder pressure and political signalling incentives. With the exception of municipal population size (the corporation and cooperation context) and fee level (the corporation context), no factor influenced capital expenditure deviations within context of corporation and cooperation. That fee level, and not tax rate, negatively influenced absolute capital expenditure deviations in the context of municipal corporations also supports the idea of independence, specialisation and a shift from citizen to customer orientation (Grossi and Thomasson, 2015).

This paper contributes to current research mainly in two ways. First, this paper contributes to the scarce knowledge of aggregated capital expenditure deviations in general and specifically within the municipal water and sewerage sector. Second, analysing the municipal governance landscape adds further insights and suggestions on why budget performance varies. By adding governance forms, this study complements the more conventional analysis of how external and political factors influence budget deviations in the municipal sector (see Mayper *et al.*, 1991; Serritzlew, 2005; Benito *et al.*, 2015). In particular, the results highlight that the governance forms of corporations and cooperations change the relation to political signalling incentives.

The practical implication is that large and constant capital expenditure deviations call for change in the regulation and control of the municipal investment budget. One suggestion in the literature is to audit budgets (not a requirement in Sweden) and force the municipal leaders to explain large deviations (Benito *et al.*, 2015). However, in countries such as Sweden where externalising services to municipal corporations and cooperations is significant, this discussion needs to address the consolidated level of the municipality. Otherwise, a large share of the investment budget will be unscrutinised. More closely related to the Swedish water and sewerage sector, the risks associated with a constantly low execution rate should

be analysed and addressed as it might lead to future capital destruction and problems with supply interruptions, contaminated drinking water and various environmental impacts (Malm *et al.*, 2017).

6.1 Limitations

As for limitations of this study, the study addresses capital expenditure deviations in the Swedish fee-funded water and sewerage sector, a quite specific sector, which might cast some doubts regarding the generalisability of the findings. The advantage is that it makes it possible to address different governance forms, but still, there are important differences in relation to more visible tax-funded investments such as roads and public schools. Further, the context of Sweden is not directly comparable to other countries' organisation and regulation of the municipal sector.

6.2 Future research

Regarding future research, there is room for more general studies of capital expenditure deviations in different municipal contexts (different countries, services, etc.. We know very little about this issue. In addition, more knowledge about how budgets are set and executed in different governance forms is needed in order to understand the incentives that bias capital expenditure deviations in those contexts. Finally, capital investments are hard to plan and to execute according to plan and budget. Research on the role of organisational capacity and competence for enhanced budget performance would be of great importance, theoretically and practically.

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Appendix

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	VIF
(1) CAPDEVABS	1															
(2) LOGPOP	−0.165**	1														1.414
(3) LOGTAXBASE	−0.037	0.433**	1													1.627
(4) TAXRATE	−0.011	−0.464**	−0.600**	1												1.715
(5) FEE LEVEL	0.032	−0.428**	−0.235**	0.320**	1											1.401
(6) PREELEC	−0.083**	0.001	−0.009	−0.001	−0.016	1										1.84
(7) ELEC	0.052†	−0.006	0.016	−0.009	−0.051†	−0.408**	1									1.613
(8) POSTELEC	0.015	−0.001	0.008	−0.003	0.013	−0.408**	−0.250**	1								1.604
(9) RIGHT	0.013	0.091**	0.348**	−0.404**	−0.103**	0.100**	−0.047	−0.042	1							1.673
(10) COAL	−0.006	−0.003	−0.175**	0.050†	0.085**	−0.113**	0.046	0.046	−0.489**	1						1.457
(11) MINOR	−0.055†	0.052†	−0.084**	−0.039	0.006	−0.076**	0.031	0.031	0.111**	−0.175**	1					1.093
(12) LIQ	0.063*	−0.190**	−0.014	−0.039	−0.031	0.012	−0.021	−0.008	0.053†	−0.051**	0.025	1				1.238
(13) SOL	0.011	0.138**	0.187**	−0.329**	−0.320**	0.019	0.000	−0.026	0.243	−0.118	−0.006	0.354	1			1.417
(14) Corp	−0.046	0.188**	0.085**	0.059*	0.042	0.000	0.000	0.000	−0.060*	−0.037	0.005	−0.178**	−0.203**	1		1.222
(15) COOP	−0.023	0.066*	0.004	−0.068*	−0.004	0.000	0.000	0.000	0.046	−0.004	0.000	−0.066*	−0.015	0.280**	1	1.109

Note(s): *. Correlation is significant at the 0.05 level (two-tailed). **. Correlation is significant at the 0.01 level (two-tailed). †. Correlation is moderately significant at the 0.10 level

Table A1.
Correlations matrix