

Water supply as a public enterprise: Decentralisation and corruption

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Abstract

Decentralisation of powers and responsibilities from a higher to a lower level of government has been held out as an answer to a multitude of diverse political challenges. It is often assumed that as an organising principle, decentralisation reduces corruption by bringing government closer to the people. This article adds to the small literature dealing with the relationship between decentralisation and corruption by examining decentralisation of water supply from one level of sub-national government to another. It extends this literature by considering a dynamic situation and examining whether the relationship changes over time. The area of study covers the rural and semi-urban areas of two large Indian states. The study compares the level of corruption in piped water supply schemes run by centralised agencies and decentralised agencies. The study is based on experiential, not perception-based corruption measures. We find that decentralisation increases corruption significantly in the immediate aftermath of decentralisation. At the same time, we observe that with time, this increase in corruption is reduced substantially, although the increase persists in the medium term.

KEYWORDS: Water supply, local governance, decentralisation, corruption, difference-in-difference, longitudinal study

Introduction

Following the Soviet Union's decline and fall, decentralisation emerged as a popular approach in governance, public administration, and development. It was seen as a solution to various political challenges, from managing transitions in Eastern Europe and South Africa to addressing issues in Latin America and supporting economic growth in China and India. Decentralisation attracted diverse supporters, including free-market economists sceptical of an overextended state and those concerned about market failures, as well as various activist groups. The World Bank embraced

decentralisation as a major governance reform, and questioning its merits became almost unthinkable.

The high hopes placed in decentralisation partly stem from dissatisfaction with centralised governance models, which often bred corruption among officials (Bardhan and Mookherjee, 2006). Arguments for decentralisation are frequently based on subjective assessments and unclear definitions. At its core, decentralisation involves transferring powers and responsibilities from higher to lower levels of government. The concept has long been central to public administration, leading to various classification systems (Dubois and Fattore, 2009). The most widely accepted approach categorises decentralisation into three types: deconcentration, delegation, and devolution (Brennan and Buchanan, 1980). Deconcentration transfers authority over specific functions within the government's jurisdiction. Delegation involves transferring authority for defined tasks to organisations outside direct government control. Devolution occurs when higher levels of government transfer authority to autonomous lower levels through constitutional or legislative means. Decentralisation literature typically focuses on devolution, based on the assumption that decentralised systems allow for greater citizen influence on outcomes.

While the standard decentralisation model doesn't explicitly address corruption, it's assumed that by bringing government closer to the people and empowering citizens, decentralisation enhances accountability and reduces corruption (McGuire, 2010). Some argue that decentralising corruption could have redistributive effects, but this isn't typically used to justify decentralisation. Instead, proponents claim it will reduce corruption overall. This claim partly arises from conflating decentralisation with public participation, two distinct concepts often used interchangeably in development debates. For instance, the World Bank (2024) has suggested that decentralisation can achieve development goals by responding to local community needs and assigning control to those with relevant information and incentives. While development professionals generally agree that beneficiary participation improves outcomes, this doesn't necessarily endorse decentralisation. Confusing these terms diminishes their individual potential.

Recent theoretical research has shifted focus from inter-jurisdictional externalities and preference heterogeneity to examining whether decentralisation can effectively discipline government officials (Inman and Rubinfeld, 1997). Some argue that local democracy allows citizens to control corruption using their knowledge of officials' behaviour (Seabright, 1996). Critics counter that local levels may have fewer safeguards against corruption due to underdeveloped media and audit systems, potentially leading to clientelistic networks and elite capture (Prud'homme, 1995;

Manzetti & Wilson, 2007) and elite capture (Platteau, 2004). Ultimately, theory suggests that decentralisation's impact may be context-specific, making empirical assessment crucial.

Cross-country studies on decentralisation's effect on corruption have yielded mixed results. World Bank-sponsored research often finds that decentralisation reduces corruption (e.g., Huther & Shah, 1998), but these studies have been criticised for methodological issues such as confusing correlation with causality and inadequately addressing endogeneity. Other studies have found contrasting results, with some indicating that federal structures are associated with higher perceived corruption (Goldsmith, 1998; Treisman, 2000; Kunicová & Rose-Ackerman, 2005). The discrepancies in findings often stem from differences in control variables, data sources, and methodological approaches (Fisman & Gatti, 2002). Overall, cross-country empirical studies have failed to provide clear guidance on decentralisation's effect on corruption, with some researchers suggesting that the relationship is not robust. Arikan (2004) analyses decentralisation measures on Transparency International's Corruption Perception Index in a cross-country dataset and finds levels of corruption to be lower in decentralised countries. However, as pointed out by Lessman & Markwardt (2010), her study too fails to adequately tackle the problem of endogeneity.

Yet another factor is the problematic use of the term "sub-national government" in contexts where provinces or states may have populations larger than many countries. Additionally, these studies often fail to distinguish between decentralisation from national to sub-national governments and decentralisation between different levels of sub-national government. This lack of nuance can lead to flawed policy advice, as the effects of decentralisation may differ depending on the levels involved. For example, decentralisation from national to sub-national governments might promote democracy, while decentralisation to local governments could potentially weaken regional governments and consolidate central power, as seen in some autocratic regimes.

Given the limitations of cross-country studies, more localised and disaggregated empirical evidence may prove more useful. While numerous within-country studies examine decentralisation's effects on various economic and social factors, few directly address its relationship with corruption in public services. One exception is Asthana's (2008) study in central India, which found higher corruption levels in water supply agencies run by local governments compared to those run by regional governments. However, this study provides only a snapshot and doesn't necessarily imply that decentralisation is inherently flawed. Some researchers suggest that corruption may initially increase with decentralisation but decrease over time as local governments learn and adapt.

Measuring corruption typically involves assessing transactions, either directly or indirectly. While observational approaches would be ideal, they are rare due to the risks and logistical challenges involved. Most empirical studies rely on reports of perceived or experienced corruption. Perception-based research is common and convenient, with indices from organisations like Transparency International, the World Bank, and ICRG widely used. However, reliance on perceptions can lead to flawed results, especially in dynamic situations where increased transparency might initially appear to increase corruption. Recent studies suggest that experiential data may be more reliable than perception data. As Daniel Treisman (2007) notes, the next wave of corruption research will need to focus on refining and gathering more experience-based measures to examine the patterns they reveal.

The Setting

The research area encompasses the rural and semi-urban regions of two sizeable Indian states, Madhya Pradesh and Chhattisgarh, which span the entirety of central India. These states collectively cover 440,000 km² and house a population of 81 million. Excluding some minor outlying states of India and metropolitan cities with high human development levels, the demographic and socio-economic profile of the study area mirrors that of the rest of South Asia. According to India's constitution, water-related matters fall under state government jurisdiction. Water is a crucial input for various sectors such as health, agriculture, industry, inland transport and tourism, which are also state government responsibilities. In theory, the federal government's role is confined to coordinating inter-state water sharing and engaging with international agencies. In practice, the federal government's involvement is more extensive as it provides substantial funding to state governments for irrigation and drinking water schemes, both directly and through federal welfare programmes like the employment guarantee scheme. The financing pattern for the drinking water sector has remained relatively stable over the past two decades. For new and expansion projects, sub-national governments contribute 60% of the finances, the federal government provides 35%, and 5% comes from international aid agencies. For operations and management (O&M), sub-national governments provide 100% of the funds. India's water supply programme is not aid-dependent, as the financial contribution from international agencies constitutes a small proportion of total sector expenditure. Consequently, policy-making is autonomous. Federal and state government officials find the aid component useful for demonstration projects, training, and overseas visits. International agencies are also viewed as a source of intellectual capital. Many prefer to continue projects in lower middle-

income countries like India where they can show results to their donors rather than in some poor African countries where it is difficult to get results in the short run.

Although India's federal system has existed for six decades, a 1993 constitutional amendment formalised the political structure of local governments. State governments are encouraged to devolve more functions to local governments. Much of the federal funds transferred to state governments in the drinking water sector are contingent upon decentralisation to local bodies. In numerous programmes, such as employment guarantee schemes, the state government retains authority functions while the provider function is delegated to the local government. In some instances, like the construction of piped water supply schemes, the local government may secure a loan from a public institution and, lacking technical capacity, have the project executed by a state government agency as a 'deposit work'. O&M functions of government infrastructure remain with the respective government, meaning authority functions and provider functions remain consolidated. All state governments are committed to transferring the O&M of drinking water schemes to local bodies. This decision has not been fully implemented, primarily because local bodies are reluctant to accept responsibility for utilities unlikely to generate profits. In India, privatisation of water supplies is limited to some small industrial areas. Due to a lack of political consensus and appetite for social conflict, privatisation is not an option even for larger cities. Private sector participation is restricted to management contracts for some water purification plants. Privatisation of water supplies in small towns or villages is not currently under consideration.

Non-governmental organisations (NGOs) support decentralisation but hold state governments accountable in crisis situations, even when the water utility is under local government control. Since the adoption of a General Comment on the Right to Water by a UN Committee in November 2002, federal and state human rights commissions have become active in the drinking water sector. These commissions hold the relevant state government responsible for human rights violations when a water utility, decentralised or not, fails to deliver. At one point, a state human rights commission even recommended that drinking water supplies should remain under State Government control.

Methodology and data

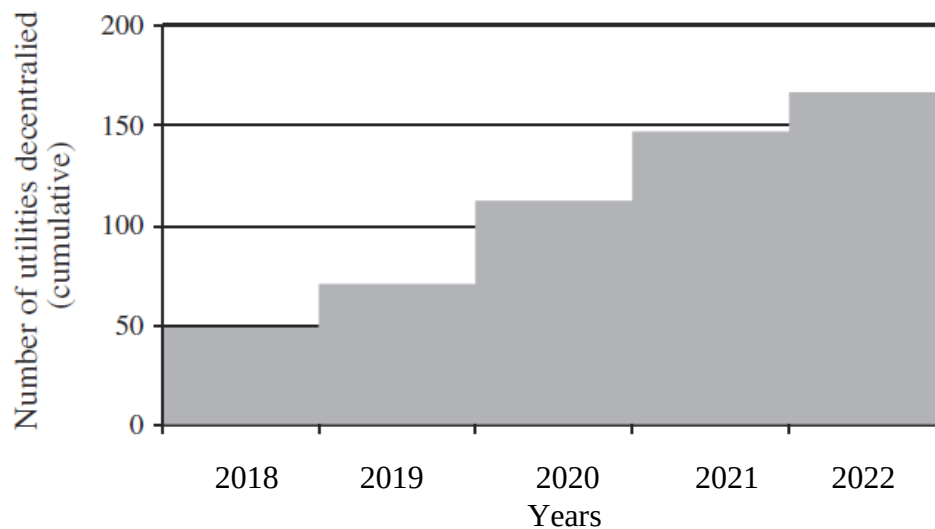
To explore the impact of decentralisation from state to local government on corruption, we employ experience-based measures and analyse a 'natural experiment' using the difference-in-differences (DD or DiD) method. This approach traces its roots to John Snow's (1855) work in water supply and public health. During that era, cholera was believed to be caused by foul air, with methods

such as exhuming and removing horse carcasses being attempted to control the disease. To demonstrate that contaminated water, rather than air, caused cholera, Snow compared changes in cholera mortality rates across districts served by two water utilities that, in 1849, sourced their water from the River Thames in central London. Three years on, one utility relocated its waterworks upstream to an area with less sewage contamination. Cholera mortality decreased in both cases, but more significantly in the districts supplied by the company that moved upstream. Natural experiments and the DD method remained largely overlooked in social sciences literature until the 1990s, after which they gained prominence in mainstream social science research. By this time, the methodology had been largely standardised, though finer points continue to be debated. Over the past decade, public policy and public administration researchers have published numerous studies using this approach. In 2009, an entire issue of *Political Analysis* was dedicated to natural experiments. While the simplicity of DD methods negates the need for advanced computational power, it also renders the methodology and results comprehensible to readers with only basic statistical knowledge.

About 85 per cent of the population of large villages and small towns is covered by piped water supply schemes, with either household connections or public stand posts within easy reach. The uncovered population, usually on the periphery of the habitations, gets water from hand pumps or from unsafe sources. Water vending, an activity popular in African countries like Kenya is not prevalent in the area of study. Often people with household connections and those living near public stand posts supplement their water requirements from other sources as piped water supply is available for only few hours a day. The data are obtained from a longitudinal survey for research on good governance and human rights which also covers issues other than corruption and decentralisation, which commenced in 2018. Each year the sampling frame was the latest census list of small towns and villages of population above 2000. For the stratified two stage random sampling, the first stage units are the water supply schemes in small towns and large villages and the second stage units are the households. The villages which did not have a functioning piped water supply scheme were left out. From the pruned list, 200 small towns and villages were selected. The results of the first survey in June 2018 were reported in cross sectional study. At the time 49 utilities were centralised, i.e., controlled by the state government and 151 were decentralised, i.e., under the control of the local governments. In the succeeding years, more utilities were transferred to the local governments. Yearwise details are given in Figure 1. This short period of time avoids the utilities becoming less comparable over time.

Figure 1

Timing of Decentralisation



The investigators listed the houses in the same order as that of the latest census. Where such listings were not available, listings were started from the northwestern corner of the habitation. From this list, households without water connection were deleted. Thereafter, from each scheme, 30 households were selected. First, we focused our attention on the consumers: have they paid a bribe during the last one year in a matter relating to the water bill, be it for showing lower consumption or for avoiding being charged for higher than actual consumption. Next we considered two smaller samples—those consumers who needed repairs during the last 1-year and those that needed new connections.

All the contractors concerned with these schemes were interviewed. They were asked whether they have paid a bribe to any official or politician during the last one year for any purpose relating to the utility. Interviews were also conducted with ‘key informants’ viz. NGO staff, union representatives and elected officials. Data collection was achieved through semi-structured interviews based on pretested flexible questionnaire. While a questionnaire and an interview not specifically related to corruption could lose focus, the advantage was that since the questions relating to corruption came at the end, the investigator had a better chance of developing a rapport with the interviewee.

The required assumption for the estimations to be valid is that the changes in the outcome variables (i.e., corruption) would not have differed systematically between the decentralised utilities and the control districts if decentralisation had not occurred. While this assumption is essentially untestable, it is likely to hold if there are no initial systematic differences in trends. The impact of

decentralisation is thus identified using cross-utility differences in the status (centralised or decentralised) over time. It is important to see whether the timing of decentralisation had anything to do with the trends in corruption. We interviewed state government officials, who insisted that the timing of implementation of decentralisation had nothing to do with the changes in the level of corruption in the past or the expectation thereof in the future. The fact that the utilities were not randomly selected for decentralisation does not invalidate the identification strategy as the strategy relies on the changes over time being similar across timing of decentralisation and the decentralisation of various utilities was not related to the lagged values or expected future values of outcome variables of interest. The three checks described above validate the strategy.

Results

Table 1 reports the preliminary results of the study. The most common form of bribery is manipulating bills. Some consumers bribe the utility officials to get a lower bill; others pay a bribe (or an illegal gratuity) to avoid getting an inflated bill. Often the purpose of the payment was to secure both objectives and hence a combined figure is reported in Table 1.

Table 1

Types of corruption

S. no.	Type of corruption	Decentralised	Centralised	Difference
1	Manipulating bills	0.513	0.409	-0.104***
2	Average payment per transaction	US\$ 0.44	US\$ 0.45	-0.01
3	Expediting repairs	0.397	0.304	-0.093**
4	Average payment per transaction	US\$ 1.90	US\$ 1.92	-0.02
5	Expediting new connections	0.156	0.092	-0.064**
6	Average payment per transaction	US\$ 23.00	US\$ 23.41	-0.41
7	Kickbacks from contractors	0.753	0.724	-0.029*

*** Significance at the 1% level.

** Significance at the 5% level.

* Significance at the 10% level.

Overall, as many as 51.3% respondents had paid bribes in the case of decentralised agencies and 40.9% in the case of centralised agencies. The difference is statistically significant. However, the difference between the amounts paid in case of the decentralised agencies and the centralised agencies is statistically insignificant. The next sample was smaller, as we considered only those consumers who needed repairs during the last one year. Of these, 39.7% of the respondents had paid

bribes in the case of decentralised agencies and 30.4% in the case of centralised agencies. This is a statistically significant difference in the proportion of transactions which involved speed money. The difference in the amounts involved in the transaction is statistically insignificant. The third sample was still smaller, though large enough for meaningful testing—households that needed new connections. Only a small number paid bribes. Even so, as reported in Table 1, the percentage of bribe payers in case of decentralised was significantly higher than those in case of centralised agencies. The fourth sample related to contractors. As reported in Table 1, the percentage of contractors paying bribes to officials of decentralised utilities is significantly higher than that of contractors paying bribes to centralised utilities. The results of linear multivariate regression are given in Table 2. We find that the coefficient for decentralisation is positive and significant in all types of bribery.

Table 2

Determinants of corruption

Variables	Meter reading	Repairs	New connections	Contracts
Decentralisation	0.10***	0.09**	0.05**	0.03**
Size (utility)	0.00	0.00	0.00	0.001*
Age (utility)	-0.01	-0.02	-0.03*	0.02*
Size (contractor)				0.08*
Education (consumer)	-0.02*	-0.02*	-0.03*	
Income (consumer)	0.03	0.03*	0.04**	
Sample size	18,300	4,941	1,809	1,538

*** Significance at the 1% level.

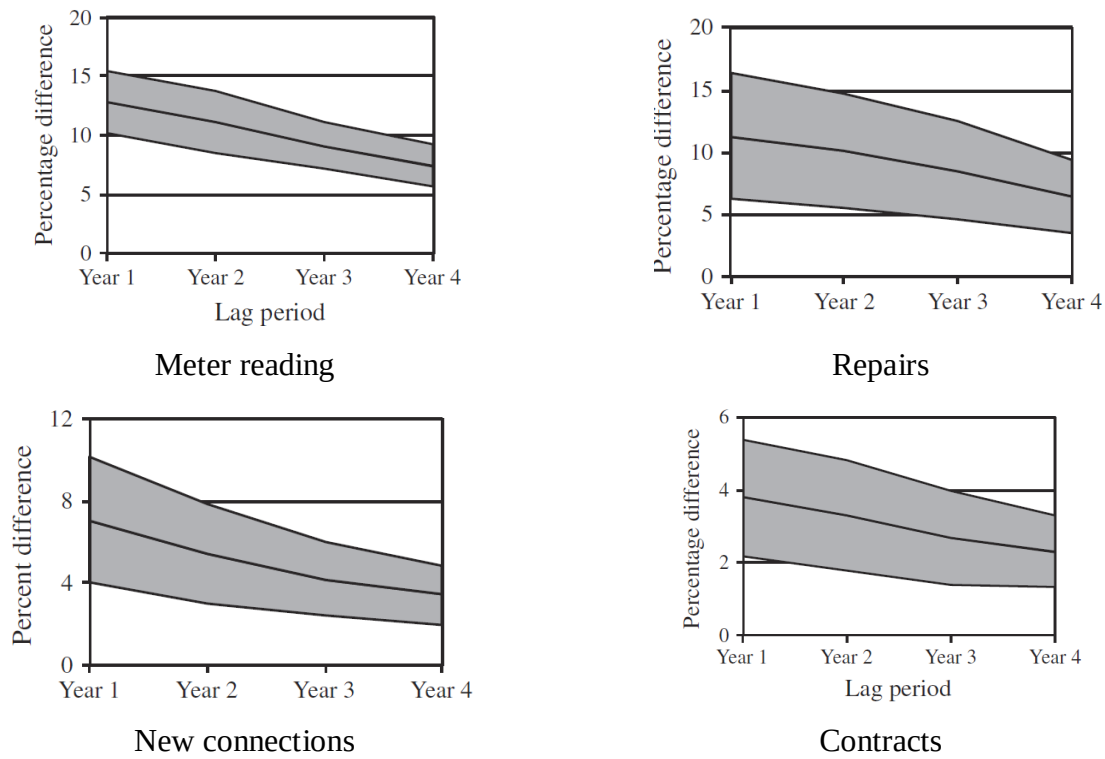
** Significance at the 5% level.

* Significance at the 10% level.

Figures 2 shows plots of the coefficients of decentralisation over time relating to corruption in (a) meter reading, (b) repairs, (c) new connections and (d) contracts. For the sake of clarity, we have scaled the coefficient. For example a coefficient of 0.01 has been converted to show that in case of decentralised utility, corruption is 10 percentage points higher than that in a centralised utility. The gray area in these plots shows these differences with a 95% confidence interval.

Figure 2

Variation in corruption over time



We observe that the grey area in these figures does not touch horizontal axis which is set at 0. The net result is that after decentralisation, the corruption level rises but declines subsequently. In the medium term, the difference remains significant.

Conclusion

The decentralisation drum has been rolling on for a long time, gaining momentum in various parts of the world. Developing country governments have been under increasing pressure from donor agencies as well as their own metropolitan elite to decentralise the provision of public services to local governments. This push for decentralisation has been particularly strong in regions with a history of centralized governance. Among international agencies, a broad consensus has emerged that decentralisation is not only desirable but essential for the sustenance of democracy and for significant improvement in efficiency of public service delivery. Often these agencies do not hesitate to demand decentralisation to local governments as a key conditionality in their development projects and aid programs. However, the widely held assumption that decentralisation will automatically reduce corruption is without solid foundation and merits closer scrutiny. Contrary to popular belief, our research finds that decentralisation actually increases corruption significantly in the short term. At the same time, we observe an interesting trend: with the passage of time, this initial

increase in corruption is reduced substantially, although the overall increase persists in the medium term. This pattern points towards the existence of a learning curve in decentralised entities, suggesting that local governments gradually develop better governance practices and accountability mechanisms. This observation is a cause for cautious optimism, indicating that while the path to effective decentralisation may be challenging, there is potential for long-term improvements in governance of public enterprises.

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