

Leveling Up

Impacts of Performance-Based Grants on Municipal Revenue Collection in Mozambique

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Abstract

Due to recent decentralization reforms, municipalities now have important responsibilities in the sustainable urban development of Mozambique. This paper assesses the efficiency of World Bank funded municipal performance grants and technical assistance provided to municipalities, to enable municipalities to increase revenue collection. The municipal performance grants transferred resources to municipalities directed by performance-based indicators. The technical assistance program provided classroom and on-the-job training for municipal staff. The effect of a municipal performance grant on revenue collection is found to be positive and the effect is primarily lagged. Receiving a municipal performance grant in years $t-1$ and $t-2$ is associated with an increase in revenue collection in year t . Contemporary effects are negative but not significant. However, the positive impact of a lagged municipal performance grant on revenue collection is only significant

after 2015, which coincides with implementation of technical assistance. And when municipal performance grants *are combined with* technical assistance, the contemporary effect of the transfer is also positive and significant. Overall, the impact of the municipal performance grants is larger for towns than cities. For every 10 meticaïs per capita received in municipal performance grants *when combined with* technical assistance, revenue collection increases by 10–11 meticaïs per capita in cities and 24 and 60 meticaïs per capita in towns. The findings of this study suggest that performance-based grants incentivize local governments with low capacity to collect more revenue. However, the transfers should be accompanied by a technical assistance program that can support capacity building in financial and fiscal management, as well as urban development and investment planning.

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Leveling Up: Impacts of Performance-Based Grants on Municipal Revenue Collection in Mozambique

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Introduction

Mozambique has experienced rapid and largely unplanned urbanization in the past three decades. Urbanization is likely to continue and much of the urban growth is expected to happen in secondary and tertiary cities (World Bank 2017). Cities and towns in Mozambique are characterized by a gap of access in infrastructure (World Bank 2019), large informality (Jones and Tarp 2012), and a large share of people living in areas prone to natural hazards (GFDRR 2019). While 22 percent of the population live in Mozambique's 23 cities, they generate 51 percent of its gross domestic product (GDP). Policy simulations show that increasing the urban population share by 6.2 percentage points raises the total GDP growth rate by 0.4 percentage points per year (World Bank 2017).

Mozambique's democratization process in the 1990s was also accompanied by decentralization of authority from central to local levels. As a part of the decentralization process, much of the responsibility to deliver services and manage urbanization landed on newly created municipalities. Thirty-three municipalities were created in 1994. An additional ten were added in 2008 and ten more in 2013, bringing the existing number of municipalities to 53 (Weimer and Carrilho 2017). The municipalities play an important role in sustainable urban development of the country. They are responsible for urban land management by planning urban growth, enabling formalization of land, and collection of property taxes. Municipalities also provide basic infrastructure, including local roads, water, sanitation and drainage, as well as environmental conservation and provision of green areas. Existing legislation has extended municipal responsibilities to health and education, and since the 2000 floods, to disaster risk reduction and climate resilience.¹

Throughout the past three decades, many developing countries have decentralized political and fiscal authority from central to local governments. A major motivation for decentralization is that it enables the government to serve marginalized groups better, including the poor, who are often dispersed in remote areas (Bardhan 2002; Faguet 2004; Mogues and Erman 2018). Given the diverse preferences and needs of citizens, a more decentralized government is believed to know more about their constituents, and, at the same time, decentralization can enable people to vote with their feet and relocate to regions that will adapt more to their preferences (Tiebout 1956). Decentralization can also break the monopoly of power of the central government (Shah 2006) and could mean less corruption since it reduces the distance between decision making and citizens, enabling better surveillance (Fisman and Gatti 2002). In the context of post conflict, such as in Mozambique, decentralization has the potential to diffuse social and political tension by providing local autonomy (Faria and Chichava 1999; Edwards, Yilmaz, and Boex 2015).

Yet, mixed evidence supports the effects of fiscal decentralization. Education and health outcomes demonstrate positive effects of decentralization, increased social spending and macroeconomic stability, there is less conclusive evidence on subjects like economic growth, inequality, and poverty (Martinez-Vasquez 2017). Decentralization might contribute to increased disparities between subnational governments and can result in political influence and, as an extension, public resources being captured by local elites. In Latin America, fiscal transfers that are distributed to subnational governments without considering local capacity or needs are associated with increased inequality in access to public services for citizens (Muñoz et al. 2016). In Brazil, municipalities with higher income inequality tend to spend less on sectors that predominantly benefit the poor, such as public education, indicating that local elites are influencing prioritization (Kosec 2014). Local elite capture also manifests itself in the proliferation of administrative units, as observed in Uganda (Grossman and Lewis 2014). In Mozambique, Forlquilha (2020) argues that the decentralization reforms have been used by political elites as mechanisms to maintain and strengthen political power. Finally, while most evidence tends

¹ The DRM Law (2014) now empowers local governments, municipalities, communities, and stakeholders to handle disaster risk management.

to suggest decentralization is linked to less corruption, Fan, Lin, and Treisman (2009) argue that when decentralization results in more complex governmental structure with a larger number of administrative tiers, it can foster more corruptive behavior.

In Mozambique, despite this broadly enabling legal and political framework, few municipalities have the capacity to meet the social, environmental, and economic challenges they face. Municipal capacity is generally very low compared to the responsibilities that municipalities have. A proxy for local government capacity is the size of spending. The total municipal spending per capita in Mozambique in 2006 was approximately 269 constant meticaïs—US\$10.6 at the yearly exchange rate—which was significantly less than the average in Sub-Saharan Africa at the time. According to the public expenditure data collected as part of this study,² it is found that municipal spending has increased to 908 constant meticaïs per capita³ or US\$15.05 in 2018. This is a significant increase in meticaïs, but owing to devaluations of the currency in the relevant time period, it does not translate into significant improvements in real terms. Unfortunately, because of lack of data, it is not possible to compare this statistic with those of neighboring countries.

Even as municipal spending remains relatively low, municipalities are highly dependent on the central government for covering much of their expenditures. Taxation is largely controlled at the central level, including setting the rates and defining the tax base. Municipalities have more control over fees and tariffs, explaining why most of municipalities' own source revenue is from non-fiscal sources (Forlquilha 2020). This lack of autonomy in taxation is compounded by weak capacity in municipal own-source revenue collection. As a result, between 2013 and 2018, 71 percent of municipal expenditure was covered by intergovernmental transfers (while they make up 80 percent of income). Municipalities receive transfers from several different governmental programs. Allocations are generally not need based and lack transparency in allocation processes, which undermine budgetary predictability (World Bank 2020). The lack of consistency and predictability of the intergovernmental transfer system makes it difficult for municipalities to deliver on their mandate.

To meet the challenges associated with limited municipal autonomy and capacity and to unlock the potential of decentralization, the World Bank financed a project in 2011 called Cities and Climate Change. The project financed a performance-based grant and technical assistance to municipalities to help support urban development while incentivizing municipalities to improve performance in revenue collection. The focus of this paper is to assess the impact of the performance grant and technical assistance on municipal revenue collection.

Background

The Cities and Climate Change Project (3CP), financed by the World Bank, provided support to 26 municipalities—20 municipalities included at the start, and six added in 2017. The objective of the municipal support of 3CP was to strengthen institutional capacity for local revenue enhancement and land use management in targeted municipalities. The support included an annual performance-based transfer to municipalities and a technical assistance program targeting municipal officials.

The 26 municipalities (map 1) are located the south and center of Mozambique and were selected to complement the Programme for Municipal Development in North and North-Central Mozambique (PRODEM), steered by Denmark, Ireland, Sweden, and Switzerland. PRODEM was established in 2007 and provided technical assistance and investment support to municipalities located in the North—

² The data cover 25 of the 52 municipalities in the country.

³ Constant meticaïs were obtained by deflating current values with the consumer price index (CPI) from the corresponding years.

central and northern regions of the country. Since both 3CP and PRODEM focused on municipal capacity building and PRODEM was active when 3CP was initiated, the municipalities selected to participate in 3CP were located in regions not covered by PRODEM. As a result, the selection of municipalities was based on geography and all municipalities in southern and central regions were included in the program. The municipalities that were added in 2017 were municipalities that had been converted to municipalities during project implementation and were in regions already covered by 3CP.

Map 1. Municipalities (bolded in red) in Mozambique selected to participate in 3CP.



The municipal performance grant (MPG) program, financed under the project, provided supplementary capital grants to municipalities to: (i) incentivize improved municipal performance in core land use management and municipal finance and taxation functions; and (ii) finance strategic urban investment subprojects—small infrastructure works or purchase of equipment.

The project financed five cycles of annual MPG that provided direct transfers of at least US\$40,000 to participating municipalities per year depending on their population, plus increments for achieving predetermined performance indicators. To be eligible for the annual performance grant, municipalities had to fulfill minimum participation requirements every year, including a presentation of an annual financial audit and fulfillment of grant reporting requirements from previous year.⁴ Municipalities had relative discretion in spending the MPG resources but were limited to capital investments. Each year, eligible municipalities had to prepare an investment proposal for the use of the grant funds that was evaluated by MAEFP against predetermined eligibility or screening criteria, which excluded any works

⁴ All participating municipalities achieved eligibility every year during the project period.

with significant safeguards implications.⁵ The municipalities were responsible for implementing the investments (including procurement and safeguards) under the supervision of MAEFP. Annual financial and procurement audits of the MPGs were carried out.

The first municipal grant cycle was in 2013. During the first two cycles, allocation was based only on population, the base component. Starting in 2015, the grants were allocated based on population and achievement of predefined performance indicators or the performance component. The base component was proportional to the size of the municipality’s population with a minimum of US\$40,000 and a maximum of US\$400,000 to guarantee that all participating municipalities receive a sensible amount. The performance component consisted of two indicators with increasing annual targets to incentivize municipalities to enhance their performance regarding financial sustainability and land management (see Table 1). The municipalities received an additional 36 percent of their base allocation for reaching the annual target for one performance indicator and an additional 72 percent for reaching annual goals for both indicators.⁶

Table 1 Goals to be reached by municipalities to receive the performance grant.

Objective	Indicator	Cumulative Goals				
		2013	2014	2015	2016	2017
Improvement of financial sustainability	Annual increase in aggregated municipality’s own source of revenue (%)	5%	20%	50%	75%	Na
Improvement of land management	Annual increase of aggregated number of entitled land parcels (DUAT) (%)	0%	10%	20%	30%	Na

In the 2017 grant cycle, the performance target on land management was dropped and also expanded to include six additional municipalities, which had been recently created at the time, but only provided the basic allocation for these new municipalities. The additional municipalities also did not receive TA.

A preliminary calculation of the grant amounts for the following year was done each April based on unaudited information from the municipalities regarding the performance targets. The final calculation occurred in September based on audited information. Municipalities received a first installment of 50 percent of their annual grant between January and March and the second installment between June and September. See the timeline of the grant’s calculation and allocation in Figure 1 and the timeline of changes in design and implementation in Figure 2.

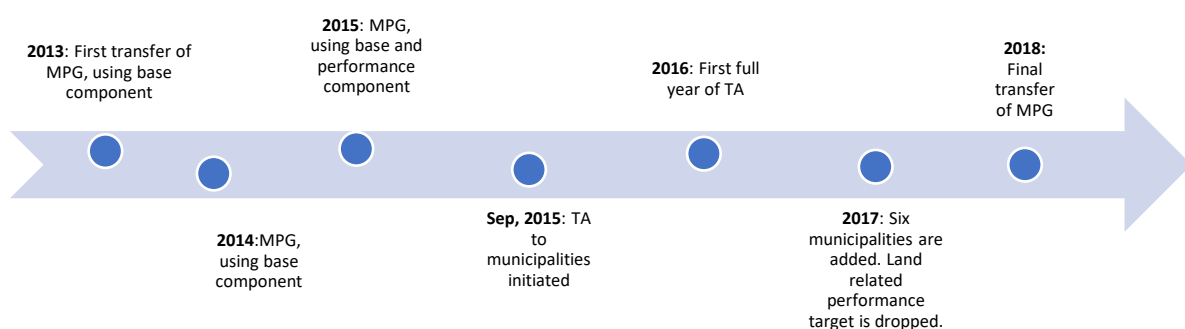
⁵ <https://www.worldbank.org/en/projects-operations/environmental-and-social-framework>

⁶ See Table A-1 in the Appendix for breakdown of municipalities that reached the goals each year for which there is information.

Figure 1 Timeline of the grant's calculation and allocation.



Figure 2 Timeline of project changes 2013 – 2018.



The TA, which was initiated in September 2015, provided classroom and on-the-job training, as well as equipment and institutional advice to the 20 original municipalities in the program. The objective of the TA program was improving institutional capacity, systems, and procedures for land use management as well as municipal finance and taxation. The TA helped the participating municipalities implement operational land registries, allowing to register land and property and systematically linking it to property taxation (IPRA⁷), which is the most important municipal tax in Mozambique. The TA contributed to a significant increase in the issuance of land and property related permits and authorizations along the whole delivery chain of land use management and land related taxation according to the prevailing regulations (see box A-1 in the Appendix). Specifically, TA included:

- Three training sessions in urban planning and land use management (120 hours and 138 participants)
- Four training sessions in financial and fiscal management (160 hours and 46 participants)
- One training session in internal control or taxation (24 hours and 46 participants)
- On-the-job training provided to 20 municipalities. On average, 13 visits focused on land use management, 12 on financial and fiscal management and six focused on internal control and taxation (see list of municipalities and on-the-job training visits in table A-2 in the Appendix).

Finally, the study looked at how the performance grant resources were used and found that over 40 percent of resources were allocated to road infrastructure, about 20 percent to solid waste management and about 10 percent to urban planning and land management. Cities and towns prioritized resources a bit differently. Towns spent a lower share of resources on roads and more on

⁷ IPRA - Imposto Predial Autárquico (Property Tax).

solid waste and urban planning and land management than cities. See figure A-1 and A-2 in the Appendix.

Literature overview

The literature that assesses the impacts of transfers on local government revenue collection raises mixed results. Some studies find that transfers can discourage local governments from collecting their own revenue. As Caldeira and Rota Graziosi (2014) point out, transfers can be perceived as a windfall resource that crowd out local revenues by eroding local fiscal autonomy (Masaki 2018). These effects have been recognized in the US (Buettner and Wildasin 2006) and Russia (Zhuravskaya 2000). Mogues and Benin (2012) discuss the effect in the context of a developing country as they assess the impact of transfers to district governments on revenue collection capacity in districts in Ghana. They find that transfers appear to discourage own-source revenue generation, although the magnitude of the effect is found to be quite small. Panda (2009) uses both fixed and random effect panel regression models in India and finds similar results—per capita transfers from the central government are found to have a negative and significant effect on states' own revenue. This result holds true at a lower governmental level; in the state of Kerala, state grants to local governments are negatively associated with tax collection effort of rural local governments (Rajaraman and Vasishtha 2000). Correa and Steiner (1994) find a disincentivizing effect of fiscal transfers on local tax effort in Latin America.

Transfers have also been found to support local government revenue collection. Caldeira and Rota-Graziosi (2014) point out that in Benin, an unconditional grant, allocated according to a formula based on population size, has a positive effect on local own revenue. Most importantly, they highlight the complementarity between own revenue and the grant, showing a crowd-in effect between both. Brun and Sanogo (2017) look at the effect of transfers on municipalities in Côte d'Ivoire from 2001 to 2014. They find a statistically significant and positive effect of central transfers on revenue mobilization by municipalities for both tax and non-tax revenue.

The effect of transfers on local government revenue collection capacity is influenced by the level of local autonomy in spending and taxation. Caldeira and Rota-Graziosi (2014) argue that the positive relationship between transfers and revenue collection in Benin is different from what Mogues and Benin (2012) find in Ghana because the main resources of Ghana's districts are conditional grants, which restrict Ghanaian local governments in their expenditure choices. Therefore, as they are less accountable in spending, districts have less incentive to raise revenue. Brun and Sanogo (2017) believe the results they find for Côte d'Ivoire are driven by specific country context, including scope of the delegation of revenue raising responsibilities to municipalities and local government's discretion in setting local tax rates.

Unconditional grants are found to be more efficient than condition grants in improving the local governments' capacity of increasing their own revenue. Brun and Khdari (2016) compare the impact of conditional and unconditional transfers on local own revenue generation in Moroccan municipalities. They find a significant incentive effect of unconditional transfers and less robust effect of conditional transfers, suggesting that per capita unconditional transfers from the central government have a positive impact on per capita local own-revenue mobilization. They explain this result by the fact that conditional transfers are more sensible to political manipulation and local bargaining. Banful (2011) finds a similar result in Ghana where the allocation formula itself had been manipulated, which benefited non-targeted swing states. This might account for the difference of results with Caldeira and Rota-Graziosi (2014), where the allocation formula used in Benin was simple and transparent.

The effect of transfers on local government revenue collection capacity can differ within a country depending on the specific local needs and constraints. Masaki (2018) argues that local revenues are

supported by intergovernmental transfers, especially when fiscal capacity is limited and endogenously determined by the financial support of international donors. This is particularly true for rural settings, where geographical vastness, poverty, and low population density make tax collection an arduous task (Fjelstad et al. 2014). Here, the administrative capacity of collecting taxes is weak, given that monitoring and enforcement systems are costly, to the point that collection costs offset revenues. Moreover, the political costs are low, relative to cities where tax enforcement is costly given the influence of their residents to avoid property taxes, for example (Bahl and Bird 2008).

Integrating a formula based on local government performance in revenue collection into transfer allocation could create incentives for local governments to focus more on revenue collection. Mogues and Benin (2012) argue that if the allocation formula in Ghana contained a criterion which encouraged improvements in local revenue mobilization, it could have positive effects on local revenue mobilization. Panda (2009) argues that in India, the incentive criterion for tax effort failed, and calls for assigning a higher weight to tax effort in the formula of transfer allocation.

Transfers influence local government performance through different channels and some effects are immediate, others are lagged. Masaki (2018) identifies two different channels through which transfers can support local revenue collection: directly, by financing salaries and other fixed costs of tax enforcement and indirectly, by stimulating local economies, which increases the tax base and associated tax collection or fiscal stimulus. Transfers that can support revenue collection directly are called administrative transfers and are unconditional. Transfers that can support revenue collection indirectly are called service-related transfers and are earmarked for service delivery. The MPGs in 3CP fall under the latter category since they can only be used for capital investments. Further, Masaki (2018) argues that there is a temporal aspect to these channels; direct effects are contemporary while the indirect effects are lagged. He analyzes the effects of the two different transfers on revenue collection of local governments in Tanzania and finds contemporary effects of administrative transfers and contemporary and lagged effects of service-related transfers. Other studies have used different temporal considerations when assessing impacts of transfers. Caldeira and Rota-Graziosi (2014) and Panda (2009) assess the impact of transfers on revenue collection the same year they receive the resources while Mogues and Benin (2012) assess the impact of resources received in one year on revenue collection the following year.

In addition to the two channels described in Masaki (2018), two other potentially important channels are available through which performance-based transfers can influence revenue collection and both channels are assumed to be lagged. The performance grants can be used to invest in technology and equipment, such as computers, land registration equipment, and fee-charging stations that can support revenue collection. The effect of such investments on revenue collection is likely to be less immediate than administrative transfers but likely faster than the fiscal stimulus channel discussed.

Box 1. Typology of the different types of transfers

Grants can be classified according to the way they are distributed across local governments. They can be distributed as ad-hoc grants, where the central government has discretionary power (Steffensen 2010). They can also be designed as formula-based transfers, based on criteria such as population size, GDP per capita, number of health facilities, number of schools, etc. (Mogues and Benin 2012). The criteria vary with the purpose of the grant.

Formula-based transfers can be conditional or earmarked, meaning that they are designated for a particular purpose or sector by the donor, or unconditional or multisector usage, meaning that local government can use it more freely (Steffensen 2010).

All types of formula-based transfers can incorporate performance into the formula. The size of the grant is adjusted against local government performance (Steffensen 2010). The purpose of performance grants is to stimulate local government performance while also supporting them financially. Performance grants can also be conditional or unconditional.

In the 3CP project, municipalities decide how to spend the MPG. However, spending is limited to capital investments that have been approved by MAEFP and the World Bank. The MPG is therefore not completely unconditional, but since spending is not limited to a specific expenditure or sector, it can be considered unconditional with minor limitations.

Another unique channel through which performance-based grants influence revenue collection is by changing the local incentive structure. If underperformance in revenue collection at the local government level is driven by weak incentives, then the change in the incentive structure from the performance grant program design alone can increase revenue collection. This effect could be immediate if local authorities understand the rules of the game up front. The effect could also be delayed since it may take local governments some time to realize how the allocation scheme works. Other factors that could affect the timing of impacts include: i) when and if local governments receive information about the size of transfers that they will receive (Gneezy, Meier, and Rey-Biel, 2011), ii) timing of budgeting processes in relation to receiving transfers and flexibility of budgetary system or the ability to shift priorities along the fiscal year; and iii) the time it takes for local governments to improve performance, whether it is revenue collection or spending (Guccio, Pignataro, and Rizzo, 2014).

The performance grant incorporates municipal performance indicators as part of its allocation formula to incentivize the municipalities to invest in capacity building and tax and fee collection efforts. During the past ten years, the World Bank and other development partners have supported performance grant programs in client countries. The World Bank has financed more than USD7 billion toward performance-based grant programs, much of which is in Sub-Saharan African countries. The programs gained popularity with the launch of the [Performance-for-Results \(P4R\)](#)⁸ lending instrument in 2012. Besides the Cities and Climate Change project in Mozambique (P123201), other performance grant projects include Tanzania Urban Local Government Strengthening Program (P118152), the Kenya Urban Support Program (P153777), and Ethiopia Local Government Development Project (P133592). Another program with municipal performance grants in Mozambique will be delivered under the Mozambique Urban Development and Decentralization Project (P163989).

The objective of this report is to assess the effect of the performance-based grant and TA program that were implemented as part of the Cities and Climate Change Program in municipalities in Mozambique. The study is the first rigorous assessment of the impact of a performance grant program in a developing context to date. The findings of this report will contribute to the literature on decentralization and

⁸ Performance-for-Results (P4R) <https://www.worldbank.org/en/programs/program-for-results-financing>

urban planning. It will also support the design of future development projects and government programs that aim at supporting local government capacity.

Data

The analysis draws on two sources of data:

- i) Municipal finance data obtained from the Ministry of Economy and Finance (MEF).
- ii) The 2017 Mozambique Population and Housing Census, from which the municipal population was drawn.

Table 2 Municipalities for which data exist in the MEF public finance database.

	Municipalities included in the data	Municipalities NOT included in the data	Total
Received the program from the start	Chibuto, Chimoino, Gondola, Gorongosa, Mandlakazi, Maxixe, Massinga, Matola, Tete, Vilankulo, ,	Chokwé, Catandica, Inhambane, Macia, Manhiça, Manica, Namaasha, Moatize, Ulongué, Xai-Xai,	20
Added in 2017	Nhamatanda, Quissico,	Boane, Nhamayabue, Praia de Bilene, Sussundenga	6
Total (received the program)	12	14	26
Didn't receive the program	Beira, Dondo, Gurue*, Linchinga, Mocimboa, Mocuba, Maganja, Malema, Mandimba, Marromeu, Molocue*, Monapo, Mueda, Nacala, Quelimane	Angocha, Cuarrba, Chiure, Ilha de Moçambique, Marrupa, Metangula, Mlange, Montepuez, Nampula, Pemba, Ribaué,	26
Total (did not receive the program)	15	11	26
Total	27	25	52

Note: *Municipalities that were dropped from the analysis because the format of the data was not compatible with the rest of the municipalities

The municipal finance data provided by MEF and used in this study covers 27 municipalities. However, the data for Gurue and Molocue were inconsistent with the rest of the municipalities and were therefore dropped. Among the 25 remaining municipalities, 12 benefited from the program including two that were added to the program in 2017, and 13 did not participate. Municipal revenues are disaggregated by fiscal, property tax (IPRA) and other taxes, and non-fiscal, such as user fees for different services, issuance of land use permits (DUATs), and solid waste management. The data also contain information on external transfers from governments and other institutions as well as the MPGs. Municipal expenditures are also included.

Some quality concerns go with the data. Discrepancies in the municipal finance data were identified. The data contain a breakdown of both total revenues—an aggregate of own-source revenue and external transfers—and a breakdown of own-sourced revenue, an aggregate of fiscal and non-fiscal. Own-sourced revenue, as presented in the two tables did not match for all municipalities and years. We compared the different estimates with the data used to monitor revenue collection in the monitoring and evaluation of the 3CP to inform the decision on which of the different estimates of own-source revenue to trust. We found that the own-source revenue from the total revenues table was more consistent with those numbers than the aggregate of fiscal and non-fiscal municipal

revenue.⁹ As a result, we used those estimates for the main analysis. However, the table did not include any information on the composition of the types of sources of income. As a result, we still use the values from the table with fiscal and non-fiscal municipal revenue to understand the composition of revenue streams for municipalities.

Table 3 contains summary statistics of key variables from the data and compares values for municipalities that benefitted from 3CP with those in that data that did not and whether the difference is significant or not. Values are averages across all 6 years in the data. Variables used in the analysis are presented in meticaís per capita. There are some differences between 3CP and non-3CP municipalities. For example, 3CP municipalities received slightly more in governmental transfers per capita and as expected only 3CP municipalities received MPG, while non-3CP municipalities received more PRODEM.

The municipal finance overview shows the composition of total municipal income. MPG make up a small share of total income for municipalities, only four percent of income for receiving municipalities.¹⁰ Government transfers make up 73 percent of total income and is the most important source of revenue for municipalities.

The overview also includes a breakdown of own-source revenue. Own-source revenue makes up 20 percent of total income and is composed of both fiscal and non-fiscal sources. Fiscal revenues make up 15 percent of own source revenue on average. IPRA, which is the property tax, makes up the largest share of fiscal revenue and is an important lever for municipality to build revenue capacity. However, non-fiscal revenue, which is primarily made up of fees for different services, is the largest source of income for municipalities and makes up 85 percent of own source revenues. The differences between 3CP municipalities and non-3CP municipalities in terms of fiscal and non-fiscal revenue collection could be a result of the intervention itself. Finally, average population is 170,000 and 3CP municipalities are slightly larger. A bit more than half of municipalities is defined as towns, which are smaller than cities.

There are limitations to the data used. Only 27 out of the 52 municipalities made their data available, and we are able to use data from only 25 of those. The data were provided by the municipalities themselves, under the supervision and quality control of MEF. Consequently, the lack of data from 25 municipalities and exclusion of an additional two may represent a source of sample selection bias. Additionally, no data are available prior to 2013, which is the first year of implementation of the program. Baseline data from before program implementation would have strengthened the robustness of the assessment. However, the grant was allocated based on population and not performance during 2013 and 2014. This compensates partially for the lack of baseline data and provides us with some confidence that at least the impact of the performance allocation aspect of the grant is captured in this assessment. Since TA was introduced in 2015, this time variance allows for further exploration of impacts. See more details on this in the section on Methodology.

⁹ In cases the numbers corresponded, they corresponded with the numbers from the total revenue table.

¹⁰ In relation to capital expenditure, the share of MPG is 8 percent—7 percent for cities and 18 percent for towns.

Table 3 Summary statistics table.

Variables of interest :	Overall		Treatment		Control		Difference (T)-(C)
	N	Mean/SE	N	Mean/SE	N	Mean/SE	
<i>OSR per capita</i>	145	168.48 [13.58]	70	189.31 [22.77]	75	149.04 [15.25]	40.28
<i>Grant per capita</i>	145	17.35 [2.26]	70	35.94 [3.53]	75	0.00 [0.00]	35.94***
<i>PRODEM per capita</i>	145	20.38 [4.04]	70	7.34 [3.35]	75	32.56 [6.89]	-25.22***
<i>Gov. transfers per capita</i>	145	622.39 [30.26]	70	682.94 [54.16]	75	565.88 [28.34]	117.06*
<i>Other transfers per capita</i>	145	26.46 [6.78]	70	35.17 [13.53]	75	18.33 [3.41]	16.84
Municipal finance overview:							
<i>% Grant</i>	145	1.92 [0.23]	70	3.97 [0.33]	75	0.00 [0.00]	3.97**
<i>% PRODEM*</i>	145	2.44 [0.48]	70	0.78 [0.33]	75	4.00 [0.83]	-3.22***
<i>% Government Transfers</i>	145	72.75 [1.20]	70	71.00 [1.87]	75	74.38 [1.52]	-3.38
<i>% Other transfers</i>	145	1.84 [0.51]	70	2.35 [0.97]	75	1.36 [0.42]	0.99
<i>% OSR</i>	145	19.63 [1.02]	70	20.48 [1.43]	75	18.84 [1.46]	1.64
<i>Total revenues per capita</i>	145	858.87 [39.08]	70	958.29 [71.13]	75	766.08 [33.18]	192.20**
<i>% Fiscal revenues in OSR</i>	145	15.23 [1.02]	70	17.66 [1.57]	75	12.96 [1.28]	4.7**
<i>% Non – Fiscal revenues in OSR</i>	145	84.78 [1.02]	70	82.34 [1.57]	75	87.04 [1.28]	-4.7**
<i>% IPRA in fiscal revenues</i>	137	24.05 [1.97]	68	21.40 [2.68]	69	26.67 [2.86]	-5.27
<i>Population 2017</i>	145	168,657.86 [18,720.54]	70	187,060.8 6 [33,787.0 4]	75	151,481. 72 [17,797. 62]	35,579.14
<i>% towns</i>	145	54.48 [4.15]	70	57.14 [5.96]	75	52.00 [5.81]	5.00

Methodology

The objective of this study is to assess the impact of the MPG and TA on the capacity of municipalities to collect own-source revenue. To do this, a new data set with municipal finance information is used. The data cover the years between 2013–18 and include information both from municipalities that received the grant and municipalities that did not, allowing for a comparison similar to treatment and control in experimental evaluations. However, three important differences arise between our methodology and experimental evaluation.

- i) In experimental evaluations, such as randomized control trials, treatment and control are usually selected randomly to avoid selection bias. In our paper, we selected municipalities to complement an existing program, PRODEM. As a result, the selection of municipalities for the 3CP program was based on geography and was not random. Important geographical, demographical, as well as political differences exist between the country's North and South. We use municipal fixed effects to control for unobserved heterogeneity, which mitigates consequences of selection bias. However, it is important to note the difference between this methodology and a pure experimental design.
- ii) In addition, the selection of municipalities covered in the data was not random (see discussion in Data). Municipalities provided the data to MEF, which oversaw the data collection. There could be characteristics associated with having provided the data to MEF, e.g., higher administrative capacity, better leadership, etc. However, this does not necessarily introduce a bias in relation to the performance of the MPG program since both non-3CP and 3CP municipalities provided data to MEF.
- iii) Finally, experimental evaluations tend to have baseline data that are collected before implementation starts. The data used in this study only go back to 2013, which coincides with the first transfer of grants to participating municipalities (see more in the Data section). The fact that the first two rounds of transfers were allocated based on population or base allocation rather than performance and that technical assistance did not start until 2015 compensate in part for the lack of baseline data.

Timing of impacts of the performance grant

In the literature review, we discussed four channels through which transfers influence revenue collection. Each of the channels is assumed to differ in the timing of impacts on revenue collection. Transfers can support revenue collection by:

- i) Directly financing tax enforcement¹¹ (contemporary effect)
- ii) Stimulating local economies by investing in service delivery (long-term lag)
- iii) Financing technology and equipment that is used in revenue collection (medium-term lag)
- iv) Changing the incentive structure of local revenue collection¹² (timing unknown).

It is possible to shed some light on the channels through which the MPG is influencing revenue collection by assessing the timing of impacts. However, it will not be possible to assess or isolate the effects of different channels. We look at the impact of MPG on revenue collection to assess the timing of effects in year t based on how much was received in year t (contemporary effect), as well as on how much they received in year $t - 1$ and $t - 2$ (lagged effects).

Endogeneity is an important issue in this analysis. Municipal own-source revenue affects the amount of the grant received through the formula by which the MPG is allocated (Table 1). Therefore, a simultaneity bias arises and it is not possible to consider the transfers as an exogenous variable. Brun

¹¹ Not as relevant for MPGs since resources cannot be used to pay for salaries.

¹² Unique to performance-based grants.

and Sanogo (2017) and Mogues and Benin (2012) address endogeneity by using a two-stages-least-square (2SLS) estimation through the use of an instrumental variable. The former use political affiliation of local government as an instrumental variable, and the latter use an index, which multiplies the vector of weights used in each year's formula, excluding the own revenue-related weights. On account of lack of data, the use of instrumental variable is not an option for this study. Endogeneity can lead to biased estimates. However, since the size of the performance grant in year t is based on revenue collection performance in year $t - 2$ by formula design, a temporal distance forms between the dependent—revenue collection in year t —and the main explanatory variable, grant amount. As a result, we do not envisage the estimates will suffer noticeably.

The standard errors of the specifications used in the analysis are heteroskedastic. This was confirmed in a modified Wald statistic test. It means that the variance of the error term is not constant. Heteroskedasticity leads to biased standard errors, which can result in biased test statistics and confidence intervals. To address this, we apply White heteroskedastic-consistent standard errors, or robust standard errors (Econometrica, 1980). However, due to the small number of clusters in the sample (25 municipalities), robust standard errors can still be inefficient, and caution should therefore be taken when interpreting the P values and consequent significance of the regression results (Cameron et al. 2008, Cameron et. Al, 2015).

The impact of MPG on revenue collection

A fixed effects regression model is used to assess the impact of the grant. Since we have panel data that spans both time, 2013–2018, and space, 25 municipalities, a fixed effects model enables us to control for the presence of unobserved heterogeneity. The fixed effects model also eliminates bias caused by omitted variables that vary both across space and time. We also use fixed effects rather than random effects because municipal characteristics are likely to be correlated with explanatory variables, which is confirmed with a Hausman test. In line with the discussion on the timing of impacts of transfers, a dynamic model is employed, which includes contemporary and lagged values of the MPG. The following equations capture this dynamic:

- (i) $OSR_{it} = \beta_1 Grant_{it} + Other\ transfers_{it}\beta + Y_i + \delta_t + u_{it}$
- (ii) $OSR_{it} = \beta_1 Grant_{it} + \beta_2 Grant_{it-1} + Other\ transfers_{it}\beta + Y_i + \delta_t + u_{it}$
- (iii) $OSR_{it} = \beta_1 Grant_{it} + \beta_2 Grant_{it-1} + \beta_3 Grant_{it-2} + Other\ transfers_{it}\beta + Y_i + \delta_t + u_{it}$
- (iv) $OSR_{it} = \beta_1 Grant_{it-1} + \beta_2 Grant_{it-2} + Other\ transfers_{it}\beta + Y_i + \delta_t + u_{it}$

where i denotes cross-sections and t denotes time-periods. Annual per capita own-source revenue (OSR) is the dependent variable. $Grant$ is the amount of MPG received in year t , $t - 1$ or $t - 2$ depending on the specification and is the explanatory variable of interest. Specifications estimate: (i) contemporary effects; (ii) contemporary and one-year lagged effects; (iii) one-year lagged effects; and (iv) one-year lagged and two-year lagged effects of the MPG. $Other\ transfers$ is a vector ($1 \times k$) of time variant independent variables. $Other\ transfers$ includes governmental transfers, PRODEM, and an aggregate of other external transfers received by the municipality, i , at time t . u_{it} is the error term. Finally, Y_i controls for omitted variables that are constant over time but differ across municipalities and δ_t controls for omitted variables that are constant across municipalities but change over time. One could expect revenue collection to be time dependent, which would warrant the inclusion of a lagged dependent variable. However, in this case, revenue collection in year t was independent or in some cases even negatively related to revenue collection in year $t - 1$.¹³

¹³ We did not include a lagged dependent variable because we were unable to establish a relationship between revenue collection in year $t-1$ and year t that made sense (for towns the relationship was negative).

The role of TA

The program also included an ambitious technical assistance (TA) component. The TA program can influence the dependent variable (*OSR*) and is correlated with *Grant* because all municipalities that received the performance grant also received TA.¹⁴ It is therefore probable that in the specifications above, *Grant* absorbs the effect of the TA, in addition to the effect of the grant. The lack of variation in the municipalities that received TA among the ones that received the grant makes it a challenge to isolate the effect of the TA program. However, understanding better the role of TA in strengthening capacity in local governments is important to inform the design of future projects. Owing to implementation delays of the project, the TA did not start until September 2015. We therefore assume that the first year in which we could detect impacts of the TA program is 2016. This delay provides temporal variation that can be exploited to try to capture the effect of the TA. However, to be able to exploit this temporally phased implementation, we are unable to control for time-variant fixed effects. We use two different approaches to assess the impact of TA.

1. The first approach interacts a dummy that equals 1 if $t > 2015$ called TA_t , which captures the years in which TA was carried out, with another dummy indicating whether the municipalities is participating in the 3CP program ($3CP_i$). The approach captures the annual benefit of receiving TA_t , in addition to the PMG, contemporary (i) or lagged (ii):

$$(v) \quad OSR_{it} = \beta_1 Grant_{it} + Other\ transfers_{it}\beta + TA_t * 3CP_i + Y_i + u_{it}$$

$$(vi) \quad OSR_{it} = \beta_1 Grant_{it-1} + Other\ transfers_{it}\beta + TA_t * 3CP_i + Y_i + u_{it}$$

2. The second approach combines the dummy TA_t from the previous approach with the MPG received (*Grant*), contemporary or lagged. The approach captures the annual per capita benefit of receiving the performance grant during a year in which the municipality also receives TA (or the year prior to a TA year, depending on the specification):

$$(vii) \quad OSR_{it} = \beta_1 Grant_{it} + Other\ transfers_{it}\beta + TA_t * Grant_{it} + Y_i + u_{it}$$

$$(viii) \quad OSR_{it} = \beta_1 Grant_{it-1} + Other\ transfers_{it}\beta + TA_t * Grant_{it-1} + Y_i + u_{it}$$

The first approach intends to isolate the benefit of TA and looks at the effect of MPG and TA separately. The second approach tried to capture the effect of TA in combination with MPG.

Since all municipalities started to receive TA at the same time, it is not possible to ascertain that the effect of TA captured in the specifications above can only be attributed to the effects of the TA program and of no other factors. There could be factors influencing the performance of the municipalities in revenue collection that is correlated with both the timing of implementation of the TA program and participating in the 3CP program. For example, it is possible that the MPG is influencing revenue collection by changing the incentive structure among municipal officials. We cannot determine whether this happened or how much time it took. If a change in incentive structure coincides with the timing of TA implementation, the TA dummy could be capturing some of that effect. However, if this is the case, we are unable to establish whether the incentive structure changed as a result of the TA received⁵ or if this would have happened even in the absence of TA. Therefore, we need to factor these assumptions when interpreting results.

Heterogeneity of results

The sample contains municipalities of both towns and cities with populations ranging from 12,695 to 62,390 for towns and 72,605 to 1,032,197 for cities. It is likely that the effect of the MPG and TA will depend on whether the municipality is a town or a city. Since towns generally have fewer sources of

¹⁴ Except the municipalities added in 2017; but we do not have enough data points (1 year and 2 municipalities) to use that variation to assess the program.

income than cities, maximizing the MPG may be more of an incentive for towns than cities. However, it is possibly easier for a larger city to scale up revenue collection since the tax base is larger than in a smaller town. But on the other hand, as argued in Masaki (2018), smaller towns have lower starting points in terms of capacity so the potential and relative impact that the MPG program can have may be larger in a town. We explore this potential heterogeneity in results in the analysis.

Results

This paper examines results through two lenses—descriptive and econometric. Descriptive analysis compares key variables for 3CP and non-3CP municipalities. Econometric analysis estimates the influence of MPG on municipal revenue collection and the timing of impacts of the MPG, as well as the role of TA in increasing revenue collection of municipalities.

Descriptive analysis results

During project implementation, the 3CP municipalities increased their revenue by 114 percent, compared to 9 percent for non-3CP municipalities. Table 4 includes annual average revenue collection of municipalities over the period 2013–2018, for municipalities that received the grant and municipalities that did not. The municipalities that were added in 2017 are not covered in the following tables and figures, and results do not change significantly if they are included.

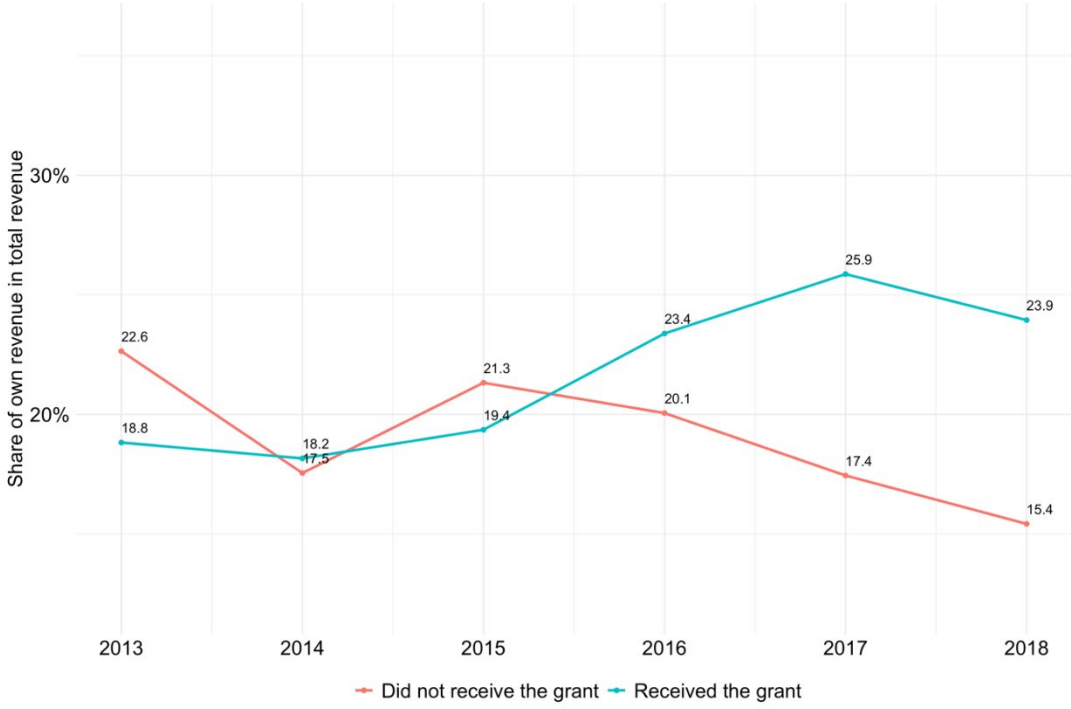
Table 4 Average annual growth in own-source revenue per capita.

Received the grant	Indicator	2013	2014	2015	2016	2017	2018	Change 2013–2018
Yes	Average own revenue per capita	121	132	169.8	307.1	240.5	258.4	114%
	% change	n.a.	9.1%	28.6%	80.9%	-21.7%	7.5%	
No	Average own revenue per capita	136.3	121.1	154.6	173.7	155.2	149.2	9%
	% change	n.a.	-11.2%	27.7%	12.4%	-10.7%	-3.8%	

Note: n.a. = not applicable.

Figure 3 shows the average share of own-source revenue in total revenue from 2013 to 2018 for 3CP municipalities and non-3CP municipalities. 3CP municipalities significantly increased the share of own-source revenue in total revenue during the project from 19 to 24 percent, which is higher than non-3CP municipalities during the same period. In 2013, the average share of revenue was lower for grant receivers at 19 percent than for non-receivers at 23 percent.

Figure 3 Average share of own revenue in total revenue (2013–2018).



3CP municipalities increased the share of expenditures covered by their own-source revenue during the project from 21 to 28 percent. The same effect was not observed for non-3CP municipalities (Figure 4).

Figure 4 Average total expenditure covered by own revenue (2013 -2018).

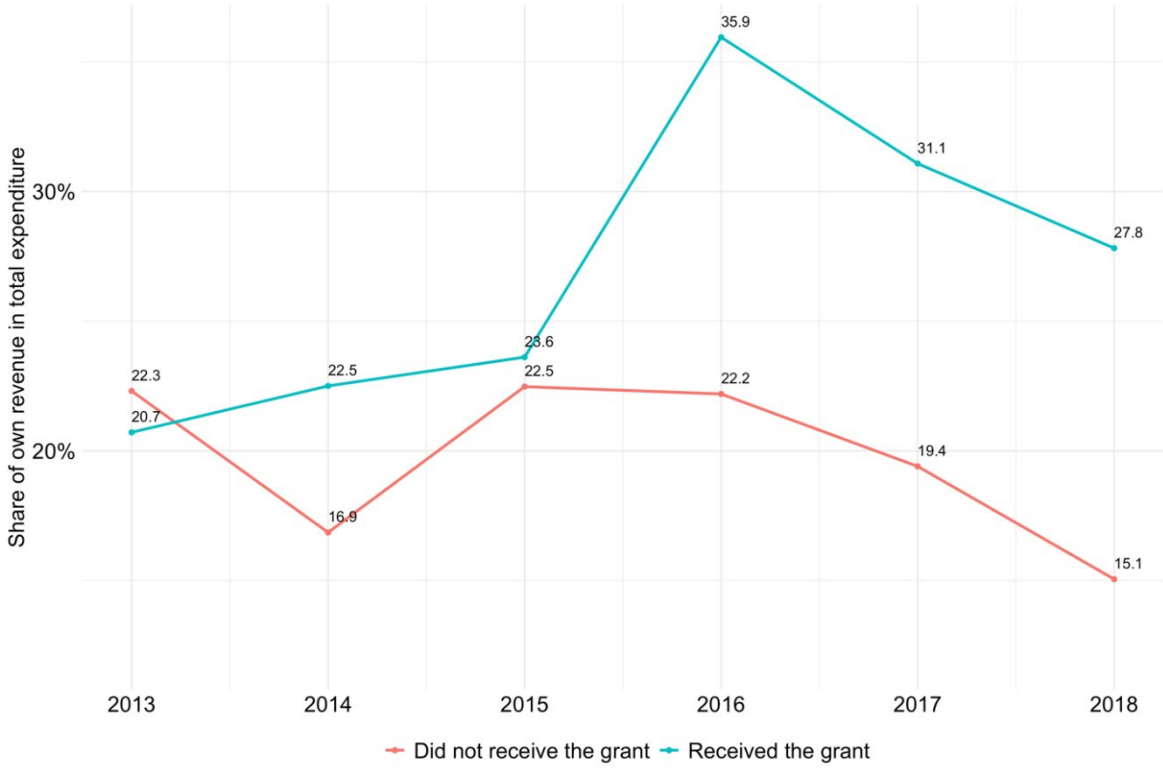


Table 5 Average annual growth in tax property per capita (2013–2018).

Received the grant	Indicator	2013	2014	2015	2016	2017	2018	Change 2013–2018
Yes	Average IPRA per capita	0.8	3.4	3.5	12.6	21.3	24.5	3070%
	% change	n.a.	345.7%	0.5%	263.2%	69.1%	15.2%	
No	Average IPRA per capita	4.0	5.6	7.9	9.0	12.2	17.1	326%
	% change	n.a.	40.4%	40.8%	13.7%	34.9%	40.7%	

Note: n.a. = not applicable.

Average property taxes collected per capita increased significantly more for 3CP municipalities than for non-3CP municipalities during the project (Table 5). Similarly, 3CP municipalities increased fee collection associated with issuance of DUATs by over 100 percent, which non-3CP municipalities decreased their income from DUAT fees during the project period by 35 percent (Table 6).

Table 6 Average land use fee (DUATs) collection per capita (2013–2018).

Received the grant	Indicator	2013	2014	2015	2016	2017	2018	Change 2013–2018
Yes	Average DUAT per capita	14.6	12.2	14.2	17.1	26.4	35.5	143%
	% change	n.a.	-16.4%	16.0%	20.8%	54.1%	34.4%	
No	Average DUAT fees per capita	17.3	16.9	22.1	15.9	10.0	11.3	-35%
	% change	n.a.	-2.5%	30.7%	-27.7%	-37.4%	13.2%	

Note: n.a. = not applicable.

The descriptive analysis above indicates that the performance grant program had a positive effect on revenue collection for participating municipalities. A simple comparison between 3CP and non-3CP municipalities shows that participating municipalities performed much better in property tax collection, dependence on intergovernmental transfers, and overall revenue collection during the project period than municipalities that did not participate. However, to be confident that the results are attributable to the 3CP project, regression analysis is needed.

Econometric analysis results

Regression analysis using panel data enables an improved understanding of the drivers of annual average revenue collection, which allows us to better isolate the effects of the 3CP – the MPG and TA. This section explores whether the MPG had an impact on own-source revenue for municipalities, and the timing of that impact, whether contemporary or lagged. It also presents results of analysis assessing the effect of MPG and TA respectively in the subsection on the role of TA.

Results show that the MPG had a significant and positive effect on revenue collection and that the effect is lagged. Table 7 includes results of equation (i) to (iv) in columns 1 to 8, switching time-specific fixed effects, in addition to the municipal fixed effects, intermittently, depending on the specification. Results in columns 1–6, which include contemporary effects of MPG, show a slightly negative effect of the grant. If true, this would mean that the MPG received in year t has a negative effect on revenue collection the same year. While the results are consistent, they are not statistically significant. Results in columns 3–8 indicate that the effect of MPG is lagged. For every ten meticaís received in

performance grants in year $t - 1$, revenue collection increases by 24 to 37 meticaís year t depending on the specification.¹⁵ The effect after two years is weaker. Every ten meticaís received in 3CP grant year $t - 2$, increases revenue collection by 14–16 meticaís in year t . The lagged effect of the MPG indicates that it supports municipal revenue collection either indirectly, by stimulating local economies or by financing investments in equipment and technology that help municipalities collect revenue, per the discussion in the literature review. The result makes sense since the grant is earmarked for capital investments and can therefore not directly support revenue collection by, for example, paying salaries for public servants. The lagged effect could also be driven by a change in the incentive structure, attributed to the design of the MPG program. When assessing the impact of MPG on IPRA collection, no relationship is found, indicating that results are primarily driven by fee collection and other types of taxes (table A-4 in the Appendix).

Effects of other external transfers on revenue collection is mixed. We consider contemporary effects of other external transfers in Table 7 and lagged effects of external transfers in Table A-5 in the Appendix. Other external transfers include PRODEM, government transfers, and other transfers, which is an aggregate of the rest of the transfers that municipalities receive, primarily from donors. PRODEM had similar objectives to the 3CP program but did not allocate funds based on performance and covered a different time period, 2007–2017. PRODEM focused on TA coupled with financing for prioritized investments at the municipal level. The contemporary effect of PRODEM for the time period covered in the analysis is small but positive and not statistically significant. The lagged effect is mixed and not significant (Table A-5 in the Appendix). Governmental transfers have a positive and significant effect on revenue collection in specifications (1) and (3) in Table 7. For every ten meticaís received in governmental transfers, revenue collection increases 1.8 to 2.3 meticaís per capita. The lagged effects are also positive but not statistically significant (Table A-5 in the Appendix). This indicates that governmental transfers support municipalities directly by funding the fixed costs of tax enforcement. Other transfers have a negative effect on revenue collection. Since we do not have information about the nature of these transfers, so it is difficult to determine why they have a negative effect. Since transfers are primarily coming from the donor community, the effect could be a result of donors targeting the fiscally weakest municipalities. Lagged results are also negative, but only significant in specification (4) (Table A-5 in the Appendix).

¹⁵ These numbers should be interpreted with care since the 3CP program also included TA which supported revenue collection, in addition to the MPG, but the cost of TA is not included in the 3CP grant per capita.

Table 7 Determinants of OSR at the municipal level, by timing of impacts.

Specification number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable: Own-revenue collection per capita								
<i>Grant per capita</i>	-2.754 (2.187)	-2.713 (2.110)	-2.541 (1.901)	-2.564 (1.757)	-2.319 (1.884)	-2.338 (1.769)	n.a. n.a.	n.a. n.a.
<i>Grant per capita</i> _{t-1}	n.a.	n.a.	2.424** (1.132)	2.307 (1.384)	2.826* (1.416)	2.810* (1.532)	3.727* (2.118)	3.657* (2.120)
<i>Grant per capita</i> _{t-2}	n.a.	n.a.	n.a.	n.a.	0.378 (0.897)	0.194 (0.961)	1.583* (0.832)	1.380* (0.733)
<i>PRODEM per capita</i>	0.061 (0.053)	-0.283** (0.131)	0.030 (0.066)	-0.126 (0.127)	-0.019 (0.063)	-0.089 (0.125)	0.006 (0.065)	-0.062 (0.095)
<i>Government transfers per capita</i>	0.179*** (0.049)	0.090 (0.063)	0.232** (0.098)	0.313 (0.191)	0.135 (0.089)	0.249 (0.167)	0.131 (0.096)	0.224 (0.189)
<i>Other transfers per capita</i>	-0.237* (0.125)	-0.219* (0.108)	-0.399** (0.182)	-0.430** (0.197)	-0.380* (0.216)	-0.433* (0.247)	-0.270*** (0.090)	-0.323** (0.127)
Fixed effects	No	Yes	No	Yes	No	Yes	No	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	145	145	125	125	100	100	100	100
R-squared	0.224	0.334	0.388	0.455	0.395	0.431	0.271	0.306
between R-squared	0.006	0.048	0.055	0.074	0.107	0.128	0,160	0.175
overall R-squared	0.027	0.034	0.157	0.177	0.210	0.220	0,169	0.184
Rho	0.660	0.691	0.679	0.711	0.650	0.665	0,678	0.699
Municipalities	25	25	25	25	25	25	25	25

Note: Using natural logs produces qualitatively similar results but these are not statistically significant.

Standard errors in parentheses * p<0.1, ** p<0.05, *** p<0.01

n.a. = not applicable

The role of TA

An important question for policy is whether the resources from the grant or the ambitious TA program are driving the positive results found in the previous section. The impact of the two arms of the intervention is assessed for all municipalities, cities only and towns only, respectively (Table 8, Table 9 and Table 10). In specification (1) and (2), the effects of MPG and TA are analyzed separately. In specification (3) and (4), the effects of MPG *with* TA and MPG without TA are assessed. All 3CP municipalities received TA at the same time, and therefore, we are unable to fully isolate the effect of TA. The method used here proxies the effect of the TA by taking advantage of the delay in implementing the TA program. In this part of the analysis, only the contemporary and one-year lagged effects of the MPG are accounted for.

Overall, both TA and lagged MPG have positive impacts on revenue collection for municipalities. When assessed separately, TA has a positive and significant impact on revenue collection while the impact of the MPG remains the same—negative and non-significant contemporary effects and positive and significant lagged effects. During years in which TA was active, participating municipalities collected on average 68 to 101 meticaís more per capita than during years in which there was no TA.

When assessing the impact of MPG with and without TA, it is observed that MPG is only significant when combined with TA. The results for *Grant* and *Grant*_{*t*-1} in specifications (3) and (4) can be interpreted as the impact of MPG before TA implementation, while *TA * Grant* is the effect of MPG with TA, or the MPG effect *after* TA was implemented. It is found that the contemporary effect of MPG in combination with TA is significant and positive, while contemporary MPG before TA is negative and not significant—specification (3) in Table 8. This result indicates that the negative, non-significant effect of contemporary MPGs found in the previous section was driven by the lack of performance during years in which there was no TA offered to municipalities. The lagged effect of MPG without TA is negative, and the lagged effect of MPG with TA is positive, but results are not statistically significant (specification (4) in Table 8).

When TA and MPG are analyzed in cities and towns separately, it is found that in general, MPGs have a more significant influence on revenue collection in towns compared to cities (Table 9 and Table 10). Both when looking at the influence of contemporary (negative) and lagged (positive) effects of MPGs, effects for towns are more extreme. This is true when assessing MPG separately to TA—specification (1) and (2)—as well as when assessing MPG without TA, specifications (3) and (4). The differences in effect of MPG between towns and cities, not related to impact of TA, are statistically significant (see table A-6 in the Appendix). Notably, the effects of contemporary MPG transfers prior to TA implementation are negative and significant for both towns and cities—specification (3) in Table 9 and Table 10 — emphasizing the importance of TA to achieve results. This result clearly indicates that MPGs can be a powerful instrument in incentivizing revenue collection. But if not combined with rigorous technical assistance, it can have undesired consequences, at least in the short term.

The effect of TA, when assessed separately from MPG—specification (1) and (2)—is positive for both cities and towns. The effect of MPG, when combined with TA, is positive and significant for both cities and towns. For every ten meticaís per capita received by cities in MPG, revenue collection increases by 10 or 11 meticaís per capita if combined with TA. Every ten meticaís received per capita by towns, if combined with TA, is associated with an increase in revenue collection between 24 and 60 meticaís per capita. Although the effect is seemingly much larger in towns than cities, the *difference* of TA related impacts for towns and cities is not statistically significant (see table A-6 in the Appendix).

Table 8 The role of TA, and its interaction with MPG, for all municipalities.

Specification number	(1)	(2)	(3)	(4)
Dependent Variable: Own-revenue collection per capita				
<i>Grant per capita</i>	-3.364 (2.577)	n.a.	-4.386 (2.713)	n.a.
<i>Grant per capita</i> _{t-1}	n.a.	2.959* (1.663)	n.a.	-0.028 (0.603)
<i>TA * 3CP</i>	101.408*** (32.379)	67.892* (35.299)	n.a.	n.a.
<i>TA * Grant per capita</i>	n.a.	n.a.	1.712*** (0.521)	n.a.
<i>TA * Grant per capita</i> _{t-1}	n.a.	n.a.	n.a.	3.546 (2.334)
<i>PRODEM per capita</i>	-0.005 (0.063)	0.007 (0.076)	-0.011 (0.056)	-0.071 (0.129)
<i>Government transfer per capita</i>	0.028 (0.089)	0.189 (0.111)	0.061 (0.092)	0.073 (0.074)
<i>Other transfers per capita</i>	-0.193 (0.126)	-0.368* (0.202)	-0.260* (0.148)	-0.423* (0.216)
<i>Constant</i>	Yes	Yes	Yes	Yes
Observations	135	115	135	115
within R-squared	0.357	0.285	0.329	0.420
between R-squared	0.146	0.123	0.125	0.045
overall R-squared	0.016	0.152	0.001	0.171
Rho	0.722	0.667	0.750	0.679
Municipalities	23	23	23	23

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

n.a. = not applicable

Table 9 The role of TA and its interaction with MPG, for cities.

Specification number	(1)	(2)	(3)	(4)
Dependent Variable: Own-revenue collection per capita				
<i>Grant per capita</i>	-0.363 (0.267)	n.a.	-1.014** (0.326)	n.a.
<i>Grant per capita</i> _{t-1}	n.a.	0.798 (0.512)	n.a.	0.422 (0.697)
<i>TA * 3CP</i>	86.447*** (24.077)	72.736*** (16.779)	n.a.	n.a.
<i>TA * Grant per capita</i>	n.a.	n.a.	1.147* (0.535)	n.a.
<i>TA * Grant per capita</i> _{t-1}	n.a.	n.a.	n.a.	1.052* (0.501)
<i>PRODEM per capita</i>	-0.276*	-0.255**	-0.264**	-0.223*

	(0.131)	(0.109)	(0.117)	(0.104)
<i>Government transfer per capita</i>	0.199**	0.157**	0.263***	0.220**
	(0.064)	(0.059)	(0.071)	(0.071)
<i>Other transfers per capita</i>	-0.042**	-0.141***	-0.073***	-0.196***
	(0.014)	(0.023)	(0.008)	(0.019)
<i>Constant</i>	Yes	Yes	Yes	Yes
Observations	66	55	66	55
within R-squared	0.500	0.480	0.350	0.371
between R-squared	0,0037	0,0388	0,0012	0,0345
overall R-squared	0,0502	0,0003	0,0394	0,0006
Rho	0,8834	0,9153	0,8525	0,9021
Municipalities	11	11	11	11

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

n.a. = not applicable

Table 10 The role of TA and its interaction with MPG, for towns.

Specification number	(1)	(2)	(3)	(4)
Dependent Variable:	Own-revenue collection per capita			
<i>Grant per capita</i>	-5.856*	n.a.	-7.272**	n.a.
	(3.126)	n.a.	(2.610)	
<i>Grant per capita_{t-1}</i>	n.a.	4.127**	n.a.	-1.309
		(1.765)		(0.762)
<i>TA * 3CP</i>	96.215**	90.694	n.a.	n.a.
	(43.189)	(108.549)		
<i>TA * Grant per capita</i>	n.a.	n.a.	2.427**	n.a.
			(0.809)	
<i>TA * Grant per capita_{t-1}</i>	n.a.	n.a.	n.a.	5.971*
				(3.221)
<i>PRODEM per capita</i>	0.068	0.116	0.073	0.069
	(0.045)	(0.073)	(0.047)	(0.060)
<i>Government transfer per capita</i>	-0.077	0.228	-0.077	-0.021
	(0.107)	(0.151)	(0.088)	(0.081)
<i>Other transfers per capita</i>	-0.314***	-0.614**	-0.444***	-0.688**
	(0.058)	(0.244)	(0.059)	(0.229)
<i>Constant</i>	Yes	Yes	Yes	Yes
Observations	69	60	69	60
within R-squared	0.524	0.336	0.547	0.576
between R-squared	0.874	0.775	0.855	0.037
overall R-squared	0.043	0.527	0.067	0.314
Rho	0.861	0.291	0.891	0.616
Municipalities	12	12	12	12

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

n.a. = not applicable

Discussion and conclusions

The 3CP is part of a response of the Mozambican government to strengthen fiscal decentralization to help manage increasing demands in cities due to rapid urbanization, climate change, and other challenges. This paper assesses the impact of an MPG and TA program, financed under the World Bank-funded 3CP. The objective of the program was to strengthen fiscal autonomy and institutional capacity of Mozambican municipalities by providing MPGs and an ambitious TA program to the municipalities. The MPGs transferred resources to the municipalities based on performance indicators such as increase in revenue collection and land registration, providing a financial incentive for municipalities to improve performance. The program measured success in monitoring the municipalities revenue collection. Revenue collection is also the main variable used to assess the effect of the program in this study.

A new panel data set with public finance information from 25 Mozambican municipalities was provided by MEF and is the primary data source for the analysis. The data set includes annual revenue and expenditure data between 2013 and 2018. The first round of performance grants was transferred to the municipalities in 2013, allocated on population weightage. Performance indicators were applied to the grant allocation starting in 2015, allowing us to use 2013 as a base year. The data set was particularly adequate for impact assessment since 12 of the municipalities in the data set participated in the 3CP program, and 15 did not, allowing for comparison.

The assessment finds that the MPG is successful in increasing revenue collection among participating municipalities. The effect is lagged. For every ten meticaís received in performance grants in year $t - 1$, revenue collection increases by 24 to 37 meticaís year t , depending on the specification. Every ten meticaís received in 3CP grant year $t - 2$, increases revenue collection by 14-16 meticaís. These values do not consider the cost of TA nor account for the role of TA, which, as we also conclude played an important part in increasing municipal revenue collection. Contemporary effects of the MPG are negative, but results are not significant.

The timing of MPG effects indicates that the grant itself is not influencing revenue collection directly by, for example, funding salaries of municipal personnel, but rather by enabling more long-term investments that can improve revenue collection. The result is intuitive since the money is earmarked for capital investments. Since the strongest impact of the MPG happened after one year, we believe that improvements in revenue collection were driven primarily by investments in equipment and technology, rather than increasing the tax base, which would take much longer time in a context like Mozambique. But we cannot rule out that the lagged effect is also driven by delayed changes in incentive structure of revenue collection for municipalities influenced by the design of the performance-based allocation of the grant.

The study also assessed the impact of TA on revenue collection. Besides MPGs, the program also provided TA, which consisted of classroom and on-the-job training in urban planning, fiscal management, and taxation. The TA helped municipalities establish processes and strengthen the delivery chain of land management, which in turn supported revenue collection. The study arrived at the following conclusions:

- When analyzing effects of TA and MPGs separately, it is found that, overall, both activities have significant and positive effects on revenue collection. In the years in which TA was active, participating municipalities collected on average 68 to 101 meticaís more per capita than during years when TA was absent.
- When the effect of MPG is assessed with and without TA, it is found that the effect of MPG is only significant when coinciding with TA. And, interestingly, both the effect of contemporary and lagged MPGs are positive when combined with TA.

- TA seems to influence municipalities not only by strengthening municipal capacity to collect revenue, but also by complementing the MPGs by helping municipalities understand the rules of the performance-based allocation system, and therefore incentivize revenue collection.
- However, we are unable to rule out that the grants alone influenced the incentive structure and if this effect coincided with the implementation of TA; some of the effects of TA found in the analysis could be attributed to a changing incentive structure.

While the effect of TA is consistent for towns and cities, the impact of MPGs is much larger for towns than cities. Every ten meticaís received per capita by towns, if combined with TA, is associated with an increase in revenue collection between 24 and 60 meticaís per capita. Cities on the other hand present a different ratio; for every ten meticaís per capita received by cities in MPG, if combined with TA, increases revenue collection by 10 or 11 meticaís per capita. Notably, however, while these effects are significant for both towns and cities, separately, the difference in effects between towns and cities is not significant. The effects of MPG outside of TA—whether assessed separately or without TA—are also much larger for towns than for cities, and those differences are statistically significant. We believe that this is because the funds from the MPG play a more important role in municipal budgets for towns and therefore are more influential.

Regarding the effect of other external transfers, the study finds that government transfers have a contemporary and positive effect on revenue collection. This suggests, intuitively, that government transfers, the most important source of income for municipalities in Mozambique, are supporting municipal revenue collection more directly by financing salaries and day-to-day operations that help municipalities generate revenue.

The results are consistent with literature identifying a positive relationship between unconditional transfers and revenue collection in other African countries (Caldeira and Rota-Graziosi, 2014; Brun and Sanogo, 2017; Brun and Khdari, 2016). For transfers to have a positive effect on local government capacity, relative discretion seems to be an important factor. In the 3CP program, municipalities were limited to using the resources for capital investments and project selection was reviewed by the implementation unit at MAEFP. But they were able to spend the resources freely across sectors, which could help the municipalities invest according to local needs. The conditionality, while relatively lax, could also explain why effects of the grant were lagged.

This is the first robust impact assessment of a performance grant program in a developing context, and it shows that MPGs, when combined with TA, can help incentivize and enable local governments to increase revenue collection. Overall, investing in MPG makes sense from a cost-effectiveness perspective, especially for smaller municipalities. But should be combined with a TA program that can support capacity building in financial and fiscal management, as well as urban development and investment planning. Due to limited data, we are unable to assess the sustainability of effects after a project closes. As more projects are being implemented and more public data become available in developing countries, it will be possible to explore longevity results of MPG programs.

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Appendix

Box A-1. Urban land management and taxation in Mozambican municipalities

Box figure A-1.1 describes the delivery chain scheme of urban land management and land-based taxation in municipalities in Mozambique. These are the steps that must be followed to obtain Land Use Rights (DUAT), get a building on this land licensed, and start paying property taxes (IPRA). The municipalities are supposed to only issue DUATs in areas of the municipalities that are covered by an urban development plan. For a prospective land user of a plot of land under such an urban plan, the first step is to have the municipality identify or validate the boundaries of the plots and register it—land parceling and land registration. The land user then requests temporary formalization of the land use right from the municipality to put the land to a defined use within a defined time period—ownership formalization. The land users need to apply for a construction license to be able to build on the land. The land user then has three years to build the planned construction on the land, in line with the intended use for the plot, for example, commercial or residential. Once construction is completed, the land user can obtain an occupancy licensing from the municipality. After this step, the property is ready to be registered by the municipality; under this step the user receives a property license and its record in the municipal property cadaster is completed. In a subsequent step, the municipality transfers the relevant property information to the taxpayers register and starts invoicing the user for IPRA. The initial steps in this delivery chain from land parceling up to property licensing are under the responsibility of the municipality’s urban planning and land use management department, while the latter steps from transferring property information into the taxpayer’s register to invoicing and payment are under the purview of the municipality’s finance and taxation department.

Box figure A-1.1. Delivery chain of land use management.



An important part of technical assistance (TA) provided to the municipalities as part of the program were the manuals that were created to guide municipal staff how to carry out each of these steps, as well as the associated bookkeeping. As a result, the project saw not only an increase in the number of DUATs issued, but also the number of land concessions, construction, and land use permits. All the municipalities started using Microsoft Excel spreadsheets to monitor and report the process.

Source: World Bank, 2021 (Implementation Completion Report (Report No: ICR00004913)

Table A-1. List of municipalities and goals reached for year with available data.

Municipality	2015		2016		2017
	One goal reached	Two goals reached	One goal reached	Two goals reached	One goal reached*
Catandica		n.a.		n.a.	
Chibuto	n.a.			n.a.	n.a.
Chimoio		n.a.	n.a.		
Chokwe	n.a.	n.a.	n.a.	n.a.	n.a.
Gondola	n.a.	n.a.		n.a.	
Gorongosa		n.a.		n.a.	n.a.
Inhambane	n.a.		n.a.		
Macia	n.a.			n.a.	n.a.
Mandlakazi		n.a.	n.a.		n.a.
Manhiça	n.a.		n.a.		
Manica		n.a.		n.a.	
Massinga	n.a.		n.a.		
Matola	n.a.		n.a.		
Maxixe	n.a.			n.a.	
Moatize		n.a.		n.a.	
Namaacha		n.a.	n.a.		n.a.
Tete	n.a.	n.a.	n.a.	n.a.	n.a.
Ulongue		n.a.	n.a.		n.a.
Vilankulo	n.a.			n.a.	n.a.
Xai Xai		n.a.		n.a.	n.a.

Yellow indicates that the municipality received 36 percent in additional funds, on top of base transfer. Green indicated that the municipality received 72 percent in additional funds, on top of base transfer.
 *In 2017, only the performance goal related to increase revenue collection was used. That year municipalities received the maximum amount for reaching only one goal (while in other years they had to achieve two goals).
 n.a. = not applicable

Table A-2. TA on-the-job training visits by municipalities.

Municipality	Urban planning and land use management	Financial and fiscal management	Internal control and taxation
Catandica	12	11	5
Chibuto	13	12	9
Chimoio	17	15	9
Chokwé	15	14	7
Gondola	18	17	10

Gorongosa	14	12	6
Inhambane	11	10	5
Macia	12	10	8
Mandlakazi	13	12	9
Manhiça	13	11	5
Manica	17	15	9
Massinga	12	11	3
Matola	12	11	6
Maxixe	12	10	5
Moatize	10	10	4
Namaacha	12	11	7
Tete	10	10	4
Ulongue	10	10	4
Vilankulo	12	11	6
Xai Xai	12	11	7

Table A-3. List of investments financed and implemented by municipalities using MPG.

Area of investment	Investments made
Infrastructure	<ul style="list-style-type: none"> · 72.3 km of roads and drainage in 13 municipalities, · 5 bridges in four municipalities, · 36 water points in eight municipalities, · 19 markets in seven municipalities, · 6 public bathroom facilities in two municipalities.
Technological upgrading and equipment	<ul style="list-style-type: none"> · 30 computers in four municipalities · 3 municipalities invested in GIS data collection tools · 47 motorcycles and cars in seven municipalities · 38 trucks, tractors, vans, and other heavy vehicles for solid waste management in 19 municipalities · 98 containers and trailers for solid waste collection in six municipalities.

Figure A-1. Use of MPG resources by category

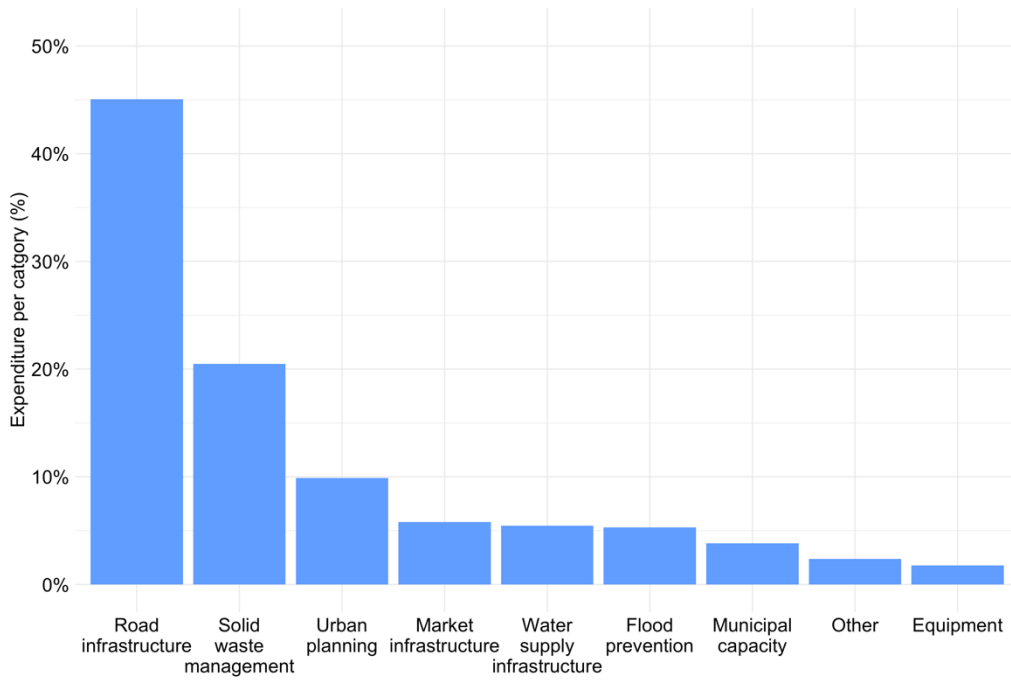


Figure A-2. Use of MPG resources by category and town and city

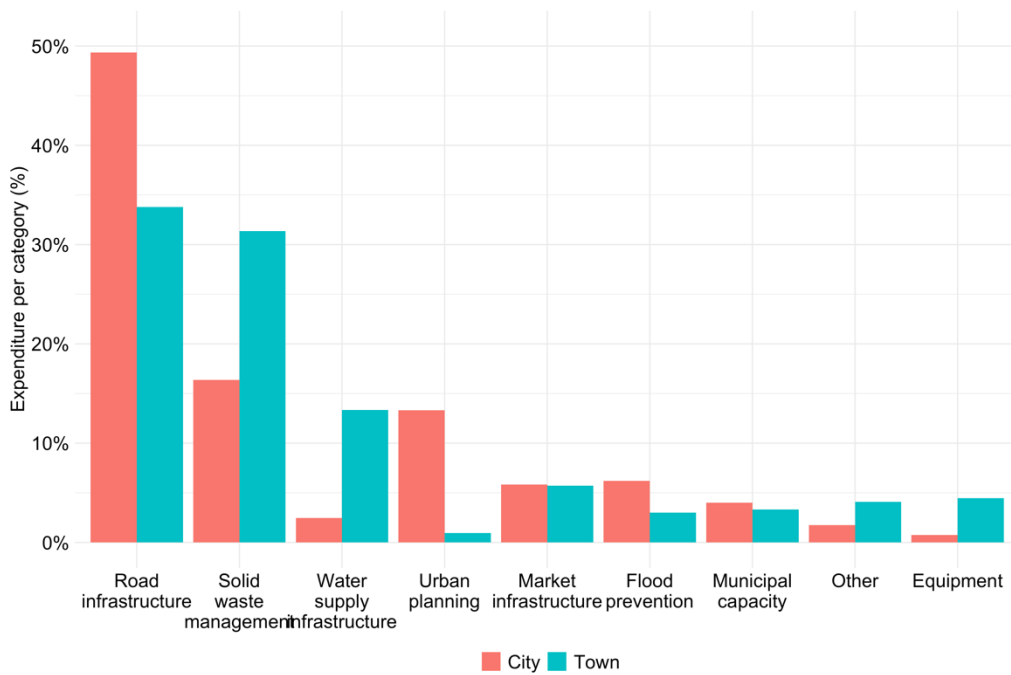


Table A-4. Determinants of IPRA collection at the municipal level, using robust, regular, and bootstrapped standard errors.

Specification number:	(1)	(2)	(3)	(4)
Dependent Variable:	Own-source revenue			
<i>Grant per capita</i>	-0.059*	-0.057	-0.071**	n.a.
	(0.029)	(0.038)	(0.031)	
<i>Grant per capita</i> _{t-1}	n.a.	0.026	-0.040	-0.014
		(0.059)	(0.067)	(0.064)
<i>Grant per capita</i> _{t-2}	n.a.	n.a.	-0.126	-0.091
			(0.137)	(0.138)
<i>PRODEM per capita</i> _t	0.015*	0.019*	0.017*	0.018*
	(0.008)	(0.009)	(0.009)	(0.010)
<i>Government transfer per capita</i> _t	0.027***	0.031***	0.027***	0.027***
	(0.008)	(0.009)	(0.008)	(0.009)
<i>Other transfers per capita</i> _t	-0.023	-0.043	-0.051*	-0.048
	(0.021)	(0.030)	(0.029)	(0.031)
<i>Constant</i>	Yes	Yes	Yes	Yes
Observations	137	117	95	95
R-squared	0.143	0.209	0.233	0.215
between R-squared	0.052	0.078	0.113	0.109
overall R-squared	0.004	0.014	0.029	0.030
Rho	0.732	0.810	0.852	0.850
Municipalities	24	24	24	24

Standard errors (se) in parentheses

* p<0.1, ** p<0.05, *** p<0.01

n.a. = not applicable.

Table A-5. Lagged effects of other transfers, using robust, regular, and bootstrapped standard errors.

Specification number:	(1)	(2)	(3)	(4)
Dependent Variable:	Own-source revenue			
<i>Grant per capita</i>	-2.860 (2.320)	-2.512 (2.134)	-2.060 (1.915)	n.a.
<i>Grant per capita</i> _{t-1}	n.a.	2.382** (1.016)	3.114* (1.633)	3.924 (2.363)
<i>Grant per capita</i> _{t-2}	n.a.	n.a.	1.606* (0.832)	2.425** (1.129)
<i>PRODEM per capita</i> _{t-1}	0.008 (0.097)	0.026 (0.125)	-0.029 (0.153)	-0.037 (0.135)
<i>Government transfer per capita</i> _{t-1}	0.029 (0.073)	0.018 (0.066)	0.041 (0.100)	0.116 (0.149)
<i>Other transfers per capita</i> _{t-1}	0.055 (0.096)	0.058 (0.084)	-0.048 (0.092)	-0.099* (0.055)
Constant	Yes	Yes	Yes	Yes
Observations	125	125	100	100
R-squared	0.196	0.278	0.341	0.245
between R-squared	0.077	0.082	0.194	0.183
overall R-squared	0.000	0.144	0.246	0.173
Rho	0.691	0.617	0.605	0.693
Municipalities	25	25	25	25

* p<0.1 ** p<0.05 *** p<0.01
n.a. = not applicable.

Table A-6. The role of TA and MPG, using regular and bootstrapped standard errors, including town and city specific effects.

Specification number:	(1)	(2)	(3)	(4)
Dependent Variable:	Own-source revenue collection			
<i>Grant per capita</i>	-0.363 (0.260)	n.a.	-1.014*** (0.318)	n.a.
<i>Town * Grant per capita</i>	-5.493* (3.073)	n.a.	-6.259** (2.577)	n.a.
<i>Grant per capita_{t-1}</i>	n.a.	0.798 (0.498)	n.a.	0.422 (0.678)
<i>Town * Grant per capita_{t-1}</i>	n.a.	3.329* (1.800)	n.a.	-1.731 (1.009)
<i>TA * 3CP</i>	86.447*** (23.443)	72.736*** (16.314)	n.a.	n.a.
<i>Town * TA * 3CP</i>	9.768 (48.366)	17.957 (107.679)	n.a.	n.a.
<i>TA * Grant per capita</i>	n.a.	n.a.	n.a.	1.052** (0.487)
<i>Town * TA * Grant per capita</i>	n.a.	n.a.	n.a.	4.919 (3.195)
<i>TA * Grant per capita</i>	n.a.	n.a.	1.147** (0.521)	n.a.
<i>Town * TA * Grant per capita</i>	n.a.	n.a.	1.280 (0.948)	n.a.
<i>PRODEM per capita</i>	-0.276** (0.128)	-0.255** (0.106)	-0.264** (0.114)	-0.223** (0.101)
<i>Town * PRODEM per capita</i>	0.344** (0.135)	0.371*** (0.127)	0.337** (0.123)	0.292** (0.117)
<i>Government transfer per capita</i>	0.199*** (0.063)	0.157** (0.057)	0.263*** (0.069)	0.220*** (0.069)
<i>Town * Government transfer per capita</i>	-0.275** (0.122)	0.072 (0.159)	-0.339*** (0.111)	-0.241** (0.105)
<i>Other transfers per capita</i>	-0.042*** (0.013)	-0.141*** (0.023)	-0.073*** (0.008)	-0.196*** (0.019)
<i>Town * Other transfers per capita</i>	-0.272*** (0.058)	-0.473* (0.240)	-0.371*** (0.058)	-0.492** (0.225)
<i>Constant</i>	Yes	Yes	Yes	Yes
Observations	135	115	135	115
R-squared	0.521	0.350	0.522	0.556
between R-squared	0.021	0.101	0.024	0.075
overall R-squared	0.009	0.139	0.003	0.245
Rho	0.875	0.731	0.899	0.715
Municipalities	23	23	23	23