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## **Public Sector Size and Corruption: Evidence from 290 Swedish Municipalities**

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# Public Sector Size and Corruption: Evidence from 290 Swedish Municipalities<sup>1</sup>

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## **Abstract**

In this paper, we use data from a corruption survey conducted among top politicians and high level civil servants in 290 Swedish municipalities in 2007 to investigate the effects of government size on corruption. We construct several measures of corruption based on the survey, and combine these corruption measures with detailed administrative municipality level data to estimate the effect of local government resources on corruption. In cross-sectional analysis, we find a robust and negative association between total public expenditure and corruption. When we use lagged population growth rates and age structure as instruments for expenditure in 2-stage-least-squares regressions, the point estimates remain negative, but are no longer significant. In contrast with standard political economy models, where a bigger public sector is typically assumed to cause problems with corruption and public office abuse, our results suggest that corruption pressures may be particularly high when government resources are limited.

*Keywords:* Corruption, government size, local politics

*JEL-codes:* D73, H72

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## Introduction

A large public choice and political economy literature has highlighted the potentially large misalignments between the interest of public servants and their electorate, and the resulting socially suboptimal behavior of public servants generally referred to as rent-seeking or political corruption. As noted by Warren (2011), corruption – broadly defined as “inappropriate use of common power and authority for purposes of individual or group gain at common expense” (p. 332) – is generally viewed as a problem resulting from the monopoly powers of government. As Persson and Tabellini (2003) phrase it, “elected politicians have ample opportunity to abuse their political powers at the expense of voters” (p. 958). Mueller (2003) still goes one step further and argues that “corruption is almost an inevitable consequence of the existence of government and the principal/agent problems that come with it” (p. 545). Similarly, predating both contributions by several decades, Myrdal (1968) argues that civil servants deliberately introduce extensive public sector regulations to increase citizen’s willingness to pay bribes, a behavior which has become a salient feature in a variety of theoretical political economy models such as those developed by Acemoglu and Verdier (2000) and Alesina and Angeletos (2005).

The notion of self-interested or inherently corrupt politicians suggests that the overall levels of political corruption will increase with the size of government in general, and with the number of employed civil servants in particular. From a fiscal sociology perspective, this is however not necessarily true. As pointed out by Moore (2004), an increased dependence of societies on taxation (and government provision) may lead to greater institutionalized social influence over revenue raising and expenditure. Along the same lines, Persson and Rothstein (2011) suggest that a larger public sector will affect citizens’ demand for good government, and that voters will be more prone to hold politicians accountable when taxes are higher.

From an empirical perspective, the evidence of the effect of government size on corruption is mixed. Most published empirical studies have analyzed differences in corruption at the country level using perception-based index measures compiled through World Bank surveys or organizations like Transparency International as surveyed in Pellegrini and Gerlagh (2008), Treisman (2007) and Andvig and Fjeldstad (2001). In general, countries with bigger public sectors are viewed as less corrupt (La Porta et al. 1999). The most salient example for this phenomenon are the Nordic countries, which consistently rank among the countries with the largest government sector and are also consistently assessed to be among the least corrupt nations in the world. However, apart from the problems associated with measuring corruption problems at the country level (Andersson and Heywood 2009), the Nordic countries differ from most other countries in a multitude of dimensions, making a causal interpretation of the negative correlation between corruption and government size in these countries difficult. At the sub-national level, Goel and Nelson (1998) analyze state level government size in the US between 1983 and 1987, and find that government size, in particular spending by state governments, has a strong positive influence on corruption as measured by the number of convictions for public office abuse. Similar results were however not found by Montinola and Jackman (2002), who analyzed country data level using a corruption measure based on assessments by Business International.<sup>2</sup>

In this paper, we use data from a corruption survey conducted among top politicians and high level civil servants in 290 Swedish municipalities in 2007 to investigate the effects of government size on

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<sup>2</sup> Business International is part of the Economist Intelligence Unit. Further details are available at <http://www.eiu.com/>.

corruption. While Sweden's central political system is generally ranked among the least corrupt at the international level, a large number of corruption scandals have emerged at the municipality level over the past year, as documented by Wångmar (2012), Andersson (2008) and Erlingsson et al. (2008). With an average annual budget of US\$ 6,700 per capita – comparable to the US federal government budget in per capita terms – the Swedish municipalities are responsible for the provision of child care, education, and elder care. In response to the rising frequency of corruption reports at the municipality level, a detailed online survey was conducted with municipality level politicians and civil servants in 2007 (Erlingsson et al. 2008).<sup>3</sup> The survey asked respondents to report any corrupt behavior observed in the community both in the form of bribe offers personally received and corrupt behaviors among fellow civil servants or politicians. In order to minimize the risk of systematic misreporting, participants were not asked to provide any identifiable information, and were also not asked any questions about their own behavior. A remarkable 80% of survey respondents reported having observed at least some corrupt behavior, and 40% of respondents indicated to have observed corrupt behavior in more than half of the domains investigated in the survey.

In order to assess the associations between government size and corruption, we linked the corruption measures collected through the survey to a large number of municipality-level characteristics collected through the central government and the national statistics office including annual total municipality expenditure. Our results overall appear highly consistent. When we regress reported corruption on budget size using multilevel regression models including a full set of municipality controls, we find a negative and statistically significant association between government size and corruption. When we use variations in government resources generated by demographic changes within municipalities as instruments in 2-stage-least-squares (2SLS) regressions, the negative point estimates of the effects of government size on corruption are confirmed, but are no longer statistically significant.

The findings presented in this paper are linked to a larger literature investigating the causal determinants of public corruption. Similar to the literature on the effects of government size on corruption cited above, a majority of existing determinant studies focus on country-level differences. Treisman (2007) reviews the determinants of corruption literature and concludes that “[q]uite strong evidence suggests that highly developed, long-established liberal democracies, with a free and widely read press, a high share of women in government, and a history of openness to trade, are perceived as less corrupt.” (p. 211). The most robust finding at the country level appears to be the negative correlation between corruption and economic development, which has been interpreted both as evidence for economic development leading to lower corruption, and as evidence for corruption impeding economic growth. Reviewing the cross-country literature Andvig and Fjeldstad (2001) conclude that democracy appears to reduce corruption, but probably only slowly.

Tavits (2007) shows that corruption (in this case as measured by Transparency International's Corruption Perception Index and the World Bank's Governance Indicator) is mitigated by clarity of responsibility. Pellegrini and Gerlagh (2008) note that corruption and extraction of political rents is a problem not confined to developing countries and young democracies, but also affects societies that are supposedly free-from-corruption. They argue that exposure to uninterrupted democracy is associated with lower corruption levels, that political instability raises corruption and that the diffusion of newspapers helps to lower corruption levels. At the sub-national level, Goel and Nelson (2011) show that in the US, greater educational attainment lowers corruption, while greater judicial

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<sup>3</sup> While descriptive conclusions from the survey are given in Erlingsson et al. (2008), our paper is the first to use these data to analyze the determinants of corruption.

employment increases corruption, regardless of how corruption is measured.<sup>4</sup> Overall, the available empirical evidence is limited both by the availability of reliable corruption measures and by a large number of unobservable characteristics potentially affecting both measured corruption and its determinants.

Against this background, we seek to contribute to the existing literature in two principal ways: first, by exploring a newly collected corruption survey which allows us to investigate differences in reported corruption problems across municipalities; and second, by using exogenous variations in government size to identify the causal impact of government size on political corruption.

## Study Background

**The Role of Municipalities in Sweden.** Sweden is administratively divided into 21 regions and 290 municipalities. Accounting for 59 percent of public employment in Sweden, municipalities are the most important administrative unit both politically and economically.<sup>5</sup> Financed mainly by an approximately proportional income tax of about 20 percent, municipalities are responsible for the provision of schooling, child care and elderly care. In addition, municipalities handle welfare provision, zoning issues (including building permits, permission to sell alcohol et cetera), culture and public transport. While the central government provides social insurance, higher education and military defense, the main part of welfare services are provided locally. Municipalities have their own (local) parliament (kommunfullmäktige), responsible for all political municipal activities. The public consumption of municipalities amount to 20 % of GDP, compared to 7% percent of GDP for central government.

**Corruption in Sweden.** According to the 2011 version of Transparency International (TI)'s corruption perception index, the least corrupt countries in the world are (in order) New Zealand, Denmark, Finland followed by Sweden and Singapore. Sweden's high TI-ranking does however not mean that Sweden is free from corruption problems. According to the International Social Survey Programme 2006, 22 percent of Swedish citizens answer 'almost all' or 'quite a lot' when asked their opinion about how many politicians in Sweden are involved in corruption. This is lower than the 48 percent average among countries covered by the ISSP, but substantially higher than the top countries Denmark (3), Switzerland (9) and New Zealand (11).<sup>6</sup> As stressed by Erlingsson, et al. (2008), there are reasons to expect corruption and similar problems to increase in Sweden as a result of organizational changes such as municipal level New Public Management. Recently, corruption scandals at the local level have been documented by Wångmar (2012), and an official report (Statskontoret 2012:20) documented an increase in perceived levels of local corruption between 2008 and 2011, likely attributable to stories about local corruption becoming more frequent in Swedish media.

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<sup>4</sup> Their measures are: i) individual state convictions of public officials for corruption over a five-year time horizon, (ii) convictions measured over a longer, three-decade time horizon, and (iii) perceptions of corruption across states based on survey data at a specific point in time.

<sup>5</sup> 53 percent are employed by municipalities, 6 are employed by companies owned by municipalities, according to Statistics Sweden.

<sup>6</sup> Data from the ISSP are available at <http://www.gesis.org/en/issp/>.

## Data and Measures

**Dependent Variables** In order to measure the prevalence of corruption in Swedish municipalities, Erlingsson et al. (2008) conducted a detailed anonymous web survey with local top politicians and high rank civil servants in 2007. For the survey, the top four politicians (the chairman of the executive board, the vice chairman of the executive board, the chairman of the municipal council, the chairman of the municipal audit) and the top three civil servants (the municipal manager, the budget manager and the staff manager) were selected in each of the 290 municipality. 1,811 individuals were included in the total survey population<sup>7</sup>, and 52% of them completed the survey. Among the 35 questions asked in the survey, six dealt directly with corruption problems in the respondent's municipality as shown in further detail in Table 1. The complete survey is available in Appendix A.

**Table 1. Questions on Corruption Problems**

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Survey Question
1) How often are you, in your position as elected representative or in your duty, offered money, or other benefits, in order to make a decision in favor of the person/persons who has offered the benefit?
2) How often do you think other politicians and civil servants in your municipality are offered money, or other benefits, in order to make a decision in favor of the person/persons who has offered the benefit?
3) How often do you think other politicians and civil servants in your municipality have actually accepted the benefit offered to them?
4) How often have you been subject to violence, threat of violence or blackmailing, where the person exposing you, has demanded that you, in your municipal duty/service, act in a way that you would otherwise had not?
5) In my municipality, the public procurement is impartial
6) If I wanted to, it would be easy for me to bring benefits to me or my close ones, at the expense of the municipality.

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*Notes:* Questions have been translated from Swedish by the authors.

All questions offered multiple answer categories, ranging from “never” to “very often” (question 1 to 4) and from “strongly agree” to “strongly disagree” (question 5 to 6). To aggregate answers into a single measure of corruption, we applied three different strategies: binary response coding, categorical response coding, and principal component analysis.

**Binary response coding.** In order to generate the simplest possible corruption score, we generated a binary indicator variable for each of the six questions. The question-specific indicator variables were coded to one if respondent's answer suggested any occurrence of the corrupt behavior of interest, regardless of the frequency or “intensity” of the problem. While the binary coding does not fully explore the provided answer categories, it is very easy to code, simple to interpret, and does not require any further weighting assumptions regarding the various response categories. The binary index ranges between zero and six, with zero indicating that no problems were reported at all, and a score of six meaning that problems was reported on all six questions.

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<sup>7</sup> The seven categories are present in most but not all municipalities, explaining why the number of surveys sent is slightly lower than  $7 \times 290 = 2,030$ .

**Categorical response coding.** A second approach commonly suggested in the literature is to directly translate provided answers into ordinal scales, so that “never” is coded as “0”, “very rarely” as 1, “rarely” as 2, “sometimes” as 3, and “often” as 4. The categorical index procedure then simply adds up the scales. The main advantage of this coding is that the index directly uses all information provided; the main disadvantage is that differences in the frequency are highly subjective, and may thus result in differential reporting and noisy measurement. The categorical coding also implies that the difference between any two response categories is equally large, which is not always obvious. The categorical index ranges between 0 and 24, with 0 indicating that no problems were reported at all, and a (never observed) score of 24 meaning that all six problems were experienced frequently.

**Principal component analysis (PCA).** In order to fully explore all variation provided by the categorical variables without imposing specific coding assumptions, we used principal component analysis to analyze the responses provided, and generated a third corruption index based on the first principal component. Since the resulting numerical values are not straightforward to interpret, we normalized the first component to a standard normal variable (z-score).

Not all respondents answered to all questions; reassuringly, the correlation between response rate and the binary index is close to zero (-0.0014) and, as shown in appendix A, does not show any particular spatial pattern.

As to the three indices constructed, the coding approach appears to matter relatively little, with correlation coefficients ranging between 0.87 (categorical and PCA) and 0.92 (binary and PCA).

Figure 1a and 1b illustrate the statistical and geographical distribution of corruption based on the binary index. The relative frequency of each index score for the categorical coding is displayed in Appendix B. Each observation in the data set corresponds to survey respondent. Only about 20 percent of respondents (215) report no incident of corrupt behavior. The most frequent score in the data set is 3 (235 cases), followed by a score of 2 (211 cases) and a score of 0 (210 cases). The spatial distribution is shown in figure 1b, indicating no clear regional or geographical variation in corruption problems as measured by our index. The geographical response rate is shown in appendix A. To facilitate the interpretation of the estimated coefficients in the multivariate analysis, we normalize the index to mean 0 and standard deviation 1, and use the resulting z-score as dependent variable.

### Figure 1. Distribution of Corruption Problems in Sweden

Figure 1a. Frequency Distribution, Binary Corruption Index<sup>8</sup>

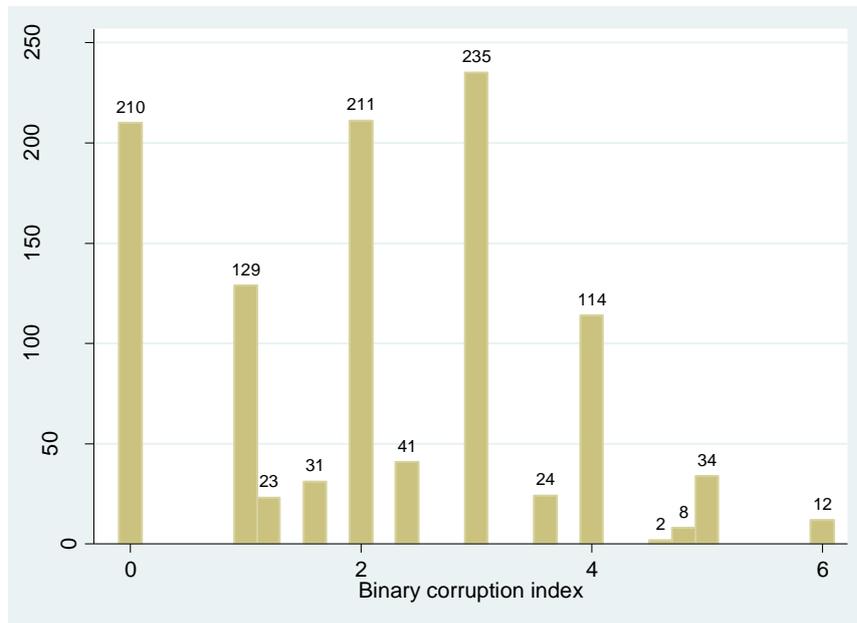
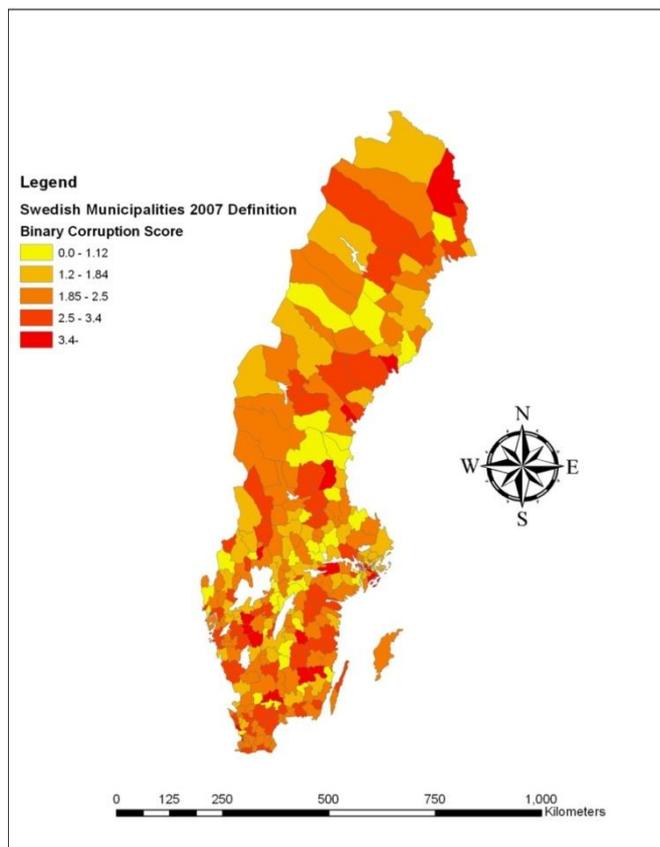


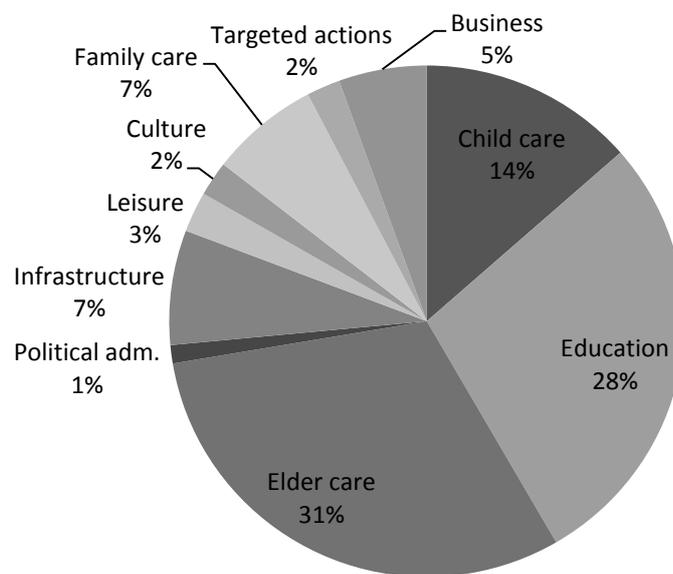
Figure 1b. Spatial Distribution, Binary Corruption Index



<sup>8</sup> When a respondent chooses not to answer some of the questions, we use the response patterns on the available items to impute cumulative corruption scores. This explains why decimal points arise.

**Independent Variables** Our main independent variable is total municipal public expenditure, converted to dollars at the prevailing exchange rate of 7.5 Swedish Krona per US\$. Average annual municipality expenditure per capita was close to 50,000 SEK (6,800 US dollar) in 2004. For comparison, the US federal budget in the same year was US\$ 7,824.2 per capita.<sup>9</sup> With an average population of 30,000, this implies a mean annual municipality budget of US\$ 217 Million.<sup>10</sup> As can be seen in Figure 2, three quarters of this amount are used for child care, primary and secondary education and care for the elderly.

**Figure 2. Composition of Municipality Expenditure 2007**



**Control Variables** To control for municipality level differences, official data on a large number of municipality level characteristics compiled in the K-fakta database (Johansson 2006) were used. The variables selected for the empirical model are population size (Millions), binary indicators for the three major cities, the share of population in working age and retirement age (20-64, 65 and older), income per capita 2007 in US\$, area ('000 square km), and the share of adults with at least college education as proxy for the average human capital in each municipality.

In addition, the corruption survey collected information on the respondents such as sex, type of appointment (political or public official), educational attainment and duration of current appointment. In order to control for political competition, we also use a binary indicator variable for “close elections”; the variable is coded to one if the 2006 election had less than a 5 percent gap between the

<sup>9</sup> [www.usgovernmentspending.com/](http://www.usgovernmentspending.com/)

<sup>10</sup> An alternative measure of public sector size would be local tax rates. Due to a complex system of redistributive transfers among municipalities, the tax rate is however not a very good measure of public sector size.

right wing and the left wing bloc. To examine the effect of local media presence, we have also collected data on the number of local news offices in each municipality. Table 2 shows summary statistics for all independent variables included in our empirical model.

**Table 2. Summary Statistics for Independent Variables**

<b>Variable</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min</b>	<b>Max</b>
Total budget (US\$ Millions)	217.34	461.45	21.44	5712.00
<b>Municipality Characteristics</b>				
Population size (Millions)	0.03	0.06	0.00	0.77
Major City	0.01	0.11	0.00	1.00
Working age share (20-64)	56.24	2.52	48.20	65.80
Share of population age 65 and older	19.35	3.62	9.40	28.90
Income per capita 2007 (US\$)	40.34	17.60	17.25	174.58
Area ('000 square km)	1.39	2.39	0.01	19.37
Percentage of adults with college	12.22	6.04	5.00	48.00
<b>Respondent Characteristics</b>				
Female	0.29		0	1
Bureaucrat	0.42		0	1
Secondary education	0.18		0	1
Tertiary education	0.70		0	1
In office for 2-10 years	0.44		0	1
In office more than 10 years	0.29		0	1
<b>Other controls</b>				
Close elections (<5% gap)	0.14		0	1
Number of newspaper offices in municipality	1.20	0.92	0	4

## Analysis and Results

As discussed in the introduction, the causal links between public sector size and corruption are complex. Higher corruption levels may result in a bigger public sector if corrupt decision makers increase taxes and expenditure to finance benefits for themselves or their networks. On the other hand, widespread corruption may make it more difficult to collect tax revenue, resulting in a smaller public sector. Similarly, as stressed by Persson and Rothstein (2011), higher public expenditure may induce voters to care more about how tax revenue is used. Then again, voters may be more prone to allow the public sector to grow when corruption is low.

These four main theory-driven hypotheses regarding the causal relation between government size and corruption are summarized in Table 3. Two out of the four theories predict a negative association between government size and corruption in cross-sectional data, while two predict the opposite. The models differ, however, in their predictions with respect to exogenous changes in public expenditures, i.e. shifts in government size not directly resulting from politicians' actions or preferences. While the first two hypotheses predict that such exogenous changes in spending should not affect corruption, models 3 and 4 predict that these changes affect subsequent corruption problems.

**Table 3. Expected sign of public expenditure on corruption under four different hypotheses.**

Hypothesis	Association between government size and corruption	Effect of an exogenous increase in government size
H1. Corruption problems result in a bigger public sector as politicians and officials extract rents.	+	0
H2. Corruption problems make it more difficult to collect tax revenue and reduce voters' willingness to support the public sector, resulting in a smaller public sector.	-	0
H3. Higher public expenditure induces voters to hold local governments accountable and thus decreases corruption problems.	-	-
H4. Higher public expenditure increases corruption problems as the potential gains from corrupt behavior increase.	+	+

To assess the predictive accuracy of the four models, we divide our empirical analysis into two parts. In the first part, we use multivariate multilevel regression models to estimate the cross-sectional association between government size and corruption at the municipality level. Since we combine respondent level data with municipality characteristics in our regressions, we apply standard multilevel models developed by Steenbergen and Jones (2002) and further described by Woolridge (2002) to estimate the associations of interest. The multilevel model we estimate is given by

$$y_{im} = \beta_0 + \beta_1 GOVSIZE_m + X_{im}\gamma + \Phi_m\lambda + \sum_{R=2}^{21} \delta_R I_R + u_{im}, \quad (1)$$

$$u_{im} = \varepsilon_m + \varepsilon_{im}.$$

where  $y_{ic}$  is the level of corruption reported by respondent  $i$  in municipality  $m$ ,  $GOVSIZE_m$  is our measure of the municipality's government size,  $X_{im}$  is a vector of respondent controls,  $\Phi_m$  is a vector of municipality level controls, and  $I_R$  are region fixed effects included to control for other unobserved differences across Sweden's 21 regions. The error term  $u_{im}$  in the empirical model contains both a municipality-specific intercept  $\varepsilon_m$  and an individual-level noise term  $\varepsilon_{im}$ . The estimates the multilevel models generates can be interpreted as fully adjusted cross-sectional associations between government size and corruption.

In the second part of our analysis, we use variations in the demographic composition of municipalities to predict need-driven changes in budget size, and use these predicted changes in budget size to identify the causal effects of increased budgets on corruption. The instrumental variable estimator is discussed in further detail in Wooldridge (2002) and Angrist and Kruger (2001) as well as in Angrist and Pischke (2009), and will generate unbiased estimates of the causal effects of interest under the assumption that the used instrument is orthogonal to the residual of the main equation of interest – we discuss this assumption in further detail below.

## Adjusted Cross-Sectional Associations – Multilevel Modeling Results

Table 4 presents results from the multilevel regressions. Column (1) shows the results using the binary index as dependent variable, column (2) uses the categorical index and column (3) uses the principal component analysis based corruption index as dependent variable. We normalized all three variables to z-scores, so that the estimated coefficients can be directly compared across the three columns – each unit of the outcome measures translates to one standard deviation of the underlying corruption index.

In order to interpret the results, it is important to note that the model identifies of variations in government size conditional on population (and population squared). While the overall standard deviation in government size is 4 (US\$ 400 Million), the average (residual) variation condition on population size is 0.2 (US\$ 20 Million). An estimated coefficient of -0.5 (column 1, table 3) then implies that a one standard deviation increase in government size translates into a 0.11 standard deviation decrease in the corruption index. Similarly, a one standard deviation increase in population size (conditional on all other variables) translates to a 0.15 standard deviation increase in the corruption index conditional on all other covariates included.

The coefficients on other municipality characteristics go in the expected direction, but are not statistically significant. Stronger associations were found for respondent level characteristics: Compared to politicians, public officials are less prone to report corruption problems, and as expected, those who have been longer in their position are more likely to report having experienced problems.

Inconsistent with the notion that more political competition induces better behavior, we find that municipalities with close election outcomes in 2006 (less than 5 percent difference between right wing and left wing parties) have on average higher levels of corruption. One possible interpretation of this result is that tight elections lead to an alliance among different political parties in which frequently changing governments mutually allow themselves a limited degree of rent-seeking. Another

interpretation is that a higher external risk of losing office lowers the cost of being caught for politician and thus induces more problematic behavior among incumbents.

With respect to the presence of media, we do not find a robust effect. Possibly, the number of local newspaper offices is a too crude measure to fully capture the effect of investigative journalism on corruption problems.

**Table 4 OLS regressions explaining corruption problems**

<b>Dependent Variable: Corruption Z-score</b>	Binary (1)	Categorical (2)	PCA (3)
<i>Municipal characteristics</i>			
<b>Total expenditure 2004 (US\$ '00 Million)</b>	<b>-0.506*</b> <b>(0.280)</b>	<b>-0.356</b> <b>(0.292)</b>	<b>-0.573**</b> <b>(0.276)</b>
Population size (Millions)	33.55** (16.94)	24.90 (17.62)	38.44** (16.70)
Population squared	8.773* (5.155)	4.495 (5.374)	8.056 (5.079)
Major City	-0.471 (0.580)	-0.204 (0.607)	-0.264 (0.570)
Working age share (20-64)	-0.0268 (0.0366)	-0.0463 (0.0381)	-0.0295 (0.0360)
Share of population age 65-79	0.00719 (0.0401)	0.00322 (0.0418)	0.0197 (0.0395)
Share of population 80+	-0.0302 (0.0538)	-0.0353 (0.0561)	-0.0546 (0.0530)
Income per capita 2007 (US\$)	-0.000968 (0.00249)	0.000996 (0.00260)	0.000300 (0.00246)
Area ('000 square km)	0.0119 (0.0205)	0.00977 (0.0213)	0.0108 (0.0202)
Percentage of adults with college	0.00201 (0.00901)	-0.00450 (0.00940)	0.00445 (0.00887)
Respondent female	0.0328 (0.0683)	0.0508 (0.0685)	0.0603 (0.0685)
Respondent bureaucrat	-0.118* (0.0705)	-0.148** (0.0704)	-0.0673 (0.0708)
Respondent sec. education	-0.166 (0.117)	-0.154 (0.117)	-0.185 (0.117)
Respondent tertiary education	-0.0142 (0.106)	0.0102 (0.106)	-0.0126 (0.106)
In office 2-10 years	0.249*** (0.0767)	0.203*** (0.0771)	0.193** (0.0768)
In office > 10 years	0.149* (0.0839)	0.172** (0.0843)	0.122 (0.0840)
<i>Additional controls</i>			
Close elections	0.174* (0.0983)	0.191* (0.102)	0.183* (0.0968)
Number of news offices	-0.0218 (0.0477)	-0.0451 (0.0497)	0.0106 (0.0469)
Constant	1.371 (2.374)	2.663 (2.473)	1.475 (2.340)
Observations	1,074	1,074	1,074
Number of municipalities	280	280	280

## Instrumental Variable Estimation

To identify the causal effect of public sector size on the corruption index, we use lagged demographic changes at the municipality level as a source of exogenous variation in government size. In the universal welfare state setting of Sweden, a complete provision of social services is expected from the municipality for all population groups. As Figure 2 shows, child care, education and elder care account for the large majority of municipality expenditure. With children and elderly accounting for most of the expenditure needs in each community, variations in age structure not only change the composition of government expenditure, but also affect the absolute level of resources available to, and handled by the municipality. We explore two instruments: lagged population growth and the relative share of elderly over the age of 80 in 2004 (i.e. those over 80 as a share of all over 65).

Population growth at the municipality level is driven to some extent by differences in reproductive behavior, but is mostly the outcome of population movement. Since growing populations are on average younger, and since growing communities frequently struggle to scale up public services (and shrinking communities struggle to scale down operations), municipal expenditure per capita is in general negatively correlated with population growth (Christoffersen and Larsen 2007). The opposite is true for the share of elderly over the age of 80. Due to the internationally observed compression of morbidity (Vita et al. 1998), the need for care increased exponentially over age 70, so that a relatively large fraction of individuals (within the population over 65) tends to increase public expenditure.

As Figure 3 illustrates, population growth varied widely among municipalities during the 1990s. Examining the distribution of population growth among municipalities more closely, reveals that municipalities with declining population are typically suffering from deindustrialization and the decline of Sweden's steel and mining industry.<sup>11</sup> Municipalities with growing populations are more heterogeneous, including cities with universities (Umeå, Uppsala), resorts in the archipelago (Värmdö, Vaxholm) and child friendly municipalities close to major cities.<sup>12</sup>

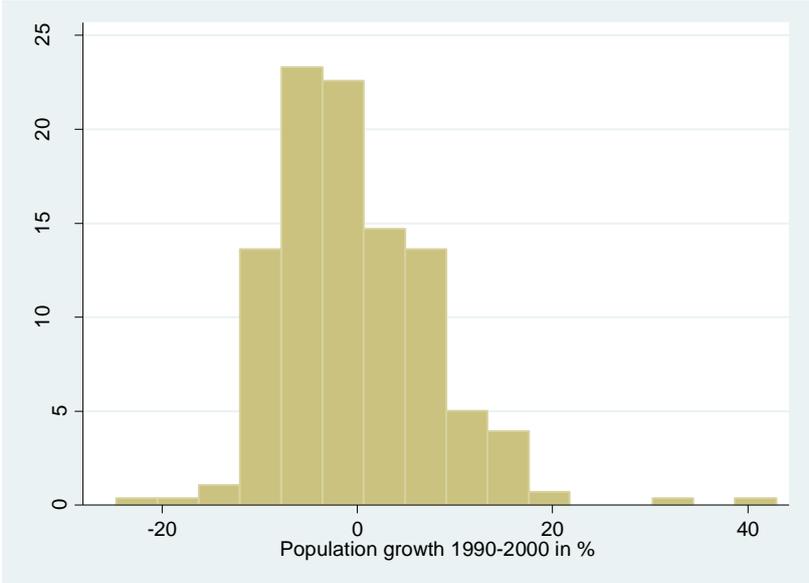
From an analytical perspective, the key assumptions for instrument validity are that i) the instrument predicts the variable of interest, and that ii) the instrument is orthogonal to the residual of the main regression. Figure 4 suggests a rather robust negative association between population growth and change in per-capita expenditure. The key question then is whether population growth is unrelated to corruption problems except for a potential link operating via public expenditure. As argued above, the primary causes for population movements in Sweden are de-industrialization and urbanization, both of which will change the composition of underlying population. In order to make sure that corruption is not affected through more mobile or more educated constituencies, we control both for education and age structure in our IV regressions – the assumption is thus that population growth does not affect corruption through mechanisms not captured in our model.

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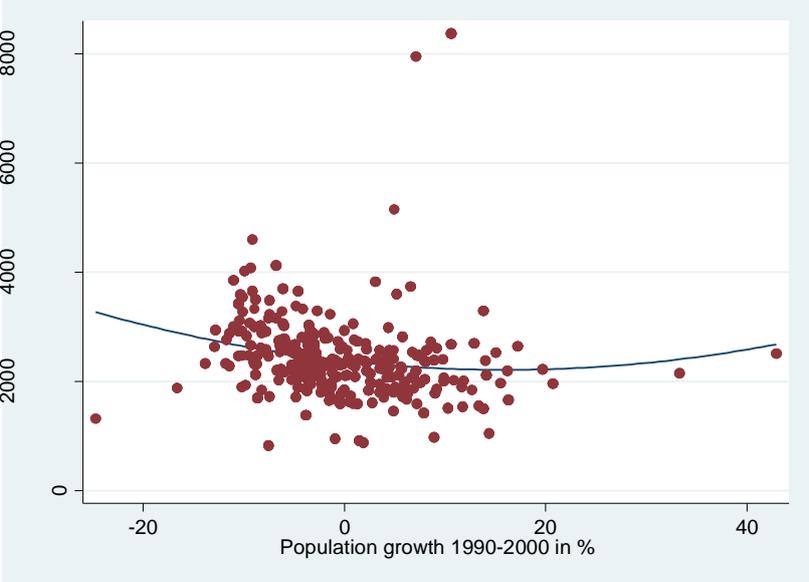
<sup>11</sup> Municipalities with largest population declines are Nyköping (due to the separation of Gnesta and Trosa in 1992), Oxelösund, Hällefors, Laxå, Munkfors, Strömsund, Filipstad, Hagfors, Hofors, Ljusnarsberg.

<sup>12</sup> Kungsbacka, Ekerö, Nacka, Norrtälje, Österåker, Häbo.

**Figure 3. Distribution of municipalities according to population growth in the 1990s**



**Figure 4. The conditional effect of population growth on per capita expenditure**



**Figure 5: Relative Share of 80+ among Individuals of Ages 65 and Older**

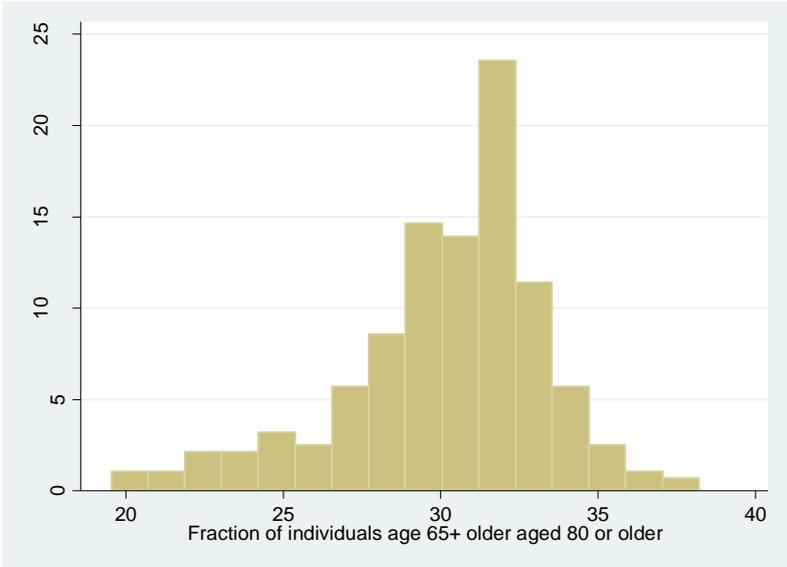


Figure 5 shows the distribution in the share of individuals 80 and older among the population over 65. The average share is 30 percent, which means that close to one third of individuals over the age of 65 were older than 80 in Sweden in 2004. The key assumption for this variable being valid as instrument is that a particularly old population does not affect corrupt behavior directly. The main model includes controls for the share of individuals over the age of 65; the identifying assumption is thus that having a relatively large share of very old (among the old) can not directly affect politician’s behavior. Under the assumption that political preferences are stable among the elderly, it seems unlikely that political preferences would differ much between the 65-79 and the 80+ group. One potential concern may be direct monitoring efforts by citizens. To the extent that older citizens are worse-off health wise, they may not be able to directly engage in monitoring of public servants, inducing a bias towards finding positive correlation between public expenditure and corruption. Considering that this population group represents only 5.9 percent of the population, the bias should however, if it exists at all, be limited.

Table 5 shows the predictive power of the two instruments in the multivariate regression setting. Both instruments are highly predictive of expenditure conditional on all other covariates included, with F-statistics between 12.7 and 24.7. Column 1 shows the first stage when only a linear population term is used, while column 2 shows the same model with a non-linear population specification. The quadratic term (column 2, row 2) appears to have limited predictive power on expenditure, so that the overall F-statistics is lower compared to when only the linear population term is used. Column 3 shows the result from a (first stage) regression where the share of 80 year olds is used as sole instrument – the F-value is very similar to the F-value of the population growth instrument alone. In the last column, we combine the two instruments, which results in the highest F-statistic overall. In order to maximize the predictive power of the instruments, we choose models 3 and 4 for our IV estimation, and estimate separate results for the share of the 80+ year olds alone as well as for the combined instrument.

**Table 5 Predictive Power of Instruments**

Dependent Variable: Total Municipality Expenditure 2004 (US\$ Millions)				
	(1)	(2)	(3)	(4)
Population growth 1990-2000	-0.00403*	-0.00460**		-0.00407*
	(0.00230)	(0.00182)		(0.00227)
Population growth squared		4.27e-05		
		(8.69e-05)		
Share of population 80+			0.0444**	0.0448***
			(0.0174)	(0.0169)
Population size	60.16***	60.18***	59.98***	60.16***
	(0.692)	(0.692)	(0.682)	(0.680)
Population squared	16.21***	16.20***	16.36***	16.15***
	(0.654)	(0.654)	(0.630)	(0.642)
Major city	0.476***	0.472***	0.470***	0.464***
	(0.142)	(0.143)	(0.136)	(0.138)
Working age share (20-64)	0.00551	0.00562	0.00790	0.00447
	(0.00920)	(0.00929)	(0.00857)	(0.00898)
Share of population age 65-79	0.00763	0.00731	-0.00479	-0.0109
	(0.00546)	(0.00535)	(0.00753)	(0.00781)
Share of population 80+	0.00127**	0.00125**	0.00133***	0.00130**
	(0.000522)	(0.000525)	(0.000510)	(0.000508)
Income per capita 2007 (US\$)	0.000491	0.000224	0.00136	0.000509
	(0.00420)	(0.00429)	(0.00426)	(0.00423)
Area ('000 square km)	0.0167***	0.0168***	0.0147***	0.0158***
	(0.00337)	(0.00336)	(0.00298)	(0.00310)
Respondent female	-0.00381	-0.00362	-0.00238	-0.00279
	(0.00686)	(0.00683)	(0.00674)	(0.00678)
Respondent bureaucrat	0.00726	0.00727	0.00858	0.00930*
	(0.00561)	(0.00560)	(0.00550)	(0.00546)
Respondent sec. education	-0.0121	-0.0122	-0.0107	-0.0111
	(0.0110)	(0.0110)	(0.0113)	(0.0112)
Respondent tertiary education	-0.0134	-0.0130	-0.0154	-0.0135
	(0.00967)	(0.00974)	(0.00985)	(0.00970)
In office 2-10 years	0.0132*	0.0132*	0.0133*	0.0121
	(0.00775)	(0.00776)	(0.00767)	(0.00759)
In office > 10 years	0.00937	0.0100	0.00837	0.00806
	(0.00766)	(0.00771)	(0.00745)	(0.00747)
Close elections	-0.0393*	-0.0379	-0.0379	-0.0415*
	(0.0237)	(0.0242)	(0.0232)	(0.0241)
Number of news offices	0.0402***	0.0408***	0.0343***	0.0378***
	(0.00991)	(0.00987)	(0.0101)	(0.0102)
Observations	1,074	1,074	1,074	1,074
R-squared	0.999	0.999	0.999	0.999
Cragg-Donald F-statistic	23.509	12.697	24.279	24.675

Notes: All specifications include region fixed effects

Table 6 presents results when public expenditure is instrumented using lagged population growth and the share of individuals over 80 as instruments. In columns 1, 3, and 5 we use only the share of individuals over the age of 80 (model 3 in Table 5); in columns 2, 4 and 6 we use both instruments to predict expenditure. Similar to before, we show the results separately for our three corruption indices. Across all specifications, the estimated coefficient is between -0.33 and -2.247, and thus consistently negative. However, none of the estimated coefficients are statistically significant.

**Table 6: IV Estimation Results**

Dependent: Corruption Z-score:	Binary Index		Categorical Index		PCA Index	
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Municipal characteristics</i>						
<b>Total expenditure (2004US\$ '00 Million)</b>	-1.357 (1.842)	-0.985 (1.263)	-1.287 (1.732)	-0.331 (1.226)	-2.247 (1.787)	-0.981 (1.123)
Population size (millions)	84.55 (110.4)	62.21 (75.76)	80.53 (103.9)	23.19 (73.55)	138.8 (107.3)	62.87 (67.40)
Population squared	22.76 (30.36)	16.64 (20.82)	19.89 (28.46)	4.194 (20.17)	35.44 (29.27)	14.66 (18.51)
Major City	-0.0587 (0.968)	-0.238 (0.691)	0.274 (0.907)	-0.187 (0.664)	0.522 (0.939)	-0.0880 (0.619)
Working age share (20-64)	-0.0196 (0.0359)	-0.0229 (0.0344)	-0.0365 (0.0381)	-0.0450 (0.0385)	-0.0163 (0.0345)	-0.0275 (0.0340)
Share of population age 65 and older	0.00344 (0.0325)	-0.00158 (0.0270)	0.000654 (0.0313)	-0.0122 (0.0276)	0.0117 (0.0300)	-0.00539 (0.0249)
Income per capita 2007 (US\$)	0.000122 (0.00361)	-0.000360 (0.00294)	0.00209 (0.00355)	0.000850 (0.00310)	0.00252 (0.00363)	0.000880 (0.00291)
Area ('000 square km)	0.0134 (0.0181)	0.0129 (0.0180)	0.0124 (0.0209)	0.0111 (0.0210)	0.0131 (0.0200)	0.0114 (0.0194)
Percentage of adults with college	0.0146 (0.0291)	0.00881 (0.0203)	0.00941 (0.0268)	-0.00547 (0.0198)	0.0290 (0.0276)	0.00935 (0.0185)
<i>Respondent characteristics</i>						
Respondent female	0.0288 (0.0692)	0.0301 (0.0689)	0.0435 (0.0714)	0.0467 (0.0707)	0.0563 (0.0745)	0.0606 (0.0738)
Respondent bureaucrat	-0.110 (0.0705)	-0.113 (0.0695)	-0.137* (0.0720)	-0.144** (0.0715)	-0.0530 (0.0732)	-0.0613 (0.0723)
Respondent secondary education	-0.178 (0.114)	-0.174 (0.114)	-0.172 (0.114)	-0.160 (0.112)	-0.203* (0.109)	-0.188* (0.107)
Respondent tertiary education	-0.0264 (0.108)	-0.0206 (0.107)	-0.00351 (0.107)	0.0112 (0.105)	-0.0384 (0.0997)	-0.0189 (0.0977)
Respondent in office 2-10 years	0.258*** (0.0765)	0.253*** (0.0730)	0.208*** (0.0800)	0.195** (0.0762)	0.215*** (0.0807)	0.197*** (0.0757)
Respondent in office > 10 years	0.155* (0.0852)	0.152* (0.0831)	0.172** (0.0856)	0.162* (0.0843)	0.136* (0.0820)	0.124 (0.0798)
<i>Other controls</i>						
Close elections (<5% gap)	0.144 (0.119)	0.157 (0.107)	0.157 (0.124)	0.192* (0.115)	0.120 (0.119)	0.165 (0.105)
Number of news offices	0.00779 (0.0801)	-0.00588 (0.0624)	-0.0126 (0.0766)	-0.0477 (0.0590)	0.0681 (0.0789)	0.0216 (0.0559)
Instrument	Age 80+	Age 80+	Age 80+	Age 80+	Age 80+	Age 80+
Observations	1,074	Growth 1,074	Growth 1,074	Growth 1,074	Growth 1,074	Growth 1,074
R-squared	0.044	0.049	0.039	0.049	0.019	0.050
Cragg-Donald F statistic	24.28	24.68	24.28	24.68	24.28	24.68

## Robustness Checks

The main result in this paper is that there is no, or potentially even a negative causal effect of local public sector size on corruption. This result appears to be robust with respect to the corruption index used, and also robust to the specific instrument chosen. In order to make sure that the specific time window chosen for government expenditure does not affect the estimated results, we estimate alternative models exploring different time structures. Given that respondents retrospectively report corrupt behavior in 2008, the ideal measurement period for government size is not obvious. In our main specification, we use 2004 municipality budgets to allow for a 3-year time lag between the measurement of public expenditure and corruption. Table 7 shows the IV estimates obtained by varying the time lag. On average, the estimated coefficients are largest for the most recent period (2007 expenditure), when the two instruments appear to have more limited power, and are marginally smaller when 2001 expenditure is analyzed. The results look virtually identical to our main specification when the period average is taken as explanatory variable as shown in the last two rows of Table 6.

**Table 7: IV Estimation with Changing Time Structures**

Dependent: Corruption Z-score:	Binary Index		Categorical Index		PCA Index	
	(1)	(2)	(3)	(4)	(5)	(6)
Instrument	Age 80+	Age 80+ Growth	Age 80+	Age 80+ Growth	Age 80+	Age 80+ Growth
Total expenditure 2004 (Table 6)	-1.357 (1.842)	-0.985 (1.263)	-1.287 (1.732)	-0.331 (1.226)	-2.247 (1.787)	-0.981 (1.123)
Total expenditure 2001	-2.271 (3.449)	-0.323 (0.564)	-2.153 (3.364)	0.123 (0.544)	-3.759 (3.984)	-0.0724 (0.491)
Total expenditure 2007	-4.233 (8.643)	-4.038 (8.144)	-4.014 (8.188)	-4.155 (8.091)	-7.007 (12.24)	-7.034 (11.84)
Average total expenditure 2001-2007	-1.463 (1.985)	-0.813 (1.078)	-1.387 (1.880)	-0.154 (1.067)	-2.422 (1.954)	-0.681 (0.952)

Notes: Numbers in parentheses are standard errors. Each coefficient corresponds to a point estimate obtained from a separate IV regression including all covariates displayed in Table 5.

We also conduct a series of additional robustness check where we exclude communities with very large or very small populations – neither exclusion affects the main results.

## Discussion

Corruption is a well-documented social problem. It breaks the link between collective decision making and people's powers to influence collective decisions (Warren 2011), and is generally presumed to inhibit economic development (Mauro 1995). Moreover, citizens in countries with higher levels of corruption express more negative evaluations of the political system and less likely to exhibit trust in civil servants (Anderson and Tverdova 2003; Linde and Erlingsson 2011).

One of the most commonly proposed causes of public corruption is government size. Larger governments, so the argument goes, imply larger potential rents for politicians and aggravate the fundamental principal-agent problem between the electorate on one side, and public officials on the other. All the results presented in this paper suggest that this notion is, at least in the specific context studied, not supported empirically. Controlling for an extensive set of respondent and municipality characteristics, we find a rather robust negative relationship between corruption and local public expenditure. This negative partial correlation is compatible with larger budgets causally reducing corrupt behavior, or, alternatively, with voters in less corrupt municipalities being more willing to let politicians handle larger budgets. When we instrument for government expenditure to overcome reverse causality and omitted variable concerns, we find a negative, but insignificant effect of increased expenditure on corruption. While estimated very noisily, the instrumental variable coefficients are on average larger than the OLS estimates, suggesting that higher municipality spending may somehow lead to lower corruption problems.

Even though our data do not allow us to directly investigate the underlying mechanisms, several theories appear consistent with the observed patterns. First, Swedish municipalities are the only major provider of primary education, child care and elder care, and also heavily involved in building permits and city planning. In municipalities with low per capita expenditure, the demand for these services is likely to be high relative to public spending levels, resulting in excess demand for welfare services. In municipalities with high levels of in-migration, there might be particularly high demand for housing and building permits, a sector known to be relatively more plagued with corruption problems, according to a report compiled by the Swedish government (Statskontoret 2012:20). Thus, one possibility is that scarcity of public services may induce citizens and private companies to directly interact with public servants to alter service provision outcomes. A second theory is related, but driven by the implicit value of favors, rather than by changes in the average behavior of the constituency: in settings with tight budgets, full services (such as access to convenient elderly care) may need to be rationed, so that the market value of preferential treatment by public servants may be particularly high. Last, voters with strong preferences for high public expenditures may move to municipalities that are efficiently governed, and thus reinforce good behavior.

Overall, our results suggest that the effect of government size on corruption is more complex than frequently postulated in the literature. While the empirical results presented in this paper provide only weak evidence for a negative causal effect of government size on corruption, the notion that leaner governments will lead to less corruption appears largely inconsistent with the overall patterns observed.

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## Appendix A: The survey

*(TRANSLATED FROM SWEDISH TO ENGLISH)*

1. I am

- Male
- Female

2. I work in/am politically active in ... (fill in the name of the municipality)

3. I am a

- Civil servant
- Politician

4. What party do you represent? (N.B. This question is only to be answered by politicians.)

- Social Democratic Party
- Moderate party
- Centre party
- Liberal people's party
- Christian Democrats
- Left Party
- Green Party
- Other party

5. My highest educational level is

- Primary school
- Secondary school
- University

6. I have held my current position for

- Less than two years
- Two to ten years
- More than ten years

7. How often are you, in your position as elected representative or in your duty, been offered money, or other benefits, in order to make a decision in favour of the person/persons who has offered the benefit?

- Never
- Very rarely
- Fairly rarely (not very often)
- Fairly often (sometimes)
- Very often
- Refrain from answering

8. Comments, if any, on the above question

9. How often do you think other politicians and civil servants in your municipality are offered money, or other benefits, in order to make a decision in favour of the person/persons who has offered the benefit?

- Never

- Very rarely
- Fairly rarely (not very often)
- Fairly often (sometimes)
- Very often
- Refrain from answering

10. Comments, if any, on the above question

11. How often do you think other politicians and civil servants in your municipality have actually accepted the benefit offered to them?

- Never
- Very rarely
- Fairly rarely (not very often)
- Fairly often (sometimes)
- Very often
- Refrain from answering

12. Comments, if any, on the above question

13. How often do you think politicians and civil servants in other municipalities are offered money, or other benefits, in order to make a decision in favour of the person/persons who has offered such a benefit?

- Never
- Very rarely
- Fairly rarely (not very often)
- Fairly often (sometimes)
- Very often
- Refrain from answering

14. Comments, if any, on the above question

15. How often do you think politicians and civil servants in other municipalities have actually accepted the benefit being offered to them?

- Never
- Very rarely
- Fairly rarely (not very often)
- Fairly often (sometimes)
- Very often
- Refrain from answering

16. Comments, if any, on the above question

17. How often have you been subject to violence, threat of violence or blackmailing, where the person exposing you, has demanded that you, in your municipal duty/service, act in a way that you would otherwise had not?

- Never
- Very rarely
- Fairly rarely (not very often)
- Fairly often (sometimes)
- Very often
- Refrain from answering

18. Comments, if any, on the above question

19. How often do you think politicians and civil servants in general are subject to violence, threat of violence or blackmailing, where the person exposing them, has demanded that they, in their municipal service, act in a way that they would otherwise had not?

- Never
- Very rarely
- Fairly rarely (not very often)
- Fairly often (sometimes)
- Very often
- Refrain from answering

20. Comments, if any, on the above question

21. Own opinions

a. It is common that full time and part-time politicians in Swedish municipalities abuse their position of power and trust, and bring benefits to themselves or their close ones, at the expense of the municipality.

- Fully agree
- Mostly agree
- Somewhat agree
- Disagree
- No opinion

b. It is common that higher civil servants in Swedish municipalities abuse their power, and bring benefits to themselves or their close ones, at the expense of the municipality.

- Fully agree
- Mostly agree
- Somewhat agree
- Disagree
- No opinion

c. It is more common for full-time and part-time politicians to benefit themselves at the expense of the municipality in other municipalities than in my municipality.

- Fully agree
- Mostly agree
- Somewhat agree
- Disagree
- No opinion

d. It is more common for civil servants to benefit themselves at the expense of the municipality in other municipalities than in my municipality.

- Fully agree
- Mostly agree
- Somewhat agree
- Disagree
- No opinion

e. In general, public procurement functions/operates impartially in Swedish municipalities.

- Fully agree
- Mostly agree
- Somewhat agree
- Disagree
- No opinion

f. In my municipality, the public procurement is impartial.

- Fully agree
- Mostly agree
- Somewhat agree
- Disagree
- No opinion

g. The municipal audit is an important instrument in checking and revealing abuse of power in my municipality.

- Fully agree
- Mostly agree
- Somewhat agree
- Disagree
- No opinion

h. Local media coverage is an important instrument in checking and revealing abuse of power in my municipality.

i. If I wanted to, it would be easy for me to bring benefits to me or my close ones, at the expense of the municipality.

- Fully agree
- Mostly agree
- Somewhat agree
- Disagree
- No opinion

j. I intervene if I suspect that someone is bringing benefits to themselves or their close ones at the expense of the municipality.

- Fully agree
- Mostly agree
- Somewhat agree
- Disagree
- No opinion

h. It is easy to trust people in general, even if they are strangers that you have never met before.

- Fully agree
- Mostly agree
- Somewhat agree
- Disagree
- No opinion

## Scenarios

We would like your position on the scenarios following below. Remember that we are not asking for what is right or wrong in the legal sense, but what you consider to be an unethical behaviour, namely, whether the scenarios express abuse by an elected representative/"civil service". What is acceptable and unacceptable behaviour among municipal politicians and civil servants?

### Scenario 1.

A logging company invites the municipal commissioner for dinner. The municipal commissioner accepts the invitation. Then, the municipal commissioner is invited by the company to go elk-hunting, gets free lodging and a couple of more dinners. Thereafter, the municipal commissioner makes a number of phone calls to friends, who are influential civil servants; and arranges for the hunting-party to get an increased hunting allotment so the group can shoot five additional adult animals.

22. What is your view on this?

- Unacceptable
- Doubtful, but unacceptable
- Doubtful, but acceptable
- Acceptable
- Refrain from answering

23. Comments, if any, on the above question

Scenario 2.

Bonds of friendship develop between an important business man in the IT sector in a Swedish municipality and the municipal manager. The businessman's IT-company has important contracts with the municipality. The "kommunchef" lets the businessman invite him/her on a trip to an exotic destination, to a value of about 35 000 SEK.

24. What is your view on this?

- Unacceptable
- Doubtful, but unacceptable
- Doubtful, but acceptable
- Acceptable
- Refrain from answering

25. Comments, if any, on the above question

Scenario 3.

A construction company invites top local politicians and officials in a county to a seminar, where the construction company informs about its business. The seminar goes on all day. Late-morning coffee, lunch and afternoon coffee is offered. In the evening, the participants are invited to a dinner with their husbands and wives. Since it is important to maintain good relations with the business sector, the municipal manager and the chairman of the municipal executive board decide to go to the seminar and participate in all the activities, and bring their husbands/wives to the dinner.

26. What is your view on this?

- Unacceptable
- Doubtful, but unacceptable
- Doubtful, but acceptable
- Acceptable
- Refrain from answering

27. Comments, if any, on the above question

Scenario 4.

The elder care in a Swedish municipality will procure a new supplier of diapers. The former producer does not get a renewed contract, although it sells the least expensive product, and the workers in the elder care facility think that the former supplier's products are the best. Instead, the products are procured from a producer whose production takes place in the municipality, and who buys most of the material for the diapers from local suppliers.

28. What is your view on this?

- Unacceptable
- Doubtful, but unacceptable
- Doubtful, but acceptable
- Acceptable
- Refrain from answering

29. Comments, if any, on the above question

Scenario 5.

A position as director at intermediate level is vacant. The staff manager's cousin is formally qualified for the position, and for this reason the personnel officer does not advertise the position in due order. The number of applicants is therefore limited, and the cousin finally gets the position.

30. What is your view on this employment procedure/process?

- Unacceptable
- Doubtful, but unacceptable
- Doubtful, but acceptable
- Acceptable
- Refrain from answering

31. Comments, if any, on the above question

Scenario 6.

A local politician is a member of the municipal council, of the board of a municipal company and is the vice chairman of a committee. He/she never reads documents, never give comments and always vote according to the party line. Thanks to the assignments, he/she only has to work half-time as a teacher, but can still manage well financially.

32. What is your view on this?

- Unacceptable
- Doubtful, but unacceptable
- Doubtful, but acceptable
- Acceptable
- Refrain from answering

33. Comments, if any, on the above question

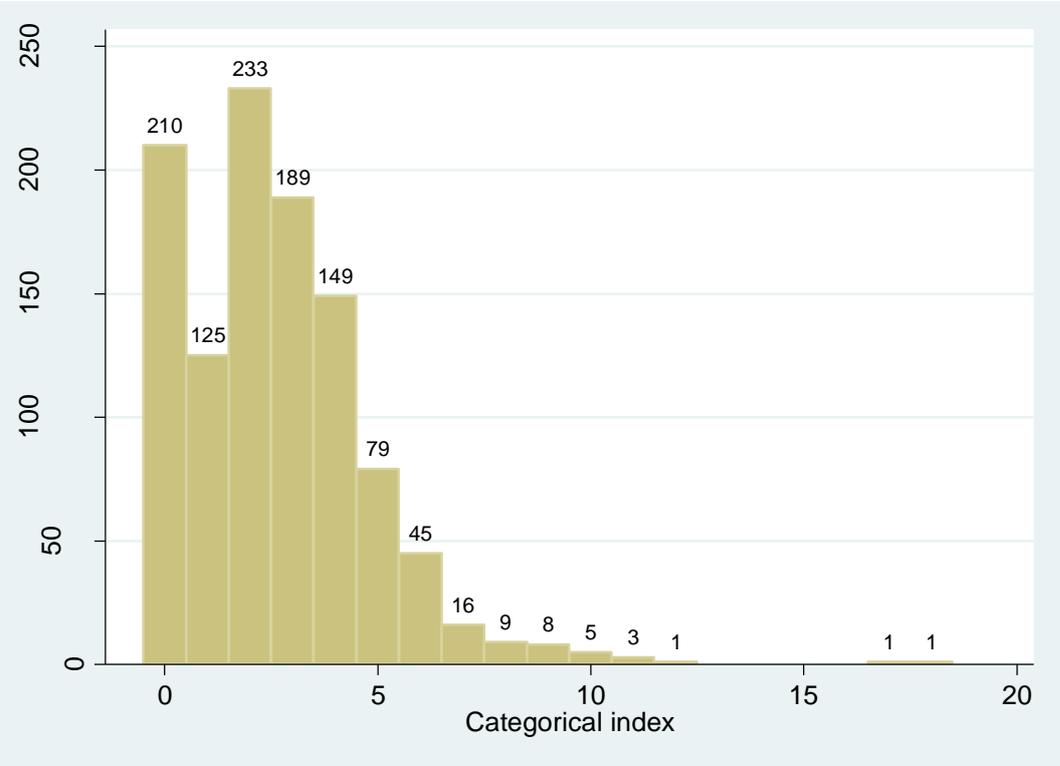
34. As compared to when you started as a local politician/local government official, problems with abuse of power have...

- Increased significantly
- Somewhat increased
- Not changed
- Somewhat decreased
- Decreased significantly
- Refrain from answering

35. As compared to when you started as a local politician/local government official, problems with blackmailing – when someone tries to force a local politician/local government official to act differently than they would otherwise have done in local politics- have...

- Increased significantly
- Somewhat increased
- Not changed
- Somewhat decreased
- Decreased significantly
- Refrain from answering

# Appendix B: Frequencies of Categorical Index



# Appendix C: Survey Response Rates

