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Scaling Corruption: The Causal Effect of Municipal Council Size on Perceived Corruption in Sweden

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Abstract: Previous research on the relationship between government size and corruption is ambiguous, and little is known about how institutional structures, such as council size, influence corruption in advanced democracies at the local level. We address this gap by studying the causal impact of municipal council size on perceived corruption in Sweden using a panel dataset of individual survey responses collected from 2008 through 2022. Building on a rational choice framework for corruption, we propose that expanding municipal councils creates opportunities for rent-seeking and weakens oversight, while reducing municipal council seats limits rent-seeking opportunities. Our analysis combines an instrumental variable estimation based on population-driven council size thresholds, which mandate increases in council size, with a difference-in-differences approach, exploiting a 2013 law change that allows councils to decrease in size. The instrumental variable estimate results reveal that expanding councils overall raise corruption perceptions, while the instrumented differences-in-differences results suggest that downsizing may be associated with lower corruption perceptions; however, this association is not statistically significant and not necessarily causal. These results imply that, while increasing the size of local institutions increases corruption levels, merely reducing their size may not be sufficient to reverse the effect.

Keywords: Corruption, Municipal Governance, Council Size, Political Decentralization, Instrumental Variables

JEL Codes: D73, H11, C26

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1 Introduction

There is little empirical evidence on how certain institutional characteristics, such as the size of the government, affect corruption in democracies. The body of work that exists exhibits large heterogeneity in method, data type, and measurement (Bonanno et al., 2024). In addition, the difficulty in accounting for the endogeneity of factors such as legal systems further complicates the isolated effect of government size on corruption.

Studies on the effects of corruption have highlighted its damaging impact on state development and national interest. Corruption has been shown to undermine economic growth (Knack and Keefer, 1997; Mauro, 1995), deter investment by private (Rose-Ackerman, 2016; Treisman, 2000) and foreign entities (Habib and Zurawicki, 2002), and erode trust in public institutions (Rivera, Seira and Jha, 2024; Sole-Olle and Sorribas-Navarro, 2014), which is important for effective state functioning (Brezzi et al., 2021). Cross-country reports show how the lower levels of corruption are tied with lower infant mortality rates, higher literacy levels, and increased per capita income (Kaufmann, Kraay and Zoido, 1999).

Yet, estimates of its effect on development outcomes remain difficult, as corruption is endogenously linked to other aspects of institutional quality such as political stability, government effectiveness, regulatory quality, and the rule of law (Quah, 2009). The existing body of research focuses on developing contexts, making it hard to generalize to advanced economies, as corruption typically manifests itself in more subtle forms such as regulatory capture, favoritism, and excessive lobbying rather than more overt forms (OECD, 2017). This gap shows the need to study how aspects related to the distribution of decision making and the design of public administration influence corruption in advanced economies. The urgency is especially underscored by Sweden's recent drop to its lowest Corruption Perceptions Index score in more than a decade (Transparency International, 2025), reflecting a broader decline in western Europe, as the region's average has fallen for the second year in a row (Bonanno et al., 2024).

Measurements like Transparency International's Corruption Perception Index have been the springboard of much corruption research. But, as is reflecting this field of study, corruption measurements have mostly been at the national level. Lower tiers have largely been eschewed, even though Sweden and most developed countries rely on some level of decentralized decision-making to municipalities or local government. Although determinants of corruption, like socioeconomic and demographic conditions (Dimant and Tosato, 2018), are known to differ across such sub-national divisions (Crombach and Smits, 2024).

At the same time, an interesting pattern has emerged in which municipalities of varying sizes seem to exhibit different corruption problems (Statskontoret, 2023). This raises the question: Are some municipalities more prone to corruption simply due to their size? To that end, using individual-level survey data obtained from Andreas Bergh and Statskontoret, we created a corruption index to study whether changes in municipal council size impact the perceived level of corruption in Swedish municipalities. Using an instrumental variable estimation, we find that increasing the number of municipal council seats has a significant and positive effect on perceived corruption for all years except 2012, where the results are positive but insignificant. In our difference-in-differences model,

we do not find causal evidence of lowered corruption for municipalities that could choose to decrease their size; however, the choice could be associated with lower levels of perceived relative corruption both before and after treatment. The findings suggest that while increasing the size of the municipal council increases corruption, it is not certain that decreasing the council size alone can reverse the effect.

The structure of our paper is as follows. Section 2 reviews the literature on size and corruption, introduces the rational choice framework on corruption, and states our research question and hypothesis. Section 3 explains how Swedish municipalities and their councils operate and explains the current municipal corruption problems in Sweden. Section 4 describes our survey data, index construction, municipal variables, and limitations of our data. Section 5 details our instrumental variable estimation and the difference-in-differences method, as well as their limitations. Section 6 estimates the effect of increasing and decreasing the size of municipal councils on perceived corruption levels, including limitations. Section 7 discusses our results and their implications. Finally, Section 8 concludes the paper.

2 Literature and Theory

This section defines size and corruption, reviews the literature on their relationship, outlines our rational choice framework on corruption, and lastly states our research question and hypothesis.

2.1 Definitions

2.1.1 Size

While many studies measure government size by financial expenditure, administrative units, or levels of government, this study defines size in terms of headcount. The focus will be on the number of politicians in municipal councils. This is because Sweden legally mandates a minimum council size based on the number of eligible voters in a municipality, after which municipalities may choose their own size, which was decreased in 2013, with effect from the election 2014 (SFS 2017:725) to enhance local democracy (Bet. 2013/14:KU7). Furthermore, the Swedish Government has recently investigated various policies to tackle the problem of increased municipal corruption, with a central issue being whether merging municipalities could offer a viable solution (SOU 2024:6). Consequently, this study seeks to assess how structural characteristics, particularly the headcounts of municipal councils, shape the recent rise in local corruption.

2.1.2 Corruption

We define corruption as the "means of exploiting one's public position to obtain an improper gain for oneself or others", drawn from the Swedish Government's own definition (Skr. 2012/13:167). In the economic literature, corruption in this sense is treated as rents that are captured by rent-seeking politicians, bureaucrats, and officials. A theoretical review of public corruption must therefore consider how these rents and incentives to be corrupt are created.

2.2 Literature Review

2.2.1 Size and Corruption: Theoretical Contributions

One leading explanation for how size influences corruption hinges on the concentration of decision-making authority. Shleifer and Vishny (1993) argued that when only one authority can extract rents, it faces full accountability for the impact of corruption on overall performance and thus has incentives to restrain it. In contrast, splitting power among multiple jurisdictions or politicians multiplies opportunities for rent-seeking, as each local official can behave opportunistically without bearing the full social cost. Rowley and Schneider (2004) extended this view, suggesting that when citizens and their representatives pursue divergent interests, delegating decision-making power enables those representatives to exploit their offices for personal gain in the absence of effective political constraints. This logic underpins two contrasting predictions about the impact of increasing municipal size.

On the one hand, increasing the size of the municipality entails more actors with the power to extract rents. As Treisman (2007) suggests, expanding local districts weakens the ability of citizens to coordinate and monitor officials directly, forcing reliance on intermediaries such as media outlets, political parties or interest groups, who may themselves have biases or incentives that obscure instances of wrongdoing. In such settings, Tanzi (1998) and Prud'homme (1995) warn that

rapid expansion often outpaces the capacity of administrative institutions, reducing the quality of local bureaucrats and further opening the space for opportunistic behavior. In short, increasing decision-making nodes without strengthening transparency or accountability, the very delegation that empowers local government becomes an opportunity for rent-seeking.

On the other hand, increasing the size of the council can dilute the share of authority of each official and place them within a larger, more visible assembly, thus intensifying scrutiny. For example, as the ratio of citizens to councilors increases, individual misconduct might be more likely to be detected and sanctioned. Bardhan and Mookherjee (2006) reinforce this point, arguing that a greater number of local politicians fosters closer ties with constituents; officials face more frequent interaction and must defend their records, which heightens transparency. Weingast (1995) adds an economic dimension: with more policymakers competing to attract mobile resources, municipalities are incentivized to secure property rights and deliver high-quality public goods rather than skim off revenues, since doing so undermines their competitiveness. Thus, in this view, increasing the council size can strengthen political constraints on corruption by making delegation more transparent and politically costly to abuse.

As theory offers ambiguous insights on the relationship between municipal council size and corruption, we now turn to empirical contributions to investigate which effect predominates in practice.

2.2.2 Size and Corruption: Empirical Contributions

Using a cross-national dataset, Rose-Ackerman and Kunicová (2005) found that federal constitutions tend to increase corruption in both low- and high-income countries. They explain this through a similar mechanism to that Shleifer and Vishny (1993) proposed; semi-autonomous regional governments each act as an independent rent-seeking monopoly. Without mutual oversight, each level adds its own markup on the same common pool, resulting in an aggregate bribe burden above the unitary optimum. Building on this, Fan, Lin and Treisman (2009) combine cross-national and firm-level data to show that political decentralization indeed raises both the frequency and costliness of bribe extraction. They find that reported bribery is more frequent in countries with more local public employees and additional administrative tiers; evidence that more complex government structures present more opportunities for uncoordinated rent-seeking. However, Lessmann and Markwardt (2010) demonstrated that the corruptionary effects of political decentralization critically depend on effective media oversight. In environments where the media are strong and independent, devolving power to local governments can curb corruption as journalists expose and deter malfeasance. In contrast, in settings where media oversight is less effective, decentralization can exacerbate rent-seeking. In other words, although decentralization can increase the avenues for rent-seeking, its ultimate impact on corruption depends on whether local officials can be held accountable.

In addition, government interventions both drive the expansion of public bodies and create opportunities for corruption. Mueller and Murrell (1986) demonstrate that as government bodies take on more redistributive and regulatory roles, their bureaucracies inevitably grow. In turn, this larger bureaucracy increases the number of rent-seeking opportunities, since larger governments are more likely to have more interaction with external actors, such as interest groups. Hansson

and Holmgren (2011) provide a concrete example at the municipal level: interest-group pressures influence municipal officials to circumvent procurement regulations, illustrating how interventionist policies can directly open channels for graft. Extending this logic by looking at European countries, Bel (2022) finds that jurisdictions with more regulatory intervention, complex bureaucratic procedures, and broad discretionary authority exhibit higher levels of corruption. Together, these studies imply that interventionist policies expand government size and increase corruption risk, although in a heterogeneous manner.

Turning to Swedish evidence, Pettersson-Lidbom (2012) exploits a statutory rule that links Swedish municipal council size to population thresholds as an instrument in a regression discontinuity design, finding that a larger number of coordinating legislators improves internal monitoring. Complementing this finding, Fredriksson, Schillemans and Pallas (2015) use quantitative content analysis of Swedish policy documents and show that increasing agency staff also increases the extent of mediatization in their rules and instructions, implying that larger agencies attract more intensive media oversight. By extension, larger government units, which face heavier media attention, would expect to exhibit lower levels of corruption. However, Bergh, Fink and Öhrvall (2017) apply similar regression discontinuity and instrumental variable methods used by Pettersson-Lidbom (2012), exploiting statutory population thresholds that determine minimum municipal council size, to estimate the causal effect of municipal council size on perceived corruption levels in 2008. Their results, in contrast to the monitoring hypothesis, show that exogenous increases in council seats lead to more corruption, although without suggesting any potential mechanisms behind these results.

Although empirical studies generally link larger councils to higher corruption, they are largely focused on national, cross-sectional analyses. Furthermore, Swedish findings at the municipal level remain ambiguous. To address this, we build on the study by Bergh, Fink, and Öhrvall (2017) by applying their instrumental variable approach to a 2008–2022 panel of perceived corruption in all Swedish municipalities to see if their result holds over time and is consistent in terms of offices and reforms to council size limits. Using the 2013 reform of council size and our set of panel data, we also aim to study the relationship in the opposite direction, that is, whether reducing council size lowers corruption perceptions.

2.3 Rational Choice Perspective on Corruption

Corruption is most often examined through Public Choice and Agency theories, both branches of the broader rational Choice framework (Snidal, 2013) which views actions as efficient means to further ends (Elster, 1989). In this setting, self-interested agents with private information extract rents from their principals. Rent-seeking then takes two main forms; direct corrupt transfers or "efficiency wages" paid by principals to deter misconduct. Some evidence points to a dynamic interaction among government interventions, corruption, and government size (Bel, 2022; Mueller and Murrell, 1986). To bring these strands together, we adopt Acemoglu and Verdier's (2000) rational choice model on corruption, which argues for how these rents and incentives arise from the transfer of resources from government interventions. The following section will outline their framework.

2.3.1 The Framework

One of the main responsibilities of the government is to correct market failures, and the government is made up of individuals who maximize utility and wealth, each holding private information and facing limited observability. These agents, often bureaucrats, are essential for designing, monitoring, and administering policies; however, their discretion allows them to extract rents when allocating resources through taxes, subsidies, or discretionary spending. Because such rent extraction perpetuates inefficient market equilibria, governments must deter corruption by offering a wage premium that agents forfeit if they are caught accepting bribes. The size of this premium depends on the intensity of the audit and the magnitude of potential rents. When a substantial share of agents cannot be corrupted, either because they adhere to rules for intrinsic reasons or because they are easily monitored, the total required wage premium falls. In such cases, it may become more efficient to tolerate some corruption among the remaining hard-to-observe agents than to maintain uniform premiums across all agents (Acemoglu and Verdier, 2000).

From this it follows that agent wages increase as monitoring becomes harder, which decreases the benefits, and thus the degree, of government intervention. As interventions create more touchpoints between bureaucrats and the affected area, they also increase potential corruption opportunities. Therefore, interventions should be avoided unless strictly necessary. If the government nevertheless deems interventions necessary to correct market failures, even if agents are hard to monitor, they will expand the bureaucracy as a tool to lower the bureaucratic rents. Thus, a government in which only a fraction of agents are corrupt and difficult to detect, and which undertakes a relatively large number of interventions, will both expand its bureaucracy and pay higher wage premiums (Acemoglu and Verdier, 2000).

In conclusion, the model implies that market failures drive governments to intervene, which in turn expands the bureaucracy. A larger bureaucracy offers more opportunities for rent-seeking, prompting the government to increase monitoring through further size increases to combat the new rent-seeking opportunities. Therefore, corruption itself creates incentives for size increases.

2.3.2 Applying the Framework to Swedish Municipal Councils

It is reasonable to assume that governments in developed countries such as Sweden meet this description; corruption is relatively rare, but certain interventions are important enough to justify their costs. Consequently, corruption should incentivize these governments both to offer higher wages and to maintain larger bureaucracies. This implies a clear link between corruption and bureaucratic size: Higher levels of corruption are expected in conjunction with larger bureaucracies. However, the causal relationship remains ambiguous. On the one hand, a higher incidence of corruption should, all else being equal, incentivize an increase in bureaucratic size. On the other hand, council size may increase when authorities intervene more or when greater market participation requires expanding governing bodies, such as when a voter or population threshold is crossed and additional council members become necessary. Such growth can also drive corruption because of agency problems. Finally, if government size and intervention levels are closely linked, larger governing bodies will likely implicitly tolerate the higher corruption that comes with greater intervention. As a result, governments that choose to be relatively large should, on average, display higher levels of corruption.

Although Acemoglu and Verdier's (2000) framework focuses on corruption among bureaucrats and officials, treating the size of government as the size of the bureaucracy, we argue that the number of politicians also matters because politicians both act as principals to those bureaucrats and as agents of voters. They possess private information and discretionary power and, like bureaucrats, play a crucial role in designing, monitoring, and administering policies. This position also enables them to extract rents. For example, Banerjee, Mullainathan and Hanna (2012) show that bribe revenue is often redistributed from bureaucrats to politicians to stifle audits. Since politicians have the ultimate responsibility for ensuring legislative compliance, a rise in corruption among bureaucrats and officials indicates that politicians are less able to control and monitor rent-seeking behavior. Examining the number of politicians thus not only provides an exogenous source of variation but also contributes to existing literature by showing how the number of politicians, not only bureaucrats, influences corruption.

Although the framework mainly argues that corruption drives increases in government size, policymakers must focus on tools they can actually control. Public officials cannot directly command corruption's presence, but they can choose how to curb it. Consequently, we ask whether adjustment of municipal council size can serve as a feasible tool to reduce corruption. Although these models make sound arguments for long-run equilibria, empirically examining the effects of exogenous variation in government size on corruption levels helps us assess whether council size can serve as a proactive tool for controlling corruption, rather than merely a reactive mechanism.

2.3.3 Framework Limitations

While Acemoglu and Verdier (2000) offer a powerful framework for understanding corruption as a result of incentive misalignments within hierarchical governance, it is based on strong assumptions regarding maximization of agent utility, observability limits, and predictable government behavior, all of which may vary across institutional contexts. In addition, the catch-all concept of interventions spans a diverse array of policies, from regulations and permits to public enterprises and grants, each of which could interact with corruption in different ways. Despite its limitations, this framework remains a valuable foundation for interpreting the link between government size and corruption. It provides a concise, tractable model that endogenously explains how rent-seeking, intervention, and organizational size interact, which makes it especially well suited to guide and contextualize our empirical analysis.

2.4 Research Question and Hypothesis

Our analysis is based on the following research question:

Is there a causal relationship between the size of the Swedish municipalities' council size and their perceived perception of corruption?

We expect corruption to rise in municipalities that increase their council size and fall in those that decrease their council size. Although our review of the literature has somewhat ambiguous findings, Acemoglu and Verdier's (2000) rational choice framework posits that municipalities increasing in size may present harder-to-monitor principal-agent relationships, diffuse accountability, and greater discretion over transfers and procurement, thus creating more opportunities for rent

extraction and agency problems. Furthermore, as larger governments are linked to more regulatory and bureaucratic interventions, we believe corruption to be higher as a result of the bureaucracy expanding to seek rents. Conversely, decreasing the size of the council should reduce opportunities for rent-seeking, and perceived corruption should decrease.

3 Background

In this section, we give an explanation of how Swedish municipalities and their councils operate. Following that, we discuss current municipal corruption problems in Sweden.

3.1 The Swedish Municipal System

Sweden's public administration is structured on three levels: national, regional, and municipal. The current municipal system was formed through amalgamations beginning in the 1950s and completed in 1974 to improve the efficiency of local service provision (Nielsen, 2003). Although the total number of municipalities has fluctuated over time, it has remained steady at 290 since 2003, and thus during all four years of our study (Statistiska Centralbyrån, n.d.; Sveriges Kommuner och Regioner, 2024b). Municipalities play a critical role in Sweden's welfare state, overseeing education, social services, childcare, eldercare, urban planning, housing, public health and environmental protection, rescue services, water and sewage management, libraries and local transportation (Sveriges Kommuner och Regioner, 2025).

Every four years, residents elect local representatives from various political parties to form the municipal council (kommunfullmäktige), whose seats are allocated proportionally based on the vote. As the highest decision-making body, the council sets local priorities and delegates responsibilities to the municipal board (kommunstyrelsen) and municipal committees (nämnder) to implement its policies and objectives. These bodies regularly report back to the council, which evaluates their performance with the help of an external auditor who conducts independent reviews. In addition to the executive board and committees, municipalities often rely on external service providers and may form preparatory committees or delegate tasks to municipal enterprises, inter-municipal associations, and financial coordination bodies (Eklöf, 2020). According to Sweden's municipal self-government principle, aligned with the EU's subsidiarity principle, councils must comply with national law but retain the authority to tailor policies to local needs and preferences (Sveriges Kommuner och Regioner, 2024a). The Swedish Municipal Act (SFS 2017:725) provides the statutory framework for municipal organization and governance, which is further elaborated by broader internal governance guidance from Sveriges Kommuner och Regioner (SKR) (Statskontoret, 2023).

Under the Swedish Municipal Act, the size of the council is tied to the number of eligible voters in a municipality; see Table 1 below. Previously, the Government (Prop. 2013/14:5) required municipalities with up to 12 000 eligible voters to have at least 31 council members. The 2013 reform of the Swedish Municipal Act (SFS 2017:725), which took effect in the 2014 election, lowered this threshold, allowing municipal councils with up to 8 000 eligible voters to shrink to a number of 21 members after the election in 2014. The law change also allowed municipalities with less than 16,001 eligible voters to reduce the minimum council seats from 41 to 31 seats.

Table 1: **Minimum Municipal Council Size by Electorate Size**

Regulation before 2013		**Regulation after 2013**	
Eligible voters	Minimum council size	Eligible voters	Minimum council size
		$\leq 8\,000$	21
$\leq 12\,000$	31	$8\,001 - 16\,000$	31
$12\,001 - 24\,000$	41	$16\,001 - 24\,000$	41
$24\,001 - 36\,000$	51	$24\,001 - 36\,000$	51
$\geq 36\,001$	61	$36\,001 - 600\,000$	61
Stockholm	101	$\geq 600\,001$	101

Sources: Council size thresholds before 2013 from Prop. 2013/14:5 by the Government. Current council size thresholds from section 5 §5 of the Swedish Municipal Act (SFS 2017:725).

This change was part of broader legal reforms to strengthen local democracy, where the Constitutional Committee (Bet. 2013/14:KU7) responded to the difficulties of small parties filling candidate lists and higher resignation rates among counselors in smaller municipalities. Importantly, the reform grants municipalities the option, not the obligation, to downsize, while still allowing any council to exceed the minimum.

3.2 Corruption in Swedish Municipalities

Even though Sweden was ranked among the least corrupt countries, Bergh, Erlingsson and Sjölin (2008) investigate how corruption problems began to surface in Sweden during the mid-1990s, highlighted by the National Audit Office and the GRECO committee finding Swedish institutions ill-equipped to detect and prevent corruption. The analysis attributed this shift to economic conditions and organizational reforms in municipal governance that, they argued, created more opportunities for corrupt practices. Traditionally, legal protections for anonymous whistleblowers allowed insiders to expose wrongdoing without fear of retaliation. However, in the aftermath of the early 1990s economic crisis, increased fear of job loss and a stronger sense of loyalty to one's employer created a "culture of silence", discouraging officials from reporting witnessed misconduct. Simultaneously, many municipalities spun off parts of their operations into independent subsidiary companies, shifting public-law oversight to the civil-law, undermining long-standing traditions of public-record access and limiting citizen rights of appeal. At the same time, the swift implementation of new public management reforms destabilized established organizational structures and norms, creating new opportunities for corrupt behavior. Lastly, the municipal audit function came under fire for its ineffectiveness, since many auditors maintained close personal ties to those they were meant to oversee and were often part of the very municipal councils they audited.

Today, Sweden is still ranked among the least corrupt countries according to indices such as Transparency International's Corruption Perceptions Index; however, the country's ranking has declined during recent years and in 2025 Sweden reported its lowest CPI score in more than a decade (Statskontoret, 2023; Transparency International, 2025). As in the 1990s, Sweden still does not have a dedicated government agency focused on combating corruption. Instead, this responsibility is distributed across several agencies. In recent years, Statskontoret has been appointed a more prominent role by analyzing corruption levels in municipalities, identifying potential problems, and proposing solutions (Statskontoret, 2012).

In 2023, Statskontoret released a report that highlights current corruption problems in Swedish municipalities. In this report, they state that the most common forms of corruption in Sweden, such as nepotism and favoritism, already are harder to detect than outright bribery. However, they explain that the problem is exacerbated by the lack of a dedicated anti-corruption agency. Without a central authority, municipalities must rely on their own resources and expertise, which vary between municipalities, to prevent and tackle corruption (Statskontoret, 2023). Moreover, the regulations in the Municipal Act (SFS 2017:725) on internal control provisions remain quite basic. In response, SKR has recently issued more detailed governance guidelines, bringing municipal oversight closer to the standards used in state administration (Statskontoret, 2023).

Statskontoret (2023) continues explaining that municipalities often define corruption differently, which leads to uneven anti-corruption approaches. Moreover, the complexity of municipal governance, with split powers between councils, boards, and specialized committees, each with its own administration, makes it difficult to apply uniform policies or guidelines throughout the organization. Furthermore, because municipalities employ a larger workforce than the central government, there are numerically more opportunities for corruption. The trend of more municipally owned companies in the 1990s has continued, further aggravating the problem of governance and control, since private companies operate under different laws than public ones. In addition, Statskontoret points out that the decline of local newsrooms reduces external monitoring, potentially leaving even more corruption cases undetected.

Lastly, Statskontoret (2023) finds that the risk of corruption differ by the size and character of municipalities. Large municipalities tend to adopt structured, proactive anti-corruption strategies: they typically employ more staff, including permanent legal advisers, and maintain well-defined routines and control systems. Smaller municipalities, in contrast, often lack these resources, such as a municipal lawyer, and operate with flatter, less formal structures that can amplify conflicts of interest and bias. Risks in rapidly growing and densely populated areas involve managing pressures from strong market forces and rapid development processes, while more prominent risks in smaller and sparsely populated municipalities are close personal networks and limited expertise.

4 Data

This section describes the survey data and control variables used to construct our index of perceived corruption prevalence in Swedish municipalities.

4.1 Corruption Survey Design

To create our corruption index, which will act as our dependent variable, we build on non-public, individual-level surveys measuring perceived local corruption in all 290 Swedish municipalities, fielded in 2008, 2012, 2018, and 2022. Compiled, this creates panel data that spans the four surveys over four corresponding elections, two before the 2013 law change, and two after. The 2008 survey by Andersson et al. (2008) and the 2018 survey were conducted for a research project conducted at Linné University and provided by Andreas Bergh, while the 2012 and 2022 surveys were conducted and provided by Statskontoret (2012; 2023) to provide a comprehensive assessment of corruption in Swedish municipalities.

The surveys consist of approximately 30 questions, of which we select a subset to create our corruption index. The questions mainly address experiences and perceptions of the prevalence of corruption in municipalities, assessments of the knowledge of municipal politicians and officials about corruption, assessments of municipal internal anti-corruption guidelines and experiences of harassment, threats, violence, and vandalism. The anonymous surveys were directed at senior political and administrative leaders within each municipality. In each survey year, four politicians participated: the chair and vice-chair of the municipal board, the chair of the municipal council, and the chair of the municipal audit committee. The survey was also sent to five senior officials, namely the municipal director, the head of personnel, the chief financial officer, the municipal lawyer, and the head of procurement, in all years except 2008 where the municipal lawyer and the head of procurement were not included.

4.2 Corruption Index

4.2.1 Index items

Of the roughly 30 survey questions, there were six that directly addressed experiences of corruption, which were the questions used to construct our index; see Table 2 below. The six questions were included in the 2008 and 2018 surveys. 2012 and 2022 do not contain questions about violence or public procurement bias in the respondent's own municipality and are therefore excluded from our index. A robustness check is performed by excluding these questions from the 2008 and 2018 datasets as well, which neither changes the direction of the effect nor the significance level, and only has a small effect on the magnitude. Table 9 in section 10.2 of the appendix presents this control. The answer scale for questions 1–4 is Don't know, Never, Very rarely, Fairly rarely, Fairly often and Very often. Questions 5-6 follow the scale No opinion, Do not agree at all, Partially agree, Largely agree, and Completely agree.

Table 2: **Survey Questions Used in the Index Construction**

Survey questions
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(s) offering the benefit?
2. How often do you think other politicians and officials in your municipality are offered money or other benefits in order to make a decision that favors the person(s) offering the benefit?
3. How often do you think other politicians and officials in your municipality have actually accepted the benefit they were offered?
4. How often have you been subject to violence, threats of violence, or blackmail, where the person exposing you has demanded that you, in your municipal duty/service, act in a way you otherwise would not have?
5. In my municipality, the public procurement process is impartial.
6. If I wanted to, it would be easy to arrange benefits for myself or people close to me at the municipality's expense.

Note: Authors' own translations of the questions from Swedish.
Sources: 2008 and 2018 survey data provided by Andreas Bergh. 2012 and 2022 survey data provided by Statskontoret.

Below, Figure 1 shows the distribution of responses to the six questions for the four survey years. A "yes" indicates perceived corrupt behavior. Response rates are consistently highest for question 1, where only about 5% each year report having been personally exposed to corruption. In contrast, questions 2 and 3 show much higher indications of corruption; 50-60% believe others are offered bribes, and 40-50% think bribes are accepted. Approximately 20% of the respondents each year believe that it would be easy to obtain undue benefits if they desired. In both 2008 and 2018, 23% report having personally experienced threats or violence, and about 40-50% believe that procurement contracts are not awarded impartially.

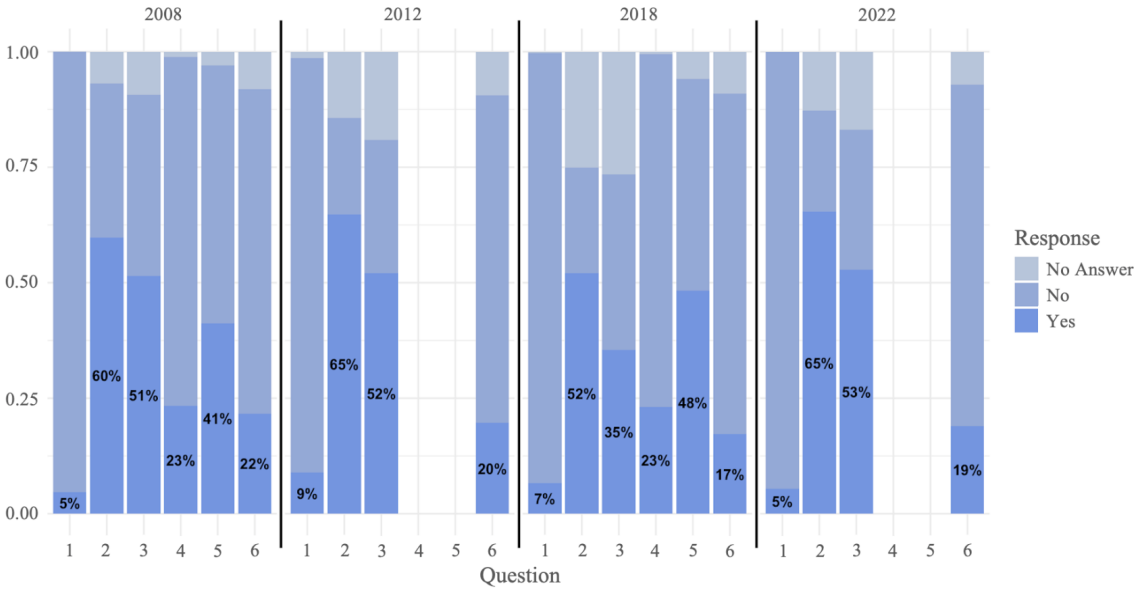

Figure 1: **Distribution of Responses for Each Index Question and Year**

Sources: 2008 and 2018 survey data provided by Andreas Bergh. 2012 and 2022 survey data provided by Statskontoret.

4.2.2 Index Construction

As is common in constructing an index from questionnaire data, we employ principal component analysis (PCA) to reduce the dimensionality of the data to one value to be used as our corruption index. To do this, we first invert any question scale so that higher scores consistently reflect greater perceived corruption. Next, we normalize each item to adjust for the differing response scales between the questions. Because the data is of a multilevel structure with individual respondents nested within municipalities, missing values are then imputed via multilevel imputation (Buuren and Groothuis-Oudshoorn, 2011). The percentages of the missing values for each question are presented in Table 3 below.

Table 3: **Percentage of Missing Values for Each Index Question and Year**

Year	Q1	Q2	Q3	Q4	Q5	Q6
2008	0.09%	6.92%	9.37%	1.18%	3.00%	8.10%
2012	1.36%	14.32%	19.12%			9.46%
2018	0.32%	25.12%	26.55%	0.48%	5.88%	9.14%
2022	0.00%	12.80%	16.90%			7.17%

Sources: 2008 and 2018 survey data provided by Andreas Bergh. 2012 and 2022 survey data provided by Statskontoret.

The final index, and thus our dependent variable, is constructed from the first component of a PCA on the entire question data set. To mitigate sensitivity to the imputed data, five different independent imputed datasets with an index are created for each year, on which five different regressions are run – one for each dataset (Buuren and Groothuis-Oudshoorn, 2011). The results from these five regressions are pooled and presented in Table 4 under the results in section 6.1.

An analysis of the PCA dimensionality reduction shows the variance explained by the first principal component, as well as the factor loadings of each question, presented in Table 7 in section 10.1 of the appendix. It is generally considered that a component that explains over 30% of the variance is sufficient, which is the case for all four years of our data. The proportion of explained variance is much higher in 2012 and 2022 as fewer questions were used, which means fewer dimensions to begin with. Question 2 and 3, those regarding the impression of the respondents about the incidence of corruption among others in their own municipality, have the highest factor loadings for all years. In the absence of questions 4 and 5 in 2012 and 2022, question 1 and 6 show an increase in contribution in 2012, while question 2 and 3 instead contribute more in 2022. Since question 2 and 3, and 1 and 6 show vastly different proportions of responses indicating whether there is corruption or not, this indication of differing response patterns might have some effect on the result.

In the survey, the vast majority of the variation in responses is within the municipality. Intraclass correlation coefficients (ICC) are shown for each question and index for each year in Table 8, found in section 10.1 of the appendix. The values are very low for both each question and the index for each year, meaning that a very large share of all variation in responses lies between individuals rather than between municipalities as a whole. This suggests that differences in reporting reflect the underlying individual factors shaping perceptions of corruption, since respondents include politicians and officials with varying levels of seniority, occupy municipal roles that expose them to different opportunities for corruption, and represent a range of political parties.

To capture these individual differences, we construct the corruption index at the individual level rather than aggregating it into a single municipal score. Methods that combine individual responses into one value per municipality involve arbitrary and subjective choices and risk obscuring important variation. Our analytical framework is grounded in micro-level foundations and models how each person's exposure to and perception of corruption affect government decision making. This approach therefore allows us to examine how the composition of a municipality's council, in particular the number of politicians, affects the perceptions of the individual respondents in that municipality, better representing the latent structure of corruption. Moreover, since the number of observations on the individual level is drastically higher than the number of municipalities, this increases statistical power as the amount of captured information and precision increases. Lastly, since treatment is assigned at the municipal level, we cluster standard errors by municipality to account for individual responses within municipalities likely being correlated, allowing us to interpret the estimates as the average treatment effect on individual perceptions within municipalities.

4.3 Municipal Variables

Data on municipal characteristics were obtained from two primary sources. To determine council size thresholds and to control for voter participation as a proxy for the general democratic engagement of the public, we collected data on the number of eligible voters and voter turnout for the 2006, 2010, 2014, and 2018 local elections from Valmyndigheten (the Swedish election authority) (Valmyndigheten, n.d.). In addition, we obtained our independent variable, the number of seats in each municipal council (Statistics Sweden, 2022) and a series of control variables from Statistics Sweden. The control variables include the size of the municipal population (Statistics Sweden,

2025c), which is generally correlated with the scope of local government and the number of eligible voters, and the annual net costs per municipality (Statistics Sweden, 2025e), which capture fiscal capacity. We also control for demographic factors, namely the proportions of residents with at least three years of post-secondary education (Statistics Sweden, 2025b), of working-age adults (ages 20–64) and of retirees (ages 65 and above), respectively (Statistics Sweden, 2025d) and of inhabitants with a foreign background (Statistics Sweden, 2025a). Lastly, we control for the geographic context through measures of urban population (Statistics Sweden, 2024b) and total municipal land area (Statistics Sweden, 2024a).

We control for these factors for multiple reasons. We control for population size and total public spending to account for differences in governance scale and resource availability. Larger populations may increase bureaucratic complexity, while higher expenditures are likely tied to more transfers and transactions. We also control for population size since we use the minimum council size as an instrument, which is determined by the number of eligible voters, in turn largely following the population size. Demographic factors such as age also impact the number of eligible voters. Furthermore, demographic factors and measures of human capital, such as the share of the population with higher education, as well as urbanization together with municipal land area and voting turnout, all serve as proxies to the ease and propensity of the population to monitor their government, and have all independently been shown to be important covariates (Bergh, Fink and Öhrvall, 2017; Colonnelli, Gallego and Prem, 2022).

4.4 Data Limitations

Certain variables are excluded from our analysis due to data availability or scope constraints. We do not control for municipally owned enterprises or media influence as comparable data are unavailable before 2015. We also exclude political coalition composition as many municipalities form coalitions that do not align with traditional left-right blocks and because local parties often resist straightforward classification. Finally, in accordance with the SSE confidentiality guidelines and the boundaries of this paper, we do not control for individual respondent characteristics such as age, sex, or political seniority.

There are also limitations to the survey data. The survey response rates varied over time, going from 45% in 2008 to 59% in 2012, dipping to 53% in 2018 before reaching 70% in 2022. Early non-response often reflected gaps in municipal staffing: Many councils lacked a permanent lawyer or procurement head, or one person covered multiple roles, and therefore submitted only a single questionnaire. The sensitive nature of corruption might also have reduced participation. 287 of 290 municipalities are represented in the data from 2008, all 290 were represented in 2012 and 2018, while 2022 had responses from 288 of 290 councils. The anonymous design of the surveys and the SSE confidentiality guidelines prevent any analysis of attrition by individual role or other personal characteristic. However, Bergh, Fink and Öhrvall (2017) provide an analysis of the 2008 dataset in their study, suggesting that attrition bias is minimal. They report response rates of 59% among politicians and 57% among officials, without clear geographic or municipal-size patterns and only a one-point gender gap. Using the structural classification of municipalities by the Swedish Association of Local Authorities and Regions, the data show response rates ranging from 52 to 62%, indicating no severe bias. Similar analyses of the data for the other years show similar

results, and we draw the conclusion that there is no clear attrition bias in the data.

Finally, given the extent of missing values in our survey questions, our results may be sensitive to the imputation method applied in the PCA. As a robustness control, we also impute the missing values using regularized PCA imputation, which preserves the variance in the data and avoids overfitting by preparing the data for the PCA dimensionality reduction and constructing a separate index. The results from running the same regressions on this index show no meaningful differences and are shown in Table 10, section 10.2 in the appendix.

Across all methods, a recurring limitation is the measurement error in the corruption index, which is based on perception and may be influenced by factors not related to actual behavior. This could attenuate the estimated effects or introduce noise. Moreover, municipality-level heterogeneity in governance structures, political competition, or civic culture may interact with both corruption and council size in ways not fully accounted for by fixed effects or control variables.

5 Methodology

In this section, we identify and conduct two quasi-experiments to overcome the endogeneity issues presented in our framework when looking at size and corruption. First, we specify our two-stage least squares model (instrumental variable estimation) and then describe our instrumented difference-in-differences (IV-DiD) model before discussing the necessary assumptions for valid inference.

5.1 Instrumental Variable Estimation

The effect of size on corruption has many endogenous elements, where factors such as corruption, government interventions, and government size can influence each other. As explained in the rational choice model on corruption, municipalities facing higher corruption might adopt larger government structures, and conversely, larger governments with more interventionist policies encourage greater corruption. As a result, council seat counts can respond to perceived corruption, introducing simultaneity bias. The legally determined minimum council size, forcing municipal councils to increase council size when surpassing a population threshold, presents an opportunity to test the effects that government size has on corruption. Since municipalities have discretion in choosing their own council size above the legally mandated minimum size, we use the determined minimum size as an instrument to the actual council size chosen by the municipality, using a two-stage least squares model.

In the first stage, we regress the actual number of seats in the council on the minimum number of seats:

$$Seats_k = \pi_0 + \pi_1 Minimum_k + \delta X_k + v_k \tag{1}$$

where k is a municipality. $Seats_k$ is the actual number of seats in the council; our outcome variable. $Minimum_k$ is the minimum amount of seats, X_k is a vector of our control variables, and v_k is the error term.

The second stage regresses the corruption index on the estimated number of seats:

$$C_{ik} = \beta_0 + \beta_1 \widehat{Seats}_k + \gamma X_k + \varepsilon_k \tag{2}$$

where i is an individual and k is a municipality. C_{ik} is the corruption index value; our outcome variable. $\widehat{Seats}_k$ is the estimated number of municipal council seats, X_k is a vector of our control variables, and ε_k is the error term. The coefficient of interest is that of the estimated number of seats, β_1. This coefficient is the estimate of the local average treatment effect (LATE) of increasing the number of seats around the relevant thresholds on individual corruption perceptions.

5.1.1 Identifying Assumptions

If the instrument is relevant and satisfies the exclusion restriction, this isolates the effect of treatment exposure, council size, driven by exogenous legal variation.

To determine the relevance of the instrument, we run a first-stage regression to determine if the law predicts the actual number of seats conditional on the control variables, and find that the instrument is highly valid with F-statistics well above the recommended threshold, ranging between 192 and 440. The F-statistics are presented alongside the regression results; see Table 4 in section 6.1 of the results.

For the instrument to be valid, the exclusion restriction must also hold, meaning that the instrument should not affect the outcome in any way other than through the treatment, conditional on controls. First, the instrument relies on there being no manipulation around the cut-off, for example in anticipation of an increase. The Swedish Election Authority creates and updates the electoral roles centrally, and no voter needs to register to vote (Valmyndigheten, 2024). The municipalities therefore have no plausible way to influence the number of eligible voters on any specific date. In addition, the law is centrally determined and uniformly imposed, and municipalities cannot influence their own minimum size based on corruption. The law itself should also not directly influence perception levels. Since the number of eligible voters is mechanically linked to the instrument, and the number of eligible voters largely follows the population size, we control for this relationship in both the first and second stages. The voting population likely also follows some demographic factors such as age and foreign background, which we also control for. We argue that, conditional on these controls, all influence of the law on perceived corruption should flow through the actual council sizes, and thus that the IV exclusion restriction holds. We therefore determine that our instrument is valid.

5.2 Instrumented Difference-in-Differences

While the instrumental variable estimation looks at the effect of increasing politicians around thresholds that force municipalities to a new, larger minimum council size, we also want to examine the effect of decreasing in size. Although we cannot isolate any exogenous treatment that forces a decrease in council size, the 2013 reform allowed smaller municipalities to lower their minimum council size by reducing it from 41 to 31 seats in municipalities with fewer than 16000 eligible voters and from 31 to 21 seats in those with under 8000 eligible voters following the 2014 election. This change created an opportunity for a subset of councils that had been constrained at the lower bound to shrink. While we cannot rule out that the municipalities that decided to shrink were endogenously different, the law's eligibility criteria provide a plausibly exogenous source of variation. Through this, we can study whether removing constraints and allowing municipalities to reduce their council size more freely can have positive, perhaps unintended, effects on lowering corruption. Since we wish to examine the actual effect on corruption following a reduction instead of restricting ourselves to the intent-to-treat effect, we instrument actual council reductions with eligibility, interpreting results as the local effect among municipalities induced to shrink by the law. Using panel data from four surveys conducted after each of the four municipal elections, two before and two after the reform, we implement an instrumented difference-in-differences (IV-DiD) design to estimate the causal impact of council size reductions on corruption perceptions.

In the first stage, we regress the instrumented treatment variable on the eligibility to shrink past the old limit:

$$\widehat{Treat}_k = \pi_0 + \pi_1 Eligibility_k + \delta X_{kt} + \Phi_k + \lambda_t + v_{ik} \tag{3}$$

where i is the observed individual, k is a municipality, and t is the time of when the survey was conducted. $\widehat{Treat}_k$ is the estimated decision to shrink as a result of the reform; our instrumented treatment variable. $Eligibility_k$ is the eligibility for a municipal council to shrink past the old limit, X_{kt} is a vector of time varying controls, Φ_k is municipality-fixed effects, and λ_t is time-fixed effects. v_{ik} is the error term.

The second stage regresses the corruption index on the instrumented treatment variable:

$$C_{ik} = \beta_0 + \beta_1 \widehat{Treat}_k \times POST_k + \gamma X_{kt} + \Phi_k + \lambda_t + \varepsilon_{ik} \tag{4}$$

where i is the observed individual, k is a municipality, and t is the time of when the survey was conducted. C_{ik} is the constructed corruption index; our outcome variable. $\widehat{Treat}_k$ is the instrumented treatment variable. $POST_k$ is a dummy variable taking the value 1 if the observation is in the post-treatment period, and 0 otherwise. X_{kt} is a vector of time varying controls, Φ_k is municipality-fixed effects, and λ_k is time-fixed effects. ε_k is the error term. The coefficient of interest is that on the interaction term $\widehat{Treat}_k$ and $POST_k$, β_1, which is the local average change in individual corruption perception from decreasing the council size below a previous lower limit. Standard errors are clustered at the municipality level.

Because of the lack of truly binding exogenous variation and the presence of measurement problems, our hypothesis is very difficult to study robustly. Despite the limitations presented below, we wish to exploit this rare reform and unique panel data to exploratorily examine whether council size reductions, like increases, could be a viable policy tool for reducing corruption, without being overly insistent on finding causal evidence.

5.2.1 Identifying Assumptions and Limitations

The identifying assumption for this model is parallel trends, where the treatment and control groups must have had the same development in corruption before treatment. Since our data only spans two years before the treatment and two years after, and might be subject to measurement errors, identifying and analyzing any trends is close to impossible. We therefore approach any results from the model with caution.

The development in the relationship between the corruption measure for the treatment and control groups poses another large limitation. Due to corruption indices constructed from standardized data, the index values of the treatment and control groups are mechanically linked. For example, an estimate showing that the treatment group is relatively less corrupt after treatment can be due to a decrease in corruption in the treatment group and to an increase in corruption in the control group. This problem extends to the analysis of parallel trends, as any movement in one group will be countered by an opposite movement in the other, making trend analysis effectively impossible. To address this, we create a secondary index by taking the mean of the responses of

each respondent. This index allows the two groups to move independently from each other. We examine these movements by a visual inspection of a plot of the relationship, seen in Figure 2, while also modeling a dynamic difference-in-differences to test for any pre-trends, seen in Table 6, both in section 6.2 under results.

Since we use an instrumented treatment, we examine parallel trends between municipalities affected and not affected by the reform. This assumption is necessary for the exclusion restriction, as any divergence in pre-existing trends would show that the instrument is not fully exogenous, which would violate the instrument's exclusion restriction, thus invalidating the instrument. Lastly, the panel data used in the IV-DiD is not fully balanced: observations range from 1,099 in 2008 to 1,822 in 2022, and the number of municipalities varies between 287 and 290. However, since this variation largely seems to reflect an increase in respondents within municipalities rather than attrition, we do not judge it to be a constraint.

5.3 Other Model Limitations

Both the two-stage least squares model and the difference-in-differences model identify local average treatment effects, meaning that the causal effect only can be interpreted for those municipalities whose council size was influenced by the instrument or were already close to their respective thresholds. This limits external validity, as the effect may not generalize to municipalities that would shrink or expand irrespective of the legal thresholds. Municipalities close to either side of the cut-off are also assumed to not differ systematically with regard to corruption, conditional on the controls.

6 Results

6.1 Instrumental Variable Estimation Results

We start by interpreting the effects of adding an additional council seat on the corruption index, as seen in Table 4 below. For 2008, we observe that, on average, each additional council seat increases the corruption index by 0.011 standard deviations when controlling for demographics and land area. The result is statistically significant at the 10% level. While population shows a positive sign and government expenditure a negative sign, these signs switch for the other years.

The results of 2012 indicate that each additional council seat on average increased the corruption index by 0.004 standard deviations. However, the result is not statistically significant. Interestingly, when demographic and land area controls are excluded, the effect size increases and becomes statistically significant at the 5% level. Population and government expenditure are also highly significant at the 1% level.

The regression in 2018 shows that, both with and without controlling for demographics and land area, each additional council seat on average increases the corruption index by 0.012 standard deviations while being significant at the 5% level. Furthermore, population is significant at the 10% level.

For 2022, a one-unit increase in council seats leads to a 0.012 standard deviation increase in the corruption index on average, both with and without controls for demographics and land area. This is highly significant at the 1% level.

Overall, the results show a positive and significant to highly significant effect of increases in council size on corruption. Importantly, the first-stage F-statistics reported with control variables are all sufficiently large for each year, indicating that the instrument has predictive power. Once we control for demographics and land area, 2008 shows a comparable effect size to 2018 and 2022. The significance level increases from the 10% level in 2008 to the 1% level in 2022. Given the relatively stable effect size, it is reasonable that the significance level has increased as the number of observations has increased because this decreases the standard error and gives the test more power. Because the effect size is measured per seat, a legally mandated jump of ten council seats can be interpreted as a 0.12 standard-deviation increase in perceived corruption, using 2022 as an example.

Table 4: **Results from the Instrumental Variable Estimation**

	Dependent variable: Corruption Index							
	2008		**2012**		**2018**		**2022**	
Seats	0.0062	0.0106*	0.0073**	0.0038	0.0082**	0.0122**	0.0168***	0.0117***
	0.0048	*0.0057*	*0.0037*	*0.0043*	*0.0041*	*0.0048*	*0.0032*	*0.0040*
Population	0.0023	0.0042	-0.0101***	-0.0105***	-0.0082*	-0.0073*	6.25E-04	-0.0013
	0.0042	*0.0043*	*0.0034*	*0.0031*	*0.0042*	*0.0037*	*0.0025*	*0.0024*
Government expenditure	-4.50E-05	-9.00E-05	2.63E-04***	2.73E-04***	1.62E-04	1.40E-04	-2.82E-05	9.52E-06
	1.19E-04	*1.21E-04*	*9.13E-05*	*8.42E-05*	*9.86E-05*	*8.60E-05*	*4.73E-05*	*4.68E-05*
Voter turnout	-0.0027	0.0104	0.0094	-0.0070	0.0084	-0.0075	-0.0076	-0.0193
	0.0086	*0.017*	*0.0077*	*0.0137*	*0.0096*	*0.018*	*0.0076*	*0.0157*
Demographics & Land area	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1,099		1,543		1,258		1,822	
Clusters	287		290		290		288	
First-stage Wald F-statistic	279.55		440.17		192.34		264.9	

Note: *p<0.1; **p<0.05; ***p<0.01

Municipality clustered standard errors in italics below estimates.
F-statistics are reported including control variables.
Sources: 2008 and 2018 survey data provided by Andreas Bergh. 2012 and 2022 survey data provided by Statskontoret. Control variables on population, government expenditure, demographics and land area from Statistics Sweden. Control variables on voter turnout from Valmyndigheten.

2012 presents an exception in multiple ways. Adding the controls decreases both the significance and effect size from council seats, instead showing highly significant control variables. The relationship between treatment and corruption appears more confounded by demographic and fiscal factors, suggesting a distortion of the usual causal pathways. This makes 2012 an outlier, and results from that year should be interpreted with caution or potentially excluded in sensitivity analysis. The fact that adding controls changes the result, compared to the other years, strongly indicates that the causal structure is atypical for that year. Still, the response frequency is comparatively high, but it is possible that this year suffers from lower-quality responses, which introduces some measurement error. Unfortunately, we cannot look deeper into potential differences in respondent fundamentals since we lack the ability to control for individual respondent characteristics.

As a robustness control, we drop questions 4 and 5 from the 2008 and 2018 surveys to control whether the 2012 and 2022 results suffer from the lack of these questions. This adjustment increases significance from 5% to 10% in 2008, while remaining at 5% in 2022. The magnitudes of the effects do not differ in any meaningful way. This suggests that the lack of these questions in 2012 and 2022 does not bias the results, as shown in Table 9, section 10.2 of the appendix.

6.2 Instrumented Difference-in-Differences Results

Proceeding with our IV-DiD estimation, we interpret the estimated effect of reducing council seats on perceived corruption levels. Below, Table 5 shows the IV-DiD regression estimates of the treatment effect of a municipal council decrease on our dependent variable, corruption index.

Table 5: **Results from the Difference-in-Differences Estimation**

	Dependent variable: Corruption Index
$\widehat{Treat}_{ik} \times POST_k$	-0.6074
	0.4871
Controls:	
Population	Yes
Government expenditure	Yes
Voter turnout	Yes
Demographics & Land area	Yes
Observations	5,722
Clusters	290
First-stage F-score	198

Note: *p<0.1; **p<0.05; ***p<0.01

Municipality clustered standard errors in italics below estimates.
Sources: 2008 and 2018 survey data provided by Andreas Bergh. 2012 and 2022 survey data provided by Statskontoret. Control variables on population, government expenditure, demographics and land area from Statistics Sweden. Control variables on voter turnout from Valmyndigheten.

The regression shows that when including all controls, the estimated coefficient has a negative effect size of 0.607, however, it is not statistically significant. This result suggests that, while the direction of the estimated effect aligns with theoretical expectations, we cannot confidently claim a causal relationship of council size on corruption. The average decrease in council size in 2014 for all councils was 5.5 seats, with a median of 5 and a mode of 6. Given that the decreases for our instrumented treatment group are similar, this makes the effect size very large compared to the estimates of a seat increase in the instrumental variable estimation. However, because of the insignificance, this difference could potentially be an effect of noise. An F-score of 198 indicates that the instrument has a strong predictive power for the treatment.

As discussed previously, this effect need not be driven by the decreased perception of corruption in the municipalities that have shrunk. It can also be driven by increases in corruption perception in other municipalities. Looking at the plot of the unstandardized mean-value index in Figure 2 below, we see that this might be part of the explanation. The control group shows an unstable but upward-pointing trend relative to the treatment group, which shows a slight downward tendency, although without any significant differences between the years. As the treatment group's perception of corruption appears to decrease relative to the control group before the reform, the exclusion restriction of the instrument is likely violated, reinforcing that we cannot interpret any causal effect from the reform.

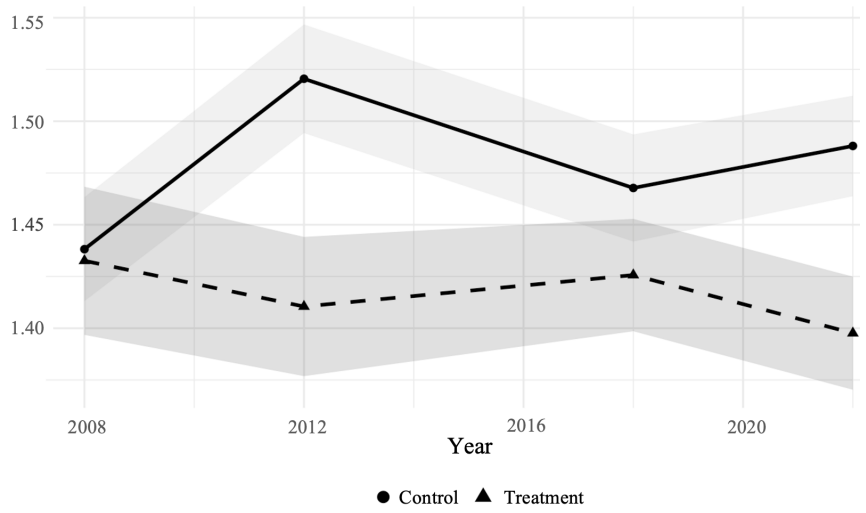

Figure 2: **Unstandardized Mean-Value Index over Time with 95% Confidence Intervals**

Sources: 2008 and 2018 survey data provided by Andreas Bergh. 2012 and 2022 survey data provided by Statskontoret.

We also see this in the pre-trend coefficient in the dynamic DiD in Table 6 below, where the treatment group's corruption perception was almost 0.19 standard deviations higher in 2008 than in 2012 compared to the control group, indicating that the groups were already diverging.

Table 6: **Results from the Dynamic Difference-in-Differences Estimation**

	Dependent variable: Corruption Index
2008 relative to 2012	0.1895**
	0.0723
2018 relative to 2012	0.0387
	0.0672
2022 relative to 2012	-0.0934
	0.0685
Controls:	
Population	Yes
Government expenditure	Yes
Voter turnout	Yes
Demographics & Land area	Yes
Observations	5,722
Clusters	290

Note: *p<0.1; **p<0.05; ***p<0.01

Municipality clustered standard errors in italics below estimates.
Sources: 2008 and 2018 survey data provided by Andreas Bergh. 2012 and 2022 survey data provided by Statskontoret. Control variables on population, government expenditure, demographics and land area from Statistics Sweden. Control variables on voter turnout from Valmyndigheten.

Although these results are not causally interpretable, they suggest that reductions in council size may be associated with lower relative corruption. Likewise, municipalities with already low or declining relative corruption may have incentives to reduce their size once they are enabled to do so. Importantly, the results also show that reductions in size do not seem to be related to increases in corruption, consistent with the instrumental variable estimation findings. Still, since the law only affected municipalities with less than 16,000 eligible voters, any potential findings from this or future studies would represent a LATE, and would not necessarily be extendable to larger municipalities.

While our analysis does not support strong causal claims, due to pre-treatment trends and the endogenous adoption of council reductions, our IV-DiD estimates nevertheless suggest two policy-relevant patterns. First, it is possible that our study lacks the power to detect an effect at significant levels and that reducing council size may be associated with relative improvements in corruption perceptions, at least in the short term. We cannot fully assess the identifying assumptions, but it seems plausible in this case that municipalities already experiencing low or declining corruption were more inclined to shrink their councils when given the opportunity. This could reflect rational incentives or a greater willingness to implement institutional change. Alternatively, our results may correctly indicate that council size reductions have no effect on corruption. In this case, corruption might be "sticky", exhibiting a form of hysteresis effect in which corruption may be easier to raise than to lower through institutional adjustments. Under this interpretation, reductions might alone not be enough to combat corruption, meaning it is more important to avoid size increases from the

beginning. In any case, we find no evidence that reducing council size increases corruption. This null finding holds across both naive comparisons and IV estimates and is informative in its own right, as it challenges concerns that smaller councils might foster rent-seeking behavior.

However, any implications must be considered within the scope of the study. The reform only applied to municipalities with fewer than 16,000 eligible voters, meaning that our findings and any future replications represent a LATE, meaning that the effect only applies to compliers under the reform. These compliers may differ systematically from larger municipalities or those that would shrink under different institutional conditions. For example, smaller towns may benefit from downsizing precisely because their political networks are more transparent, whereas larger cities could face diseconomies of scale. Thus, while the results offer cautious optimism for targeted reforms in similar settings, they cannot be generalized to all local governments without further evidence.

7 Discussion

7.1 Analysis of the Results

By exploiting voter thresholds that legally mandate increases in council size, as well as the 2013 reform that allowed smaller municipalities to lower their council sizes below the current lower limit, we studied whether council size can influence corruption levels. Expanding on our framework, where government size is instead theorized to follow from existing corruption levels, opens the door to discussions on whether laws mandating size increases at certain population thresholds might have unintended consequences.

Using a unique set of survey data that spans four surveys from 2008 to 2022 on the perception of corruption by council members and officials, our finding from the instrumental variable estimation provides support for a modest causal link between councils size increases and higher perceived corruption around the thresholds. This effect appears consistent across the survey years from 2008 to 2022, with the exception of 2012, which seems to deviate from the overall trend. As the number of survey respondents has grown, so has the statistical power of our model, with significance levels increasing from 10% to below 1%. Our IV-DiD estimate shows that while a negative correlation is observed between the reduction in council size and perceived corruption, the effect is insignificant and endogeneity and limitations in index construction limit causal interpretation even if the study lacks the power to detect a true effect. However, this finding is compelling within our theoretical framework.

Although our framework posits that interventions create incentives for corrupt behavior, in turn creating incentives to increase the size of the government, we explore through which mechanisms size increases might affect corruption. Larger councils can dilute individual accountability, increase coordination costs, and generate more complex interpersonal networks that expand well beyond the government itself. With more elected officials, the number of decision points increases, which can obscure transparency and reduce the effectiveness of oversight. Larger councils may also foster political competition, internal factionalism, and vote-trading, which may lay the ground for transactional politics, leading to policy decisions driven by strategic alliances rather than public interest. These dynamics, even in the absence of expanded interventions, can exacerbate the conditions for rent-seeking. Situating these dynamics within our framework shows an explicit link between size and corruption, which is independent of intervention.

In addition, increased size can be correlated with greater interaction between the government and external actors such as interest groups, service providers, or contractors, each offering new channels for influence and potential corruption. Mueller and Murrell (1986) suggested that larger governments are more likely to become entangled with these networks, and Hansson and Holmgren (2011) showed that these networks might create corrupt tendencies. When the intensity and scope of regulatory interventions rise through, for instance, permits, licensing, or public contracts, so too does the size of the bureaucracy needed to administer them (Bel, 2022). In an enlarged bureaucracy, discretionary authority proliferates in more offices and more officials, diluting clear lines of accountability and increasing the "surface area" for corrupt exchanges. In our context, increasing council size may directly enable a broader set of municipal interventions: more committees to oversee planning, more sub-boards to allocate grants, and more politically appointed

agents to oversee procurement. Each added layer of decision making can become an opportunity for undue influence or kickbacks, and each added permit or regulation provides cover for red tape that insiders can monetize. In this sense, corruption acts as a sort of market to clear the demand to bypass inefficient rules and arbitrarily long pathways that information and decisions have to flow through.

Thus, while we show that governments seem to adjust their size reactively to corruption within their legal limits, we also show that size itself might drive corruption, both via increases in interventions following council expansions, but also through factors not tied to explicit interventions, such as the expansion of interpersonal and interorganizational relationships and information flows.

7.2 Policy Implications

Interestingly, population size appears negatively correlated with corruption perception, occasionally significantly so. Recent reports from the national government have discussed consolidating municipalities, and while this remains beyond the scope of our analysis, our findings suggest that such a reform could plausibly influence conditions relevant to corruption. On the one hand, this could imply a large increase in the municipality size and as such council size and corruption. However, if the relative size of the council to the municipal population decreases, the effects on corruption could be similar to those of a council decreasing its size, where the benefits might work through a mechanism similar to that of economies of scale.

Furthermore, our analysis of the 2013 reform suggests that enabling such size adjustments does not increase corruption and may give municipalities the flexibility to right-size their governance. However, if reducing council size does not robustly lower corruption due to corruption hysteria, for instance, or if only low-corruption municipalities choose to shrink their councils, then structural reforms may have limited utility in lowering corruption levels. If larger governments introduce new opportunities for rent extraction, then smaller, more agile governments may offer a more robust defense against corruption.

Additionally, while the rational choice framework offers compelling logic for why governments might tolerate or inadvertently incentivize corruption, it offers little prescriptive guidance, especially when size is determined irrespective of current corruption levels. We suggest that it is more effective to curb corruption by preventing municipalities from growing too much in the first place rather than trying to reverse the corruption effect later by downsizing those municipalities. Structural reforms that expand councils must be balanced against the risk of added complexity and weakened accountability. Reforms that add layers of oversight, such as implementing multiple standing committees or specialized advisory boards, risk expanding corruption opportunities unless accompanied by transparency through streamlined processes or stronger audit functions. Therefore, monitoring capacity, such as independent audit offices or open-data platforms, should scale along with any increase in the scope of local government.

7.3 Directions for Future Research

Ultimately, our overall findings suggest that municipal size matters for reported levels of corruption. It may be easier and more effective to prevent the emergence of corruption through thoughtful institutional design rather than trying to reverse deep-rooted problems through reactive downsizing. We believe that the dynamic mechanisms by which size influences corruption, mediated through other institutional characteristics, deserve further attention. Future work could therefore build on this paper by incorporating measures of political composition and organization, bureaucratic staffing, public-private interaction, or civic engagement, all of which may mediate the relationship between size and corruption.

8 Conclusion

This thesis examined whether size changes of a municipal council affected perceptions of corruption within that council, focusing on Swedish municipalities between 2008 and 2022. Drawing on a rational choice framework, we theorized that increasing council size would increase the complexity of governance and reduce oversight, thereby creating more opportunities for corruption to occur, while municipalities decreasing their council size would show the opposite effect.

Combining instrumental variable estimation and an instrumented difference-in-differences model, we found that increasing the number of politicians around legal population-based thresholds causally increased perceived corruption, although the magnitude was modest. While the effect of decreasing council size proved harder to identify causally due to endogeneity, our results suggested a negative association with corruption perception, consistent with the idea that municipalities adjust their size in response to internal governance conditions. This supports the notion that governments expand not only in response to corruption, but also that they may downsize when integrity improves.

We discussed several potential mechanisms through which increased size might facilitate corruption, including more regulatory interventions, diluted accountability, and interorganizational dynamics. These findings indicate that the subnational institutional structure influences corruption levels. Although downsizing itself might not effectively reduce corruption, coupled with other policy tools, it may contribute to better corruption outcomes. Future research should explore how other institutional and contextual variables interact with size to influence corruption outcomes.

9 References

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10 Appendix

10.1 Summary Statistics

Table 7: **PCA Factor Loadings**

Principal Component Analysis				
	Variance and Loadings			
PC1	2008	2012	2018	2022
Proportion of Variance Explained	0.354	0.505	0.343	0.470
Q1	0.365	0.437	0.347	0.334
Q2	0.572	0.597	0.535	0.626
Q3	0.559	0.560	0.569	0.614
Q4	0.233		262	
Q5	0.322		0.263	
Q6	0.263	0.372	0.363	0.344

Sources: 2008 and 2018 survey data provided by Andreas Bergh. 2012 and 2022 survey data provided by Statskontoret.

Table 8: **Intraclass Correlation Coefficient Analysis**

	Intraclass Correlation Coefficient			
	2008	2012	2018	2022
Q1	0.0000	0.0135	0.0038	0.0142
Q2	0.0394	0.0564	0.0000	0.0463
Q3	0.0182	0.0211	0.0106	0.0436
Q4	0.0000		0.0567	
Q5	0.0732		0.0275	
Q6	0.0412	0.0719	0.0000	0.0099
Corruption index	0.0375	0.0434	0.0005	0.0465

Sources: 2008 and 2018 survey data provided by Andreas Bergh. 2012 and 2022 survey data provided by Statskontoret.

10.2 Robustness Controls

Table 9: **Removing Questions Robustness Control**

	Dependent variable: Corruption Index	
	2008	2018
Seats	0.0127**	0.0100**
	0.0054	*0.0046*
Controls:		
Population	Yes	Yes
Government expenditure	Yes	Yes
Voter turnout	Yes	Yes
Demographics & Land area	Yes	Yes
Observations	1,099	1,258
Clusters	287	290

Note: *p<0.1; **p<0.05; ***p<0.01

Municipality clustered standard errors in italics below estimates.
Sources: 2008 and 2018 survey data provided by Andreas Bergh. 2012 and 2022 survey data provided by Statskontoret. Control variables on population, government expenditure, demographics and land area from Statistics Sweden. Control variables on voter turnout from Valmyndigheten.

Table 10: **PCA-Imputation Robustness Control**

	Dependent Variable: Corruption Index			
	2008	2012	2018	2022
Seats	0.0140**	0.0051	0.0140***	0.0126***
	0.0055	*0.0042*	*0.0046*	*0.0034*
Controls	Yes	Yes	Yes	Yes
Observations	1,099	1,543	1,258	1,822
Clusters	287	290	290	288

Note: *p<0.1; **p<0.05; ***p<0.01

Municipality clustered standard errors in italics below estimates.
Controls include population, government expenditure, voter turnout, demographics and land area.
Sources: 2008 and 2018 survey data provided by Andreas Bergh. 2012 and 2022 survey data provided by Statskontoret. Control variables on population, government expenditure, demographics, and land area from Statistics Sweden. Control variables on voter turnout from Valmyndigheten.

11 AI Disclosure

In writing this paper, we have used ChatGPT-4o from OpenAI primarily as an aid in sourcing and implementing R packages and tools, for example, to deal with files and data not natively supported by R, and to identify and solve errors. We have also used it as a sounding board in order to source and discuss new ideas and perspectives, both with regards to theoretical and empirical considerations; for example, insights in methods to analyze and approach large-scale imputations of multilevel data.

We are aware of and acknowledge the fact that the use of AI tools, such as an LLM like ChatGPT-4o entails certain risks. These include the risk of false or made-up claims and responses due to hallucinations, information biases, disinformation, or potential plagiarism. When writing this paper, we have been careful to review each suggestion and claim against existing literature and trustworthy sources.