

WHAT STRUCTURAL FACTORS INFLUENCE PUBLIC SERVICE DELIVERY? LESSONS LEARNED FOR LOCAL GOVERNMENT IN ASIA FROM A STUDY OF SWISS MUNICIPALITIES

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ABSTRACT

Local governments are an important provider of public services. Decentralization, which is often supported by international organizations, has become an important reform strategy in many Asian countries in recent decades. An analysis of the influence of structural variables on local public service delivery can be helpful to determine what tasks can be provided at the local tier of government and what organizational structures are most suitable. This article therefore investigates the question of what structural factors influence the provision of local services.

The European country Switzerland is selected as the unit of research; in Switzerland, one-third of public spending is done at the local level, showing the significance of local public service delivery. This article draws data from the Swiss Local Authorities Monitoring, a survey of all 2,324 Swiss municipalities that has been conducted in 2010. Using regression analysis, the article indicates that structural variables influence public service delivery.

We can therefore get some suggestions how structures of Local Government in Asia may be designed to help municipalities perform better.

Introduction

Local authorities are a significant player in providing public services. During the last decades, decentralization has been an important reform strategy in many Asian countries, usually supported by international organizations. Traditional arguments suggest that efficiency and quality gains in the provision of public services are achieved through decentralization along with greater expectations for accountability and responsiveness. However, Robinson (2007) warns that there are also dangers involved in decentralization. For example, local administrations could be understaffed, which can potentially lead to poorer public service provision.

To decide what tasks can be provided at the local tier of government and what organizational structures are most suitable, the influence of structural variables on local public service delivery need to be analyzed. The main research question of this article is, therefore, as follows: What structural factors influence the provision of public services at the local level? We draw on survey data taken from a longitudinal survey from the year 2010 by the highest-ranked local bureaucrats in Switzerland, which serves as a prime example of a decentralized

state. Approximately 70 per cent of the total expenditures are being spent at the local level. Swiss municipalities carry out a wide range of tasks. Therefore, we were able to analyze the service provision in seven task categories.

The article is structured as follows. First, after a review of the existing literature, possible structural factors are suggested, and six corresponding hypotheses are proposed. Second, the methodological steps of the analyses are explained. Third, the general situation of Swiss municipalities is presented in brief, followed by a presentation and discussion of the empirical results and conclusions we might draw for Local Government in Asia.

Theoretical Background and Hypotheses

The existing literature in the broad field of public service delivery efficiency at the local tier of government follows two main research directions (Afonso & Fernandes, 2008). One branch focuses on the question of whether or not local governments should contract out public services and only guarantee their provision. Good governance in this setting is linked to cutting the cost of service delivery. Many studies in this field focus on a single service area. Waste collection, among other services, is prominently investigated (i.e., Dijkgraaf & Gradus, 2003; Bel & Miralles, 2003; Antonioli & Filippini, 2002; Callan & Thomas, 2001; McDavid, 2001). Another branch focuses on overall government efficiency; researchers identify good local governments where input and output relationships are most favorable (e.g., Kalb et al., 2012; Geys & Moesen, 2009; Borge et al., 2008). These two research approaches then inevitably lead, e.g., to questions regarding the optimal allocated resources, the size of the local governing body or its organizational structure.

This article pursues a different angle in the discussion of public service delivery efficiency. Rather than identifying efficient local governments, we investigate what structural factors might be beneficial when organizing public service provision. Literature addressing which factors influence public service delivery is scarce. Although focusing on performance improvement, Boyne (2003) states that there exist only vague theories that identify variables believed to influence public service provision. In his rigorous review, he recognizes five broader categories (resources, regulation, market structure, organization and management), of which in the end, partially because of the limited number of studies, only resources and management appear to have a clear significant influence on service provision. However, single studies in the other three categories also sometimes show a significant influence on service delivery. Only when service delivery is analyzed together with other studies within the same category is the direction of influence offset, and thus, it remains unstable. Thus, the assumption that these variables still might influence service delivery cannot be fully rejected.

To identify structural factors that influence public service delivery, we test the three most commonly theorized factors (size, resources and economic level) and add a fourth di-

mension, culture, to the analysis. In the remainder of this chapter, we first present theoretical arguments and then subsequently propose one or more hypotheses for each of the four factors.

Size: The question of whether size influences municipalities' performance has a long tradition (Avellaneda & Gomes, 2015). Amalgamation reforms in many countries follow the argument that larger municipalities are more cost-efficient. They argue that economies of scale mean that a small municipality can benefit from merging into a bigger one. Boyne (1992) identifies three cost-saving mechanisms. Larger municipalities benefit from administrative synergies, greater purchasing power and a greater scope when acquiring sophisticated technical equipment. However, Allan (2003: 76) critically notes that many international researchers link larger municipalities with less economical spending. This circumstance could stem from coordination needs that arise within the municipalities. Nevertheless, size as a possible influencing factor should be further investigated. In the data set, municipal secretaries were asked about the extent to which they perceived that their municipalities had the capacity to provide certain public services. Our hypothesis is that, at least to a certain threshold, a municipality can profit from an economy of scale effect. Following this argument, larger municipalities should then encounter less difficulty when providing public services. In contrast, De Borger and Kerstens (1996) link population density and efficiency, arguing that the less densely populated a region is, the less efficiently public services are provided. Density as a second possible factor should be further analyzed. We thus arrive at the following two hypotheses:

H₁: The more populated a municipality is, the less difficulty it encounters when providing public services.

H₂: The more densely populated a municipality is, the less difficulty it encounters when providing public services.

Resources: Our hypothesis is that municipalities with greater relative administrative resources¹ face less difficulty in public service provision because they have more specialized and probably better trained staff. Additionally, executive resources² could also influence service provision. Many small municipalities do not have fully professional executives: they are so small that their executives are only paid part-time. We expect that municipalities with fewer executive resources will encounter more difficulty in public service provision because there is less leadership in such municipalities. Below are the two hypotheses:

¹ Administrative resources (per 1,000 residents): $\frac{\text{Administrative staff in FTE}}{\text{Number of residents}} * 1,000$

² Executive resources (per 1,000 residents): $\frac{\text{Size of Executive in FTE}}{\text{Number of residents}} * 1,000$

H₃: The greater a municipality's administrative resources, the less difficulty it encounters when providing public services.

H₄: The greater a municipality's executive resources, the less difficulty it encounters when providing public services.

Economic level: Another possible influence on public service provision is the municipality's economic level. The argument is that wealthier municipalities are under less pressure to spend efficiently and that they provide more services than poorer municipalities. A number of researchers report that wealthier municipalities do indeed show less efficiency (Spann, 1997; De Borger & Kerstens, 1996; Silkman & Young, 1982; Kitchen, 1976). In contrast, Gimenez and Prior (2003) found no significant difference between the efficiency levels of wealthier Spanish municipalities.

Because there are considerable differences in the economic levels of Swiss municipalities, this could potentially influence public service delivery. We argue that wealthier municipalities have more resources to provide public services and should therefore encounter less difficulty, no matter how efficiently they provide the services.

H₅: Wealthier municipalities encounter less difficulty in public service delivery.

Cultural Context: Because Switzerland has four official languages, it could be researched whether municipalities from the French- and Italian-speaking regions self-assess greater difficulty in providing public services than do German-speaking municipalities. Most studies in the field of public service provision focus on municipalities within the same cultural context. Researchers restrict their fields of study to one country or language region because in these cases, input and output factors are easily compiled and comparable. A good example for that is Belgium: Surprisingly, no studies on Belgium exist that explain differences in public service provision based on whether municipalities are located in the Flemish or Walloon regions of the country. De Borger et al. (1994: 356) admit in their footnotes that in an earlier version of their work, regional factors were included in the analysis. However, because they were unable to stringently explain the differences, they later dropped this factor due to the heated political discussion on regional issues. We will consider the cultural context factor in our analysis. We argue that German-speaking municipalities face fewer difficulties in providing public services because they have been more influenced by the New Public Management concepts from Anglo-Saxon countries and have therefore improved the steering and performance of their service provision. Additionally, direct democracy is common in the German-speaking municipalities, which encourages these administrations to adapt more directly to the needs of their citizens and to make service provision more efficient.

H₆: German-speaking municipalities face fewer difficulties when providing public services.

Methodology

This article is based on data from the Swiss Local Authorities Monitoring. This is a longitudinal written survey of all 2,324 Swiss municipalities that has been conducted regularly every five years since 1988. For this article, we chose the most recent survey, which was administered in the year 2010 and had a response rate of 58 per cent.

The highest-ranked bureaucrats in the municipalities (called municipal secretaries) were questioned about the financial condition of their municipality, the structure of their administration, and any political and administrative reforms they had instituted. Additionally, through self-assessment, top-level bureaucrats were asked to rate how their municipality performed in the 30 most important policy areas. The secretaries could assess whether their municipalities had no performance limits, whether any limits were in sight or if they had been reached or exceeded.

For the empirical part of the article, regression analysis was conducted to test the hypotheses and determine what structural factors influence the municipalities' performance using task fulfillment performance as a dependent variable and various structural variables as independent variables. In a first step, the 30 task areas were examined individually. In a second step, seven groups of tasks were formed (education, social welfare, government and administration, security, promotion of economic development, infrastructure and culture). In a third step, an overall index of the 30 task areas considered in the study was built.

This overall index of performance limits is calculated using the average values of the municipalities' responses for the 30 task areas. This index can thus vary between 1 (no performance limits), 2 (performance limits in sight), 3 (performance limits reached) and 4 (performance limits exceeded). The main characteristics of the variables used in the article are provided in appendix 1; the descriptive statistics and details on the operationalization can be found in appendix 2.

Tasks of the Swiss municipalities

For a better understanding of the article, the general situation of the Swiss municipalities is presented in brief. In Switzerland, municipalities are part of the twenty-six cantons that form the Swiss federal state. They are under cantonal supervision, and it is left to the cantons to organize the municipalities and determine their tasks (Friederich et al., 1998: 11 et seqq.). Under the cantonal laws, municipalities can select an appropriate structure and administrative organization, levy taxes and independently fulfill those tasks that do not lie within the jurisdiction of the cantons or the federal government (Linder, 1999: 156 et seqq.). The municipalities are characterized by their smallness, their manifold responsibilities and their relatively large degree of autonomy (Ladner, 2008: 1). The territorial structure is quite heterogeneous and small-scaled. The 2,324 Swiss municipalities each have a median population of 1,214

inhabitants and a mean of 3,163 (Federal Statistical Office 2013). The relatively large amount of autonomy of Swiss local authorities is evident in the fact that the municipalities obtain 70 per cent of their gross income by means of their own financial resources. In no other European country is the transfer of resources from the superordinate state to the local authorities lower than in Switzerland (Council of Europe, 1997: 25).

The municipalities fulfill the tasks that are defined by communal, cantonal and federal politics. Because of Switzerland's federal structure, the tasks carried out by the municipalities vary from canton to canton. The following tasks are usually fulfilled by the municipalities (Steiner & Kaiser, 2013):

- Education: kindergarten, primary school, secondary school
- Welfare and health: social welfare, home care nursing services, retirement homes, tasks concerning social insurance
- Provision and disposal: water, sewage, waste, electricity
- Transport: public transport within the municipality
- Buildings: land use planning, building police, land- and townscape preservation, road and path networks, sports infrastructure, cultural events and issues
- Internal organization: appointment of authorities, organization of the administration, human resource management
- Financing: budgeting and accounting, managing communal assets, fixing tax rate
- Municipal police: fire, traffic, factory inspectorate
- Citizenship: granting local citizenship to foreign residents

During the last decade, the Swiss cantons reorganized the repartition of tasks between the cantonal and communal levels. The new system of fiscal equalization and the division of tasks between cantons and the confederation (NFE), which came into effect in 2008, also acted as a trigger for clarifying the responsibilities between the cantons and the municipalities. It is striking that in recent years, tasks have shifted from the communal to the cantonal levels, justified by the cantons' greater proficiency and stronger financial power and the argument that smaller municipalities may no longer be able to adequately fulfill their tasks (Steiner & Kaiser, 2013).

Empirical results

To examine the hypotheses, the analysis of the empirical data is structured as follows. First, the influence of the structural variables on overall task fulfillment is observed using an overall index. Then, the different task groups (education, social welfare, government and administration, security, promotion of economic development, infrastructure and culture) are examined separately.

Table 1: Structural Characteristics of Municipalities' Performance Limits in Switzerland

[illegible]

- No tax rate change vs. tax reduction	-.031	.030	-.099	.050	-.048	.065	-.133*	-.019	-.022
Earnings:	.019	-.135	.008	-.003	-.181*	.004	-.165*	-.095	.088
- No change in earnings vs. earnings increase									
- No change in earnings vs. earnings decrease	.075	-.055	.018	-.010	-.128	.023	-.020	.008	.066
Communal debt:	.054	-.138	.044	.155*	.070	.098	.144*	.000	-.017
- No change in debt vs. debt increase									
- No change in debt vs. debt decrease	.126	-.044	.072	.157*	.131	.128	.207**	.121	.058
Affected by the financial and economic crisis	.042	.070	.113	-.008	.009	-.047	.022	.051	.068
<i>Autonomy</i>									
Perception of municipal autonomy	-.038	-.017	-.043	.039	-.069	.026	-.093	-.086	-.005
R ²	0.053	0.080	0.091	0.082	0.117	0.044	0.124	0.109	0.040
Note: * p < .05, ** p < .01, *** p < .001									

To learn more about the influence of structural factors such as size, region, economic level and resources, a regression analysis was conducted to predict overall task fulfillment (table 1). The prediction model using the overall index shown in table 1 is not statistically significant, $F(15, 264) = 0.981$, $p < 0.01$. R square is 0.053, which means that the model accounts for 5.3 per cent of the variation in the dependent variable, i.e., the overall service delivery performance. Although the influence is rather small, we can see that the structural factors do make some difference in how a municipality is able to fulfill its tasks. Whether a municipality is located in the German- or Italian-speaking regions of Switzerland is significant, but the remaining independent variables are not statistically significant.

Next, the task area of education is studied. The model (appendix 5) is statistically significant, $F(15, 264) = 1.759$, $p < 0.001$, and accounts for 9.1 per cent of the variation in the dependent variable. A statistically significant influencing factor is whether a municipality is located in the German- or the French-speaking regions of Switzerland. The other factors in the model are not statistically significant. The results show that municipalities in the French-speaking region of Switzerland reach performance limits in education less often.

Regarding cultural public service delivery, the overall model is not statistically significant, with $F(15, 264) = 1.574$, $p < 0.001$, and it accounts for 8.2 per cent of the variation in the dependent variable. However, the location of the municipality significantly affects public service provision. Compared with German-speaking municipalities, Italian- and French-speaking municipalities encounter more difficulty in providing cultural public services (the respective values are .164*** and .133**). In addition, density as a structural factor affects the delivery of cultural public services. More densely populated municipalities perceive greater difficulty in providing public services. Although to a less significant extent, changes in municipal debt also influence cultural service provision. Interestingly, it does not matter whether the debt increases or decreases—the respective values are nearly identical (.155* and .157*). The other structural factors in the model are not statistically significant.

Examining infrastructure as an important municipal task, the model is statistically significant, with $F(15, 260) = 2.286$, $p < 0.005$. The model accounts for 11.7 per cent of the variation. Being located in the Italian-speaking part of Switzerland strongly influences municipal service delivery. These municipalities encounter significantly more difficulty in providing infrastructural services compared with their German-speaking neighbors. The value of .285*** is the highest value in the entire model, and it therefore indicates that many Italian-speaking municipalities face infrastructural problems. The only other significant value demonstrates that municipalities that benefit from increased earnings encounter less difficulty in providing infrastructural public services (-.181*).

In the field of economic development promotion, no significant values are observed. The model accounts for only 4.4 per cent of variation, with $F(15, 264) = 0.673$, $p < 0.001$. None of the proposed structural factors appear to influence whether municipalities encounter difficulties in economic development promotion.

For the next group of tasks, security, the model accounts for 12.4 per cent of the variation, with $F(15, 251) = 2.359$, $p < 0.005$; it is statistically significant. Italian-speaking municipalities again encounter more difficulty in providing public services compared with German-speaking municipalities. The value of $.205^{***}$ is the third highest significant value and is significant at the 1 per cent level. The two financial factors 'tax reduction' and 'increased earnings' indicate that municipalities that benefit from newly gained financial resources encounter less difficulty in providing public security services. The corresponding values are $-.133^*$ and $-.165^*$, respectively. However, mixed results are observed when the debt level has changed during the last four years. More difficulties in providing public security services occur when debt increased or decreased. The latter effect is stronger and more robust, as the values are $.144^*$ and $.207^{**}$, respectively.

The model for government administration accounts for 10.9 per cent of the variation, with $F(15, 261) = 2.137$, $p < 0.01$; it is also statistically significant. Only the two regional factors significantly influence the provision of government services. Whereas the French-speaking municipalities faced performance limits less frequently, the Italian-speaking municipalities faced more of these limits in providing government services. The values are comparably strong, $-.180^{***}$ for the French-speaking and $.198^{***}$ for the Italian-speaking municipalities.

The last group of tasks incorporates the delivery of social services. The model is not statistically significant, with $F(15, 264) = 0.731$, $p < 0.001$. Again, only being located in the Italian-speaking region of Switzerland affects the provision of social services. These municipalities face performance limits earlier compared with German-speaking municipalities, with a corresponding value of $.131^{**}$.

The models were tested for multicollinearity. VIF tests and tolerance statistics indicate that there is no cause for concern regarding multicollinearity (all VIF values are less than 10, the average VIF value is not substantially greater than 1, and the tolerance is above 0.2 in all cases (Field 2009: 241 et seq.)).

Discussion

When viewing these results, there are relatively weak connections between the proposed structural factors and the dependent variable. A number of explanatory factors come to mind. First and most importantly, municipalities are social constructs. They are relatively independent in deciding which public services should be provided and what lev-

el of quality is expected by their citizens. Although there are some mandatory public services across Switzerland, the extent to which municipalities provide the different public services varies considerably. This circumstance stems mostly from the cantonal municipal laws, which define the autonomy of the municipalities according to the Swiss constitution but also form the very different characteristics of the Swiss municipalities. For a comparably small country, the range of municipalities from an international financial hub such as Zurich, with 400 000 residents, to small rural municipalities such as Corippo, with 17 residents, is extensive. All municipalities have the same rights within a canton.

Second, citizens' preferences set the level of expected public services in a municipality. When there is a lack of financial resources, citizens must decide if they want more services and are willing to pay higher taxes or if they prefer the present services at lower costs. Therefore, it is not surprising that the citizens in smaller municipalities may not ask for very high levels of public services and are more easily satisfied. The fact that more densely populated municipalities encounter more difficulty in providing public services in the cultural area is a striking example. In other words, cities reach or exceed performance limits, but less densely populated, mostly rural municipalities encounter fewer or no problems in that area. This circumstance can be explained by the fact that, for example, theaters as a cultural service are mostly built in cities or regional centers. The adjacent, more rural municipalities do not need to build their own theaters because their citizens can attend theaters only a short distance outside of their municipality. Because the citizens of the small, less densely populated municipalities do not require high levels of service provision, the municipalities face no limits in providing this service. It is recognized that municipalities centered around large cities profit to a certain extent from services provided by the city. Partial internalization of these costs takes place through the cantonal realignment systems.

A similar argumentation applies when observing changes in the municipalities' debt situations. For cultural as well as security tasks, neither decreased nor increased debt benefited the provision of public services in any area. The former circumstance may be explained by the fact that in economically strong times, citizens' demands for new or better public services increase considerably. Thus, administrations are faced with additional tasks that in turn could test their performance limits in a particular area. In contrast, when a municipality faces increased debt, citizens may not request additional services. However, even the required minimal level of public service delivery may prove to be challenging for a financially struggling municipality.

Municipalities in the Italian-speaking region encounter considerably greater difficulties across nearly all service areas. The French-speaking municipalities, however, do not encounter more challenges than the German-speaking municipalities. For both government and administrative issues as well as education tasks, French-speaking municipalities even have significantly fewer problems.

Cultural factors appear to play only a minimal role. The Italian-speaking region of Switzerland faces relatively high unemployment because of the competition from low-paid workers who come from Italy. Additionally, the mountainous areas of the canton present a challenge. These factors may lead to the problems confronted by these municipalities and likely not the different cultural contexts *per se*.

In summary, in the first hypothesis, we argued that a more populated municipality faces fewer difficulties in providing public services. We argued that these municipalities could be profiting from an economy of scale effect. However, as shown above, this is not the case. In contrast, more populated municipalities may need to cover certain extra burdens because of they function as regional centers. H_1 is therefore rejected. We hypothesized in H_2 that a more densely populated municipality would face less performance limits. Based on the results, this hypothesis can be neither supported nor rejected. However, there are indications that less densely populated, mostly rural municipalities are not more likely to face difficulties in the provision of public services because they only provide limited services to their citizens.

In H_3 and H_4 , we argued that administrative or executive resources may strengthen municipalities and therefore lead them to encounter fewer difficulties in providing public services. Based on the results, both hypotheses can be rejected. Administrative and executive resources appear to have no significant influence on public service delivery. In H_5 , we argued that wealthier municipalities encounter fewer difficulties. The argumentation was that with additional resources, certain tasks could be more easily fulfilled. Based on the results, this could only be partially supported. Only with security tasks was an indication that wealthier municipalities face fewer challenges in providing public services. Wealthier municipalities are faced with increasing demands for new and better public services. In the last hypothesis, we argued that the cultural context plays a significant role, and this is only partly supported by our empirical work. Italian-speaking municipalities face more challenges, but the reason for this finding is likely not the culture *per se* but the difficult economic conditions in the canton of Ticino.

After having analyzed four structural factors, we can only offer partially significant results in a few areas. What are the reasons for this lack of significance? First, it is evident that the self-assessment of difficulties in service provision is not an ideal measurement tool. This type of data says nothing about the actual quality of the public services nor does it specify where the difficulties stem from: is it because the citizens have unusually high expectations for certain services, or is it because municipalities cannot provide even basic service levels? Either way, the survey data are not necessarily consistent with underlying structural factors, which, in turn, renders significant results impossible to achieve.

A possible second factor could be in the choice of a linear regression analysis. A structural factor such as size may influence public service provision nonlinearly rather than linearly. Boyne (2003) suggests that there might be a threshold beyond which very

small and large municipalities are increasingly ineffective because of their small size or managerial overhead, respectively.

What can practitioners and policy-makers in Asia take away from this article? Most importantly, structural factors such as size, administration and financial resources might not play such an important role in municipalities' public service provision. Smaller municipalities might aim for a niche in which only a basic level of public services at low(-er) costs is provided to citizens. This differentiation between municipalities only confirms Tiebout's model of 'voting by feet', in which citizens move to municipalities where their needs are best satisfied, be it a surplus of public services at a higher price or a basic level at minimal cost. It should be noted, though, that the central governments must approve certain structural differences between the municipalities to create competition. Realignment systems between municipalities should be limited to guarantee that all municipalities can provide at least a minimal level of public services.

Conclusion

Simple slogans such as 'bigger is better' play an important role when governments in Asia and all over the world attempt to convince citizens that territorial reforms at the local tier of government are necessary. Our study of the Swiss municipalities shows that such technocratic mono-causal explanations do not reflect the conditions found in the municipalities. Some municipalities face challenges in providing public services, but they can be found in very different settings. Internal capacities, financial resources, and the cultural context may all play a role, but these are only some of the influences. It may be that citizens in some municipalities have lower expectations and are therefore satisfied with the level of services offered by their municipality. This would be in accordance with Tiebout's model of 'voting by feet', which says that municipalities compete with each other, leading to differences in municipalities being supported by citizens whose needs are satisfied. Only arguments of distributional justice would therefore justify enforced structural reforms by the central government. This may be an important trigger for territorial reforms especially in those Asian countries with poorer living standards where a minimum level of public services is not always provided and the citizens do have limited options only to express their opinion due to low educational backgrounds. But even in these cases, alternative reforms may lead to a better outcome, such as capacity building in the local administration, intermunicipal co-operation or an effective per-equation system. Bigger is not always better.

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Appendix

APPENDIX 1

Main Characteristics of Variables Used in the Analysis

Categories	Variable	Year	Sources
Dependent variables	1. Performance limits (overall index)	2010	Survey of Swiss local secretaries
	2. Performance limits (education)	2010	Survey of Swiss local secretaries
	3. Performance limits (culture)	2010	Survey of Swiss local secretaries
	4. Performance limits (infrastructure)	2010	Survey of Swiss local secretaries
	5. Performance limits (promotion of economic development)	2010	Survey of Swiss local secretaries
	6. Performance limits (security)	2010	Survey of Swiss local secretaries
	7. Performance limits (government and administration)	2010	Survey of Swiss local secretaries
	8. Performance limits (social services)	2010	Survey of Swiss local secretaries
Independent variables	9. Population size	2009	Federal Statistical Office
	10. Language region	2009	Federal Statistical Office
	11. Executive resources	2010	Survey of Swiss local secretaries
	12. Administrative resources	2010	Survey of Swiss local secretaries
	13. Position in the cantonal realignment	2010	Survey of Swiss local secretaries
	14. Tax rate change	2010	Survey of Swiss local secretaries
	15. Change in communal earnings	2010	Survey of Swiss local secretaries
	16. Change in communal debt	2010	Survey of Swiss local secretaries
	17. Affectedness by the financial and economic crisis	2010	Survey of Swiss local secretaries
	18. Perception of municipal autonomy	2010	Survey of Swiss local secretaries

APPENDIX 2

Descriptive Statistics and Operationalization of Variables Used in the Analysis

Variables		N	M	SD	Min	Max	Description/Operationalization
1.	Performance limits (overall index)	3579	0.6	0.8	0.0	3.3	Mean performance limits (PL) in 31 task areas: 1=no PL; 2=PL in sight; 3=PL reached; 4=PL exceeded
2.	Performance limits (education)	3580	0.5	0.8	0.0	4.0	Mean performance limits (PL) in education tasks: 1=no PL; 2=PL in sight; 3=PL reached; 4=PL exceeded
3.	Performance limits (culture)	3580	0.5	0.7	0.0	4.0	Mean performance limits (PL) in cultural tasks: 1=no PL; 2=PL in sight; 3=PL reached; 4=PL exceeded
4.	Performance limits (infrastructure)	1391	1.4	0.5	1.0	3.8	Mean performance limits (PL) in infrastructure tasks: 1=no PL; 2=PL in sight; 3=PL reached; 4=PL exceeded
5.	Performance limits (promotion of economic development)	3580	0.4	0.8	0.0	4.0	Mean performance limits (PL) in promotion of economic development: 1=no PL; 2=PL in sight; 3=PL reached; 4=PL exceeded
6.	Performance limits (security)	1307	1.5	0.7	1.0	4.0	Mean performance limits (PL) in security tasks: 1=no PL; 2=PL in sight; 3=PL reached; 4=PL exceeded
7.	Performance limits (government and administration)	1392	1.4	0.5	1.0	4.0	Mean performance limits (PL) in government and administrative tasks: 1=no PL; 2=PL in sight; 3=PL reached; 4=PL exceeded
8.	Performance limits (social services)	3579	0.5	0.8	0.0	4.0	Mean performance limits (PL) in social tasks: 1=no PL; 2=PL in sight; 3=PL reached; 4=PL exceeded
9.	Population	2596	2957.0	10425.9	18.0	365132.0	Municipal population
10.	Language region: German vs. French	2596	0.3	0.5	0.0	1.0	Dummy variable (0=municipality in the German-speaking region; 1=municipality in the French-speaking region)
	Language region: German vs. Italian	2596	0.1	0.3	0.0	1.0	Dummy variable (0=municipality in the German-speaking region; 1=municipality in the Italian-speaking region)
11.	Executive resources	548	31.4	101.6	0.0	2173.9	Number of executives (FTE) divided by the number of residents (per 1000 residents)

12.	Administrative resources	790	943.2	2016.0	0.0	46121.1	Number of administrative staff (FTE) divided by the number of residents (per 1000 residents)
13.	Position in the cantonal realignment	1319	0.8	0.8	0.0	4.0	Position of the municipality in the inner cantonal realignment (transfer payments): 0=net payer; 1=net recipient
14.	Tax rate: No tax rate change vs. tax increase	1408	0.1	0.3	0.0	1.0	1=tax rate increased between 2005 and 2010; 0= all else
	Tax rate: No tax rate change vs. tax reduction	1408	0.5	0.5	0.0	1.0	1=tax rate decreased between 2005 and 2010; 0= all else
15.	Earnings: No change in earnings vs. earnings increase	1368	0.7	0.5	0.0	1.0	1=earnings from income and wealth taxes increased between 2005 and 2010; 0=else
	No change in earnings vs. earnings decrease	1368	0.2	0.4	0.0	1.0	1=earnings from income and wealth taxes decreased between 2005 and 2010; 0=else
16.	Communal debt: No change in debt vs. debt increase	1365	0.3	0.4	0.0	1.0	1=communal debt increased between 2005 and 2010; 0= all else
	Communal debt: No change in debt vs. debt decrease	1365	0.5	0.5	0.0	1.0	1=communal debt decreased between 2005 and 2010; 0= all else
17.	Affected by the financial and economic crisis	1345	0.9	0.3	0.0	1.0	Whether the municipality was affected by the financial and economic crisis: 0=not affected; 1=affected
18.	Perception of municipal autonomy	1365	4.6	1.8	1.0	10.0	Perceived municipal autonomy on a scale from 1 (=no autonomy at all) to 10 (=a great deal of autonomy)

Note: M=Mean; SD=Standard deviation; Min=Minimum; Max=Maximum.

App. 3: Structural Characteristics of Municipalities' Performance Limits in Switzerland (Dependent Variable: Overall Performance Limit Index)

	B	SE B	β
<i>Constant</i>	1.253	.169	
<i>Size</i>			
Population	-1.040E-06	.000	-.052
Population density	4.588E-05	.000	.061
<i>Region</i>			
Language region:	-.065	.083	-.052
- German vs. French			
- German vs. Italian	.526	.212	.153**
<i>Human resources</i>			
Executive resources (per 1000 residents)	-.001	.001	-.061
Administrative resources (per 1000 residents)	1.288E-05	.000	.024
<i>Finances</i>			
Position in the cantonal realignment	.001	.037	.002
Tax rate:	-.048	.101	-.032
- No tax rate change vs. tax increase			
- No tax rate change vs. tax reduction	-.029	.064	-.031
Earnings:	.019	.098	.019
- No change in earnings vs. earnings increase			
- No change in earnings vs. earnings decrease	.091	.114	.075
Communal debt:	.057	.092	.054
- No change in debt vs. debt increase			
- No change in debt vs. debt decrease	.118	.084	.126
Affected by the financial and economic crisis	.067	.098	.042
<i>Autonomy</i>			
Perception of municipal autonomy	-.009	.015	-.038

Note: $R^2 = 0.053$. * $p < .1$, ** $p < .05$, *** $p < .01$.

App. 4: Structural Characteristics of Municipalities' Performance Limits in Switzerland (Dependent Variable: Differences in the Overall 2005 and 2010 Performance Limit Indexes)

	B	SE B	β
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<i>Constant</i>	.228	.282	
<i>Size</i>			
Population	-6.228E-06	.000	-.187***
Population density	.000	.000	.118
<i>Region</i>			
Language region:	-.016	.137	-.008
- German vs. French			
- German vs. Italian	.985	.388	.155**
<i>Human resources</i>			
Executive resources (per 1000 residents)	.001	.001	.047
Administrative resources (per 1000 residents)	-5.054E-05	.000	-.057
<i>Finances</i>			
Position in the cantonal realignment	.036	.060	.038
Tax rate:	.190	.168	.074
- No tax rate change vs. tax increase			
- No tax rate change vs. tax reduction	.045	.106	.030
Earnings:	-.233	.166	-.135
- No change in earnings vs. earnings increase			
- No change in earnings vs. earnings decrease	-.111	.193	-.055
Communal debt:	-.246	.153	-.138
- No change in debt vs. debt increase			
- No change in debt vs. debt decrease	-.069	.139	-.044
Affected by the financial and economic crisis	.185	.162	.070
<i>Autonomy</i>			
Perception of municipal autonomy	-.007	.025	-.017
Note: $R^2 = 0.053$. * $p < .1$, ** $p < .05$, *** $p < .01$.			

App. 5: Structural Characteristics of Municipalities' Performance Limits in Switzerland (Dependent Variable: Performance Limits in Education)

	B	SE B	β
<i>Constant</i>	1.127	.280	
<i>Size</i>			
Population	6.391E-07	.000	.019

Population density	.000	.000	-.080
<i>Region</i>			
Language region:	-.372	.138	-.177***
- German vs. French			
- German vs. Italian	.415	.352	.071
<i>Human resources</i>			
Executive resources (per 1000 residents)	-.002	.001	-.091
Administrative resources (per 1000 residents)	5.842E-05	.000	.065
<i>Finances</i>			
Position in the cantonal realignment	-.034	.061	-.035
Tax rate:	-.183	.167	-.071
- No tax rate change vs. tax increase			
- No tax rate change vs. tax reduction	-.154	.106	-.099
Earnings:	.013	.162	.008
- No change in earnings vs. earnings increase			
- No change in earnings vs. earnings decrease	.037	.188	.018
Communal debt:	.080	.152	.044
- No change in debt vs. debt increase			
- No change in debt vs. debt decrease	.113	.139	.072
Affected by the financial and economic crisis	.307	.163	.113
<i>Autonomy</i>			
Perception of municipal autonomy	-.018	.025	-.043
Note: $R^2 = 0.091$. * $p < .1$, ** $p < .05$, *** $p < .01$.			

App. 6: Structural Characteristics of Municipalities' Performance Limits in Switzerland (Dependent Variable: Performance Limits in Culture)

	B	SE B	β
<i>Constant</i>	.791	.219	
<i>Size</i>			
Population	-2.220E-06	.000	-.084
Population density	.000	.000	.147**
<i>Region</i>			
Language region:	.218	.107	.133**

- German vs. French			
- German vs. Italian	.744	.274	.164***
<i>Human resources</i>			
Executive resources (per 1000 residents)	-.001	.001	-.081
Administrative resources (per 1000 residents)	8.106E-06	.000	.012
<i>Finances</i>			
Position in the cantonal realignment	.050	.047	.066
Tax rate:	-.071	.130	-.036
- No tax rate change vs. tax increase			
- No tax rate change vs. tax reduction	.060	.083	.050
Earnings:	-.004	.126	-.003
- No change in earnings vs. earnings increase			
- No change in earnings vs. earnings decrease	-.017	.147	-.010
Communal debt:	.217	.119	.155*
- No change in debt vs. debt increase			
- No change in debt vs. debt decrease	.194	.109	.157*
Affected by the financial and economic crisis	-.017	.127	-.008
<i>Autonomy</i>			
Perception of municipal autonomy	.012	.020	.039
Note: $R^2 = 0.082$. * $p < .1$, ** $p < .05$, *** $p < .01$.			
App. 7: Structural Characteristics of Municipalities' Performance Limits in Switzerland (Dependent Variable: Performance Limits in Infrastructure)			
	B	SE B	β
<i>Constant</i>	1.530	.167	
<i>Size</i>			
Population	-1.196E-06	.000	-.060
Population density	6.714E-05	.000	.090
<i>Region</i>			
Language region:	-.022	.081	-.018
- German vs. French			
- German vs. Italian	1.094	.229	.285***
<i>Human resources</i>			

Executive resources (per 1000 residents)	-.001	.001	-.073
Administrative resources (per 1000 residents)	4.485E-06	.000	.008

Finances

Position in the cantonal realignment	-.003	.036	-.005
Tax rate:	-.113	.100	-.073
- No tax rate change vs. tax increase			
- No tax rate change vs. tax reduction	-.044	.063	-.048
Earnings:	-.189	.098	-.181*
- No change in earnings vs. earnings increase			
- No change in earnings vs. earnings decrease	-.156	.114	-.128
Communal debt:	.075	.090	.070
- No change in debt vs. debt increase			
- No change in debt vs. debt decrease	.123	.083	.131
Affected by the financial and economic crisis	.015	.096	.009

Autonomy

Perception of municipal autonomy	-.017	.015	-.069
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Note: $R^2 = 0.117$. * $p < .1$, ** $p < .05$, *** $p < .01$.

App. 8: Structural Characteristics of Municipalities' Performance Limits in Switzerland (Dependent Variable: Performance Limits in Promotion of Economic Development)

	B	SE B	β
<i>Constant</i>	.952	.336	

Size

Population	-4.026E-07	.000	-.010
Population density	2.323E-05	.000	.016

Region

Language region:	.077	.165	.031
- German vs. French			
- German vs. Italian	.556	.421	.082

Human resources

Executive resources (per 1000 residents)	-.002	.001	-.091
Administrative resources (per 1000 residents)	6.462E-06	.000	.006

Finances

Position in the cantonal realignment	-.088	.073	-.078
Tax rate:	.294	.200	.098
- No tax rate change vs. tax increase			
- No tax rate change vs. tax reduction	.118	.127	.065
Earnings:	.009	.194	.004
- No change in earnings vs. earnings increase			
- No change in earnings vs. earnings decrease	.056	.226	.023
Communal debt:	.207	.182	.098
- No change in debt vs. debt increase			
- No change in debt vs. debt decrease	.237	.167	.128
Affected by the financial and economic crisis	-.148	.195	-.047

Autonomy

Perception of municipal autonomy	.013	.030	.026
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Note: $R^2 = 0.044$. * $p < .1$, ** $p < .05$, *** $p < .01$.

App. 9: Structural Characteristics of Municipalities' Performance Limits in Switzerland (Dependent Variable: Performance Limits in Security)

	B	SE B	β
<i>Constant</i>	1.645	.221	

Size

Population	1.607E-06	.000	.063
Population density	1.330E-06	.000	.001

Region

Language region:	-.177	.109	-.107
- German vs. French			
- German vs. Italian	1.002	.297	.205***

Human resources

Executive resources (per 1000 residents)	-.001	.001	-.062
Administrative resources (per 1000 residents)	-1.893E-05	.000	-.027

Finances

Position in the cantonal realignment	-.017	.048	-.022
Tax rate:	-.110	.129	-.056
- No tax rate change vs. tax increase			

- No tax rate change vs. tax reduction	-.159	.084	-.133*
Earnings:	-.224	.130	-.165*
- No change in earnings vs. earnings increase			
- No change in earnings vs. earnings decrease	-.032	.151	-.020
Communal debt:	.201	.119	.144*
- No change in debt vs. debt increase			
- No change in debt vs. debt decrease	.252	.109	.207**
Affected by the financial and economic crisis	.048	.128	.022
<i>Autonomy</i>			
Perception of municipal autonomy	-.029	.019	-.093
Note: $R^2 = 0.124$. * $p < .1$, ** $p < .05$, *** $p < .01$.			

App. 10: Structural Characteristics of Municipalities' Performance Limits in Switzerland (Dependent Variable: Performance Limits in Government and Administration)

	B	SE B	β
<i>Constant</i>	1.433	.191	
<i>Size</i>			
Population	-1.700E-06	.000	-.074
Population density	6.116E-05	.000	.072
<i>Region</i>			
Language region:	-.256	.093	-.180***
- German vs. French			
- German vs. Italian	.868	.262	.198***
<i>Human resources</i>			
Executive resources (per 1000 residents)	.000	.001	-.036
Administrative resources (per 1000 residents)	-1.632E-06	.000	-.003
<i>Finances</i>			
Position in the cantonal realignment	.033	.041	.050
Tax rate:	-.043	.114	-.025
- No tax rate change vs. tax increase			
- No tax rate change vs. tax reduction	-.020	.071	-.019
Earnings:	-.112	.112	-.095
- No change in earnings vs. earnings increase			

- No change in earnings vs. earnings decrease	.011	.130	.008
Communal debt:	.000	.103	.000
- No change in debt vs. debt increase			
- No change in debt vs. debt decrease	.129	.094	.121
Affected by the financial and economic crisis	.093	.109	.051
<i>Autonomy</i>			
Perception of municipal autonomy	-.024	.017	-.086
Note: $R^2 = 0.109$. * $p < .1$, ** $p < .05$, *** $p < .01$.			

App. 11: Structural Characteristics of Municipalities' Performance Limits in Switzerland (Dependent Variable: Performance Limits in Social Services)

	B	SE B	β
<i>Constant</i>	1.033	.230	
<i>Size</i>			
Population	-1.408E-06	.000	-.052
Population density	8.488E-05	.000	.084
<i>Region</i>			
Language region:	-.004	.113	-.002
- German vs. French			
- German vs. Italian	.609	.289	.131**
<i>Human resources</i>			
Executive resources (per 1000 residents)	-.001	.001	-.038
Administrative resources (per 1000 residents)	4.922E-05	.000	.068
<i>Finances</i>			
Position in the cantonal realignment	.015	.050	.019
Tax rate:	.091	.137	.044
- No tax rate change vs. tax increase			
- No tax rate change vs. tax reduction	-.027	.087	-.022
Earnings:	.123	.133	.088
- No change in earnings vs. earnings increase			
- No change in earnings vs. earnings decrease	.108	.155	.066
Communal debt:	-.025	.125	-.017

- No change in debt vs. debt increase			
- No change in debt vs. debt decrease	.073	.114	.058
Affected by the financial and economic crisis	.147	.134	.068
<i>Autonomy</i>			
Perception of municipal autonomy	-.002	.021	-.005
Note: $R^2 = 0.040$. * $p < .1$, ** $p < .05$, *** $p < .01$.			