

The Role of Revenue Decentralization in Disciplining Local Government Spending

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Current Draft: May 16, 2024

Abstract

This study examines the role of revenue decentralization in disciplining local government spending. We ask whether the Italian *Imposta Municipale Unica* (IMU) tax reform of 2012, which replaced national transfers with local property taxes, affected local government cost management. We find that municipalities more affected by the reform paid significantly less for public works after the reform without incurring greater delays or cost overruns. We also find evidence that the cost savings resulted from local officials achieving greater price discounts and awarding more contracts to non-local vendors. Consistent with increased accountability explaining the improvements in cost savings, our results are stronger for municipalities with incumbent mayors facing re-election.

We thank John Barrios (discussant), Jonathan Bonham, Christine Cuny, Emmanuel De George, Ed deHaan, Fabrizio Ferri, Henry Friedman, Dong Gil Kim, Daniele Macciocchi, Mark Maffett, Brad Nathan, Suhas Sridharan, Xixi Xiao and workshop participants at MIT, Rutgers University, University of Chicago, University of Miami and University of Rochester for helpful comments and suggestions. We thank Aarti Malik for excellent research assistance. D. Samuels thanks the James S. Kemper Foundation for generous financial support. *E-mails*: marco.errico@esade.edu (M. Errico), sjhuber@rice.edu (S. Huber), delphine.samuels@chicagobooth.edu (D. Samuels), anthony.welsch@chicagobooth.edu (A. Welsch).

1. Introduction

Local governments seek to improve the welfare of their citizens by providing a wide range of essential public goods and services, such as education, transportation, utilities, and infrastructure. In OECD countries, local government spending accounts for around 20% of total government expenditures and 10% of GDP. Although governments do not focus on maximizing or reporting profits, efficient use of resources remains crucial for public officials, mirroring the cost management priorities of for-profit businesses (Granoff, Khumawala, Calabrese, and Smith, 2016). Yet, numerous instances of excessive spending on public services and infrastructure highlight a concerning lack of focus on cost management within government (Khan, 2017).¹

We ask whether and to what extent local government cost management—i.e., the practice of acquiring, maintaining, and delivering public goods and services in the most cost effective manner (Khan, 2017)—is affected by revenue decentralization. Local governments rely on various sources of funding, including own-source revenues (e.g., property taxes) and transfers from the central government. Revenue decentralization shifts a portion of revenue generating responsibilities from central to local governments, causing local governments to rely more on local taxation than inter-governmental transfers.² Many OECD countries have recently enacted revenue decentralization measures. For example, from 1995 to 2022, the share of country-wide tax revenue collected by local governments increased by 10% in the OECD, and by 120% (from 5% to 11%) in Italy (OECD, 2022). Prior studies suggest revenue decentralization can significantly affect local government spending decisions (Shi and Tulli, 2022; Bianchi, Giorcelli, and Martino, 2023). Whereas these studies examine changes in the

¹Notorious examples of public sector cost mismanagement include waste management services in Rome (Reuters, 2016), water meters in Montreal (Gyulai, 2014), and the “Big Dig” highway artery in Boston (Bajari, Houghton, and Tadelis, 2014).

²We are specifically interested in revenue decentralization arising from an increase in local tax revenues.

amount and type of government expenditures, we instead focus on how revenue decentralization affects the cost of government expenditures (i.e., the price paid by local authorities in exchange for public goods and services), which is a key feature of fiscal responsibility and public spending efficiency.

The effect of revenue decentralization on the cost of public expenditures is unclear ex ante. On one hand, revenue decentralization could improve local government cost management because it can make citizens more able or more willing to hold local officials accountable. Citizens are much more likely to be informed about local tax revenues than transfer revenues, which are more complex and difficult to track. More information about local revenues facilitates monitoring, which makes it more difficult for local officials to engage in rent-seeking behavior (e.g., by leading the quiet life or colluding with local public vendors) (e.g., [Besley and Smart, 2007](#); [Gadenne, 2017](#)). Moreover, citizens could demand additional public services and infrastructure improvements in exchange for paying higher local taxes ([Davis and Hayes, 1993](#)), which can further motivate officials to better manage costs and free up resources to meet higher demand (e.g., [Gadenne, 2017](#)). Finally, an increase in local taxes after revenue decentralization could motivate citizens to “protect their own money” by holding public officials accountable for responsible spending (e.g., [Davis and Hayes, 1993](#); [Paler, 2013](#); [Persson and Rothstein, 2015](#)).

On the other hand, revenue decentralization may not affect, or even worsen public sector cost mismanagement. Local officials (particularly in small or understaffed governments) often lack the necessary competencies to manage costs efficiently (e.g., [Khan, 2017](#); [Guccio, Pignataro, and Rizzo, 2014](#)). In this case, if local authorities increase public expenditures in response to heightened demand from citizens, they may not do so efficiently. Furthermore, if officials face political backlash for increasing taxes, they may compensate local businesses and

citizens by acquiring goods and services from them at higher cost (e.g., [Botwinick, Efron, and Huang, 2009](#); [Hackenbrack and Shor, 2012](#)).

An important empirical challenge in estimating the effects of revenue decentralization is that any change in a locality’s reliance on own-share revenues relative to intergovernmental transfers can also affect the locality’s total amount of revenue. This makes it difficult to attribute any results to the effect of decentralization (i.e., changes in the *source* of revenue) per se.³ To cleanly identify the effect of revenue decentralization, we use a methodology developed by [Shi and Tulli \(2022\)](#) in the context of a 2012 Italian revenue decentralization reform. The reform replaced national transfers to municipalities with a new local property tax called the *Imposta Municipale Unica* (or “IMU”). In this setting, revenue decentralization (1) reduced transfers from the central government to local governments, and (2) required local governments to replace lost intergovernmental transfers with local taxes. Thus, the setting allows us to hold local government revenues constant and estimate the effect of revenue decentralization—i.e., an increase in a municipality’s “own revenue share”—on the cost of local government spending.

Our identification strategy leverages the institutional features of the IMU reform. Specifically, the IMU increased municipalities’ tax capacity by (i) increasing the valuation of the tax base, (ii) adding the primary residence to the tax base, and (iii) adding a range of new tax rates by building type. Because municipalities had discretion in choosing their new tax rates from a pre-determined range, a portion of the actual IMU revenue collected was likely endogenous to local economic conditions, which could confound any observed changes in government spending. However, because the reform was intended to be budget-neutral from the perspective of municipalities, the national government cut each municipality’s national transfers

³For example, an increase in local taxation, *ceteris paribus*, increases both a locality’s reliance on own-share revenues (i.e., revenue decentralization) and its total revenues.

by an amount equal to the municipality's *expected* additional property tax revenue, based on its pre-reform tax base and standardized rates for each building type.⁴ The standardized tax rates were set nationally, and the valuation of their tax base was determined nearly two decades before the reform, so municipalities had no control over the magnitude of their transfer cuts. Moreover, although the IMU reform was initially scheduled to be implemented in 2014, it was unexpectedly moved up to 2012 due to Italy's sovereign debt crisis. This rapid timeline gave municipalities limited opportunity to manipulate the composition of their tax base between the reform announcement and its enactment. These features of the reform allow us to use the standardized additional property tax revenue projected by the national government (which is equal to the national transfer cuts) as a source of exogenous variation in the change in municipalities' own revenue share.

Using the standardized additional property tax revenue, we examine the effect of a municipality's change in own revenue share on the price paid for local public works in an instrumented difference-in-differences design.⁵ Public works in Italy largely consist of expenditures on infrastructure such as civic and industrial buildings, roads and other transportation systems, restoration of historical buildings, and technological systems. To measure the price paid for local public works, we use a database of Italian public works auctions that allows us to observe the winning discount offered by vendors, the final cost of contracts, and several other features and outcomes of the procurement process.

⁴For example, the range of possible tax rates for secondary residences was between 0.46% and 1.06%, and the standardized rate was equal to the midpoint, i.e., 0.76%. If a municipality set the new tax rates equal to the standardized rate for each building type, its amount of additional property tax revenue would be exactly equal to the amount of its national transfer cuts (i.e., budget-neutral). If it instead set rates above (below) the standardized rates, its additional property tax revenue would be above (below) its amount of transfer cuts.

⁵Although there are several ways local governments can manage costs, we focus on the government's strategic procurement practices to obtain goods and services at competitive prices and negotiate favorable contract terms.

We find that a one percentage point increase in own revenue share significantly increases the final contract price discount by 1.2 percent. A back-of-the-envelope calculation suggests that the average increase in own revenue share in our sample (7.5 percentage points) leads to a 9 percent increase in the final price discount, for a EUR 3,197 decrease in the final price per contract. For context, [Coviello and Gagliarducci \(2017\)](#) find that an additional mayoral term in office increases the final price of the average public works contract in Italy by EUR 3,426. Our estimates are therefore commensurate with prior studies examining how political incentives affect government spending.

Next, we turn our attention to two auction features that could lead to this reduction in contract costs. We find that an increase in own revenue share makes it more likely that municipalities award contracts solely based on price (as opposed to other, more discretionary criteria) and significantly increases the winning bid discount at the award stage. These results suggest that the reform caused local officials to more seriously consider price at the contract award stage and negotiate lower prices.

To assess whether lower prices came at the cost of performance, we next examine how the IMU reform affected contract execution. Research finds that prioritizing prices over other contract award criteria (e.g., technical specifications or vendor location) can lead to more subsequent execution problems in the presence of price-performance trade-offs (e.g., [Cameron, 2000](#); [Bajari et al., 2014](#); [Decarolis, 2014](#); [Duguay, Rauter, and Samuels, 2023](#)). By contrast, we do not find any evidence of an increase in unexpected contract modifications, performance delays, or cost overruns after the reform. Instead, we find some evidence of a *decrease* in these execution outcomes. These results are consistent with local officials procuring more affordable public works without sacrificing contract performance.

To better understand the mechanism explaining our results, we examine how the reform affected vendor selection. First, we find no evidence that an increase in own revenue share affects the number of bids per contract, suggesting that our results are not driven by an increase in competition among vendors. Second, we consider officials' preferences for vendor location. Prior research finds that Italian municipalities are more likely to award contracts to local vendors and do so at higher prices, especially when the mayor has a longer tenure in office ([Coviello and Gagliarducci, 2017](#)). Thus, one way local officials might achieve greater price discounts is by reducing favoritism towards local vendors. Consistent with this notion, we find that an increase in own revenue share leads to a significantly greater geographical distance between the awarding municipality and vendor location, and that public officials are more likely to award contracts to vendors located in other municipalities.

We next examine how our results vary with public officials' political incentives. Political agency theories predict that public officials engage in less rent-seeking actions when subject to the discipline of the electoral process (e.g., [Besley, 2006](#)). For example, prior work finds that Italian mayors spend more on public services and less on remuneration when facing greater political competition (e.g., [Shi and Tulli, 2022](#); [Bianchi et al., 2023](#)). To the extent mayors can avoid reporting deficits or other budget issues prior to re-election, they can increase their re-election prospects ([Brender and Drazen, 2008](#); [Granoff et al., 2016](#)). Consistent with these arguments, we find that our results are concentrated in municipalities where the incumbent mayor is up for re-election—i.e., an average increase in own revenue share of 7.5 percentage points leads to a 24 percent increase in the final price discount, for a savings of EUR 8,487 per contract. These results support the notion that decentralized revenues discipline local government spending by increasing officials' accountability towards their citizens, particularly

when the benefits of fiscal responsibility are expected to be highest.

This paper adds to the literature on the effects of revenue decentralization on local government spending. Prior studies primarily focus on changes in types of expenditures (e.g., municipal services versus administrative expenses) rather than cost management (Guccio et al., 2014; Shi and Tulli, 2022; Bianchi et al., 2023). Our study uniquely leverages detailed contract data that allow us to directly estimate changes in the price paid for certain public goods. By focusing on contract prices, we can gauge how efficiently resources are deployed without making assumptions about the benefits of certain expenditures (e.g., education) over others (e.g., administration), which may have payoffs that accrue over various time periods, making it difficult to measure welfare effects.

We also contribute to a growing literature on local procurement. Public procurement expenditures are substantial, accounting for 10% to 20% of GDP in OECD countries, and the majority of government contracts are directly awarded by subnational authorities.⁶ Although decentralized procurement has the advantage of better servicing citizens' local needs and preferences (e.g., Besley and Coate, 2003; Faguet, 2004), recent findings suggest it can come with significant additional costs relative to a centralized system. In contrast to national or federal procurement authorities, which often impose extensive screening and monitoring procedures to help obtain the best value for taxpayers' money (e.g., Samuels, 2021), local authorities' procedures are far less extensive. Municipalities often experience lower discounts, greater delays, and more cost overruns in public works compared to regional or national governments (e.g., D'Alpaos, Moretto, Valbonesi, and Vergalli, 2013; Decarolis, 2014; Guccio,

⁶For example, in Italy, municipalities are in charge of allocating around 55% of all public works contracts, representing 32% of total contract volume, and subnational governments account for 63% of overall public procurement spending in the OECD (OECD, 2019).

Pignataro, and Rizzo, 2012), particularly when public officials are less compensated or collude with local vendors (e.g., Coviello and Gagliarducci, 2017; Chiappinelli, 2020). Our findings suggest that decentralized revenues can help reduce these inefficiencies by lowering local procurement costs through greater price discounts and reduced favoritism towards local vendors.

Finally, our study provides important insights for policymakers and monitors of government behavior. Subnational governments rely heavily on intergovernmental transfers, yet there is ongoing debate regarding the benefits and costs of such transfers.⁷ Although intergovernmental transfers can provide valuable resources for subnational governments, our study suggests that one benefit of increasing local governments' own-source revenue is improved cost management by local officials through increased transparency and accountability. Because subnational governments cannot directly determine monetary policy or freely issue debt, the increased cost savings can free up resources for the government to provide additional public goods and services.

We highlight several important caveats in our study. First, we provide evidence on the effects of one specific type of revenue decentralization—i.e., an increase in local taxes with a corresponding decrease in central transfers. Because our mechanism arises through an increase in local taxes causing greater local government monitoring by citizens, we would not necessarily expect the same effect in other decentralization settings (e.g., a decrease in local taxes coupled with a greater decrease in transfers). Moreover, because our setting does not feature a change in total revenue, it is unclear whether our results would generalize to settings

⁷For example, the 2022 average share of intergovernmental revenues to total revenues for subnational governments in OECD countries was roughly 48% (OECD, 2022). In the U.S., state and local governments receive roughly 25-30% of their revenues from intergovernmental transfers (U.S. Census Bureau, 2021). The OECD Network on Fiscal Relations provides ongoing policy analysis on the relationship between national and subnational governments, and its impact on efficiency, equity, and macroeconomic stability.

with a mere increase in local tax revenues, which may relax local officials' budget constraints and attenuate improvements in public cost management.

2. Conceptual Underpinnings

Governments generally operate under a budget constraint with the objective of providing citizens with essential goods and services to improve quality of life, including infrastructure, utilities, education, and social order.⁸ This objective requires elected officials to practice fiscal responsibility by making prudent resource allocation decisions. Although measuring the net welfare gains of public goods and services is inherently challenging, governments can nonetheless practice fiscal responsibility by managing costs effectively. It is therefore important to understand the incentives for public officials to manage costs more effectively.

One potential determinant of local officials' cost management incentives is the source of the government's revenues. Governments largely obtain resources through taxation (i.e., own-source revenue) and intergovernmental transfers. Many governments have recently enacted revenue decentralization measures that devolve revenue generating responsibilities from central to local governments. The local government typically experiences a cut in intergovernmental transfers and, in order to provide a similar level of public services, must increase its own-source revenue through higher local taxes.

Prior studies provide evidence that revenue decentralization can significantly affect government spending decisions (Shi and Tulli, 2022; Bianchi et al., 2023). However, these studies typically focus on changes in types of expenditures rather than costs. Specifically,

⁸The number of countries with balanced budget rules in 2021 was 93, up from just six countries in 1985 (Davoodi, Elger, Fotiou, Garcia-Macia, Han, Lagerborg, and Lam, 2022).

the literature finds that, both in developed and developing economies, fiscal decentralization reforms lead to a shift in total expenditures and a reallocation of resources to different types of expenditures. For example, [Gadenne \(2017\)](#) shows that an increase in the tax capacity of Brazilian municipalities results in a greater number of classrooms in municipal schools and higher quality infrastructure (i.e., including computers, internet and sports facilities). [Martinez \(2017\)](#) finds consistent evidence that increases in municipal property tax revenue due to updates of local cadastres result in significant improvements in educational enrollment in Colombia. In Italy, [Shi and Tulli \(2022\)](#) use aggregate financial data to document that revenue decentralization increased total municipal expenditures, expenditures on services and administration, but did not increase expenditures for public goods or remuneration paid to elected officials. [Bianchi et al. \(2023\)](#) find evidence that an older Italian fiscal decentralization reform reduced total municipal spending per resident, reduced spending on administration and transportation, and increased spending on welfare programs, education, and police.

These prior findings are grounded in political agency theories that model public officials as agents who engage in rent-seeking actions (e.g., low effort or corruption), subject to the discipline of the electoral process. Effort-averse or collusive local officials may therefore procure suboptimal goods and services (e.g., services that are of lower quality or are priced too high) ([Coviello and Gagliarducci, 2017](#); [Decarolis, Giuffrida, Iossa, Mollisi, and Spagnolo, 2020](#)). To the extent revenue decentralization makes citizens more able or more willing to hold local officials accountable, revenue decentralization could improve local government cost management.

Revenue decentralization could improve citizens' ability to monitor local officials by reducing information asymmetries over the public budget (e.g., [Besley and Smart, 2007](#)).

Specifically, citizens are more likely to be informed about increases in local tax revenues that they personally pay to the local government versus increases in revenues transferred from the central government that are often based on complex formulas and have a much weaker connection with taxpayer dollars (e.g., [Filimon, Romer, and Rosenthal, 1982](#); [Shah, 1995](#); [Sandbu, 2006](#); [Gadenne, 2017](#); [Martinez, 2017](#)). Observing an increase in local taxes following revenue decentralization can thus facilitate monitoring by citizens and make it more difficult for local officials to mismanage public spending.

An increase in local taxes following revenue decentralization can also make citizens more willing to monitor local officials for several reasons. Citizens could demand additional public services and infrastructure improvements in exchange for paying higher local taxes ([Davis and Hayes, 1993](#)), which can further motivate officials to better manage costs and free up resources to meet higher demand ([Gadenne, 2017](#)). Similarly, an increase in property taxes lowers disposable income, which can increase the marginal utility of public goods and services and encourage citizens to monitor their provision ([Martinez, 2017](#)). Finally, social norms and psychological factors can also play a role. For example, the mishandling of tax revenues might be perceived by taxpayers as a significant breach of fairness and reciprocity norms, potentially increasing their inclination to impose costly penalties ([Fehr and Gächter, 2000](#); [Davis and Hayes, 1993](#); [Persson and Rothstein, 2015](#)). Consistent with this argument, prior studies find that participants in lab experiments are more willing to monitor the government's budget and impose costly penalties on public officials for the misallocation of resources when the government is funded by taxes compared to other sources ([Paler, 2013](#); [Martin, 2014](#)).⁹ In

⁹Additionally, based on interviews of Ugandan public officials, NGO representatives, and journalists, [Persson and Rothstein \(2015\)](#) conclude that the “level of (visible) taxation [...] plays a decisive role in holding public officials accountable” because citizens feel an increased sense of ownership of the state and desire to keep track of their own money.

sum, decentralization should cause citizens to pressure local officials to increase effort, reduce favoritism, and ultimately improve spending decisions.

The preceding arguments rely on the assumption that the increase in local taxation was sufficiently salient for citizens to affect public officials' fiscal decisions. This assumption is plausible in our setting for several reasons. First, because tax escrow is uncommon in Italy, the additional property tax represents a large payment of one to two annual installments, which is unlikely to go unnoticed by citizens.¹⁰ Second, the reform was heavily debated by politicians, widely covered by the press, and vastly resented by citizens—primarily due to the new tax on primary residences (Alesina and Paradisi, 2017). Indeed, our search of Italian newspapers on *Factiva* in Panel A of Figure 2 shows a sharp increase in the number of articles covering the IMU around its introduction (i.e., from 281 articles in 2010 to 3,778 articles in 2011, 29,944 articles in 2012 and 54,334 articles in 2013). Panel B shows a similar pattern in the number of articles discussing the IMU in conjunction with (i) mentions of citizen backlash, and (ii) mentions of local officials and public goods or services, illustrating an increase in citizens' expectations and heightened pressure on local officials to provide more or better goods and services following the IMU.¹¹ Finally, a 2012 household survey by the Survey of Household Income and Wealth shows that households believed the increase in property taxes would be long-lasting and remain for at least five years (Oliviero and Scognamiglio, 2019).

This institutional and descriptive evidence suggests that the IMU was a salient increase in

¹⁰Decreto Legislativo 14 Marzo 2011, n.23.

¹¹For example, anecdotal evidence suggests that the IMU caused committees of citizens and businesses to “spring up like mushrooms” in order to protest the IMU (La Nazione, 2012), in part because citizens “do not see a correlation between their economic sacrifices and the services provided by the local administration” (Adnkronos Agenzia, 2012). In response, local officials underscored the importance the IMU in funding essential local public goods and services. For example, the mayor of Rome commented: “If citizens realize the the money coming out of their family budget to pay the tax is reinvested in services [...] they will understand that their money is being well spent” (Ansa, 2013). Similarly, the mayor of Cavriago stated that the only way to complete the local kindergarten, renovate the local elementary school and expand the local shelter is by increasing the IMU (Il Resto del Carlino, 2012). See Appendix B for article excerpts.

local taxation that incentivized public officials to engage in responsible government spending.

However, it is possible that revenue decentralization does not affect, or even exacerbates local government cost mismanagement. Local Italian governments are often too small and resource constrained to afford specialized officials trained in efficiently procuring goods and services (Guccio et al., 2014; Chiappinelli, 2020). Thus, even if local authorities increase (or promise to increase) public expenditures in response to heightened demand from citizens, they may not do so efficiently. Moreover, local businesses and taxpayers may voice concerns about higher taxes reducing wealth and economic growth. In response to increased political pressure, local officials could award government contracts to local businesses either as a form of compensation for higher taxes, or to increase jobs and boost the local economy (e.g., Botwinick et al., 2009; Hackenbrack and Shor, 2012).¹² This may cause public officials to favor local over non-local businesses for government contracts, even if local businesses are more expensive. Taken together, the preceding arguments and evidence suggest the effect of revenue decentralization on local government cost management efficiency is unclear ex ante.

3. Institutional Background

3.1. *The IMU Reform*

Italy has three levels of subnational governments, including 20 regions, 107 provinces and 7,914 municipalities. In the 1970s, a series of reforms led to a greater centralization of tax revenues, while decentralizing government expenditures. The resulting imbalance between

¹²For example, in response to backlash from local SMEs and artisans against the IMU, the mayor of Castrocaro Terme promised local businesses: “We will do everything we can to meet the needs of the companies that make up the local economic fabric [...]. We will try to favor the allocation of large-scale project contracts for the benefit of local entrepreneurs” (Il Resto del Carlino, 2012). See Appendix B for article excerpt.

local revenues and expenditures shored up local deficits, which were followed by increased transfers from the national government (Brosio, Hyman, and Santagata, 1980). By 1992, local governments' own taxes accounted for a mere 15% of subnational revenues, and the rest was funded by vertical transfers earmarked for particular expenditures. This situation led Italy to initiate a fiscal decentralization reform in the early 1990s. By 2001, nearly 45% of subnational revenues came from own taxes, and earmarked transfers were replaced by block grants with no strings attached to particular expenditures (Ambrosanio, Bordignon, and Cerniglia, 2010). In 2001, Italy also changed its Constitution, which continued the decentralization process, culminating in the IMU reform.

On March 14, 2011, the Italian government authorized decree law n. 23., which ordered a significant reduction in transfers from the central government to municipalities, counterbalanced by an increase in local fiscal autonomy. In particular, the reform planned to introduce the IMU, a new tax system for real estate properties slated to replace the previous fiscal framework known as the *Imposta Comunale sugli Immobili* (ICI) in 2014. Under the ICI, residential property was subject to a dual taxation scheme: the primary residence was exempt from taxation (with some exceptions for luxury residences), while other properties were subject to a local tax rate. The IMU was to increase the valuation of the tax base and provide municipalities with more discretion to set their specific rates.¹³

Although the IMU was initially scheduled to go into effect in 2014, Italy experienced a severe sovereign debt crisis in the middle of 2011. In November 2011, the prime minister resigned and a new technocratic government was formed. On December 6, 2011, the new government unexpectedly decided to move the reform up to 2012 and broadened it to include

¹³The reform redefined the valuation of the tax base as the land registry value multiplied by a factor of 160, up from a factor of 100 under the ICI.

the primary residence in addition to all other properties. Because over 60% of Italian households own their residence, the addition of the primary residence to the tax base was subject to significant political debate and citizen backlash (Alesina and Paradisi, 2017). In 2013, primary residences were excluded from the property tax base, leading to a temporary drop in local property tax revenue. However, in 2014, the government introduced a new local tax on services (*Tributo per i Servizi Indivisibili*, or TASI), which brought total tax revenues back up. See Figure 1 for a visual representation of the size of municipal budgets and their composition over our sample period.

Municipalities were given a range of new tax rates to choose from for each building type, along with a standardized “suggested” rate by the national government (i.e., the midpoint of the range). For example, the range was set to 0.2% - 0.6% for primary residences, with a standardized rate of 0.4%; and 0.46% - 1.06% for additional residences, with a standardized rate of 0.76%. Because the reform aimed to be budget-neutral for municipalities, the government used the standardized rates to project each municipality’s additional property tax revenue from the reform, and cut its transfers by the same amount. Specifically, for each municipality, the national transfer cuts were equal to the standardized rate for each building type multiplied by the tax value of all buildings of that type, minus its pre-reform property tax revenue. Most municipalities chose tax rates above the standardized rate, raising a total of EUR 23.7 billion of tax revenue from the IMU in 2012, up from EUR 9.2 billion raised in 2011 under the ICI.

3.2. *Local Procurement in Italy*

Italian municipalities are in charge of providing citizens with a variety of public services and infrastructure, including welfare programs, public transportation, utilities, roads and

schools. Many of these services are outsourced to private vendors through public auctions, from generic goods and services to complex public works. In each municipality, the mayor appoints a bureaucrat as the contracting officer (i.e., the *Responsabile Unico del Procedimento*) to administer the entire procurement process, which entails defining the parameters of the project, estimating its cost, determining the appropriate auction format and award criteria, and monitoring the contract's execution.

The procurement process begins with a public call for tender, which includes a description of the contract characteristics such as the award selection criteria, the maximum price the municipality is willing to pay (i.e., the reserve price) and the auction procedure. The primary forms of auction include the open, restricted, and negotiated procedures. In an open auction, all eligible public vendors are allowed to participate by submitting bids. The restricted procedure is very similar, except that a limited number of vendors are pre-selected in an initial screening phase before being invited to bid.¹⁴ To minimize discretion in the choice of vendor, both procedures must specify all relevant criteria in the call for tender and award the contract solely based on these criteria. By contrast, in a negotiated procedure, the contracting officer reaches out to a set of prospective contractors and negotiates the terms of the contract directly with one or several of them. Due to the discretion they afford contracting officers, these auctions are only allowed under specific circumstances (e.g., for contracts below EUR 40,000, in case of an emergency, or when an open auction failed to elicit any bids).

Contracts are awarded using either the “lowest price” criterion or the “scoring rule” criterion. Under the lowest price criterion, the vendor with the lowest bid—provided it is not

¹⁴Because Italian legislation requires that all vendors meeting the requirements of a public works tender below EUR 40 million be allowed to bid, all restricted procedures are effectively open procedures in local Italian governments, where contract prices are much smaller (Decarolis and Giorgiantonio, 2015).

so low as to be unrealistic—wins the contract. When using the scoring rule, the contracting officer includes factors beyond price, and weights each factor according to its importance to the project. The scoring rule approach thus gives procurement officials more discretion and allows them to award contracts based on additional objective and subjective criteria (e.g., number of engineers required, geographic distance to the project, aesthetic quality of the proposed solution) (Decarolis et al., 2020; Duguay et al., 2023). After the contract is awarded to the winning vendor, the contracting officer monitors the project’s execution, manages any delays or cost overruns, and pays the vendor.

Although Italian municipalities are in charge of awarding a substantial proportion of the nation’s government contracts (e.g., municipalities award roughly 55% of public works contracts, representing 32% of total public works contract volume), prior literature suggests municipalities pay significantly more for worse performing contracts than other authorities. For example, municipal public works experience longer delays and incur higher cost overruns compared to public works procured by more centralized governments (Guccio et al., 2014; D’Alpaos et al., 2013; Decarolis, 2014), suggesting that local officials are relatively inefficient at managing procurement.

A potential reason for municipalities’ lower efficiency is that local governments are less able to capitalize on the economies of scale and specialization of more centralized authorities (e.g., Dimitri, Dini, and Piga, 2006). In particular, the average Italian municipality’s purchasing unit may be too small to afford contracting officers that are properly trained in the complex activities of procurement (e.g., Chiappinelli, 2020).

Beyond economies of scale, however, prior work argues that Italian local officials may lack the incentives to make efficient procurement decisions. For example, Chiappinelli (2020)

suggests that competent Italian municipal employees achieve smaller discounts when their wages are lower, and [Decarolis et al. \(2020\)](#) find similar results in the U.S. context. Moreover, [Coviello and Gagliarducci \(2017\)](#) find that Italian mayors with longer terms in office are much more likely to hold auctions with fewer participating bidders, award contracts to local firms (and to the same firm repeatedly), pay higher prices, and experience longer delays in execution, consistent with stronger collusion with vendors. This suggests that, with the proper incentives, municipalities may be able to alleviate some of these inefficiencies.

4. Data & Research Design

4.1. *Sample*

We obtain municipal budget data from the Italian Ministry of Finance from 2008 - 2014, municipalities' projected IMU revenues (i.e., transfer cuts) from the Italian Institute of Local Economics and Finance (IFEL), socio-demographic data from the Italian National Bureau of Statistics (ISTAT), and procurement data from the Italian Anticorruption Authority (ANAC).

The ANAC is a government agency that oversees public procurement activities of federal and local Italian governments. The agency collects data on government contracts over a threshold reserve price of EUR 150,000 through 2010, and EUR 40,000 thereafter. For each contract above these thresholds, we collect data on the call for tender, purchasing authority's name and tax ID, contract description, reserve price, award procedure, and award criteria used. We also collect data on the winning bid, winning vendor's name and tax ID, award price, and winning price discount relative to the reserve price. We obtain the winning vendor's

address and website information from BizPortal’s AlphaTender database. Finally, we collect contract performance data, including the contract start and end dates, any subsequent contract modifications, delays or costs overruns, and the final contract price and corresponding price discount relative to the reserve price.

Following prior literature, we focus on public works contracts, where reserve price data are the most reliable. A key feature of public works contracts is that the municipality’s engineers evaluate the types and quantities of inputs needed for each project, and multiply these quantities by list prices to compute the contract’s reserve price. Importantly, the list prices are set annually by engineers at the regional level for the sole purpose of computing the reserve prices of all authorities in that region. Thus, contracting officers have limited discretion in setting reserve prices for public works contracts (e.g., [Decarolis, 2014](#); [Coviello and Mariniello, 2014](#); [Galavotti, Moretti, and Valbonesi, 2018](#); [Chiappinelli, 2020](#)).

Table 1 Panel A summarizes our sample selection process. We include all ordinary public works contracts tendered between 2008 and 2014.¹⁵ Next, we exclude contracts that are not tendered by municipalities, or autonomous regions for which the IMU reform was implemented differently (Sicily, Valle d’Aosta, Trentino-Alto Adige, Friuli Venezia Giulia, and Sardinia). Finally, we exclude contracts for municipalities with non-missing IMU and socio-demographic data, leaving us with a total sample of 41,400 contracts amounting to EUR 13 billion, tendered by 4,794 unique municipalities.

Table 1 Panel B provides a yearly breakdown of our sample. Each year has between 4,000 and 8,000 contracts totaling between EUR 2.2 billion just after the financial crisis and EUR 1.5 billion in the post-2011 austerity years. Panel C provides a breakdown of our sample

¹⁵Non-ordinary contracts include, for example, EU funded contracts, framework agreements, and architectural competitions.

by work type. The law subdivides the procurement of public works into 13 job types, labeled from OG1 to OG13.¹⁶ The majority of municipal public works are infrastructure expenditures related to civic buildings, roads, technology, and the restoration and maintenance of historical buildings.

4.2. Research Design

Following [Shi and Tulli \(2022\)](#), our empirical strategy leverages the national government’s projected additional property tax revenue for each municipality, which was equal to its transfer cuts, to construct an instrument for municipalities’ own revenue share. For each municipality m , we define its own revenue share in year t as the portion of total revenue that is earned as tax revenue:

$$OwnRevShare_{m,t} = \frac{OwnRevenue_{m,t}}{TotalRevenue_{m,t}} = \frac{PropertyTax_{m,t} + OtherTax_{m,t}}{TotalRevenue_{m,t}}. \quad (1)$$

Since we are interested in estimating the causal effect of revenue decentralization on local procurement decisions, the ideal experiment would allocate $OwnRevShare_{m,t}$ randomly across municipalities. In reality, we face the challenge that, although municipalities were mandated to increase property taxes through the IMU, municipalities also had discretion over their share of own tax revenue by choosing from a range of property tax rates provided by the national government. Thus, a part of municipalities’ own revenue share was likely driven by unobserved time-varying factors, which could also affect procurement decisions.

However, the IMU reform had several features that help us circumvent this endogeneity

¹⁶Although some of the data contain more granular Common Procurement Vocabulary (CPV) codes, the codes are incomplete at the municipality level ([Decarolis, Fisman, Pinotti, and Vannutelli, 2023](#)).

concern. First, the national government did not cut transfers on the basis of municipalities’ “endogenous” additional revenues raised from the IMU. Instead, the national government projected a “standardized” amount of IMU revenue for each municipality using a new default tax rate by building type, which municipalities had no control over, multiplied by their pre-reform tax base. For each municipality, the national transfer cuts were equal to the standardized amount of IMU revenue minus the municipality’s pre-reform property tax revenue, i.e., the amount of additional property tax revenue that the national government *expected* each municipality to collect under the IMU. Second, although the IMU reform was initially scheduled to be implemented in 2014, it was unexpectedly moved up to 2012 due to Italy’s sovereign debt crisis in December 2011. This rapid timeline left officials with limited opportunity to manipulate the number of buildings in their tax base between the reform announcement and its enactment.¹⁷ Moreover, municipalities have no control over the tax value for each type of building, which was set in 1990 for older buildings, and is directly reported by property owners to a national agency in charge of building registries for new buildings (*Agenzia del Territorio*). In summary, municipalities could not choose the size of their transfer cuts, providing us with plausibly exogenous variation in the degree of revenue decentralization, which we use to instrument for municipalities’ *OwnRevShare*.

We first compute the municipality’s (m) exposure to the IMU reform, $IMURevShare_m$:

$$IMURevShare_m = \frac{IMURev_m}{TotalRevenue_{m,2011}} \quad (2)$$

where $IMURev_m$ is the standardized additional revenue collected through the IMU tax as

¹⁷Building and land registries are kept by the national agency *Agenzia del Territorio*. [Shi and Tulli \(2022\)](#) find that the number of buildings of affected municipalities remained unchanged around the reform.

projected by the national government, which is equal to the size of each municipality’s transfer cuts. Because larger municipalities mechanically have more IMU revenue, we scale this amount by each municipality’s total amount of pre-reform revenue, $TotalRevenue_{m,2011}$. We then estimate the following instrumented difference-in-differences model using $IMURevShare_m$ as a continuous treatment, where $Post$ is an indicator equal to one after 2011:

1st Stage:

$$OwnRevShare_{m,t} = \gamma_1 IMURevShare_m \times Post_t + X'_{c,m,t} \gamma + \eta_t + \alpha_p + \nu_{c,m,t} \quad (3)$$

2nd Stage:

$$Y_{c,m,t} = \beta_1 \widehat{OwnRevShare}_{m,t} + X'_{c,m,t} \beta_2 + \eta_t + \alpha_p + \epsilon_{c,m,t}. \quad (4)$$

$X_{c,m,t}$ are municipality and contract-level control variables, including the $IMURevShare$ main effect, the contract’s reserve price ($LogReservePrice$), the municipality’s logged population ($LogPopulation$), the municipality’s exposure to the Domestic Stability Pact (DSP), a set of fiscal discipline rules imposed on certain municipalities to constrain their debt accumulation, and the municipality’s annual interest payments scaled by its total revenue ($InterestPayments$).¹⁸ We also include various dimensions and combinations of fixed effects, described in Section 5. $Y_{c,m,t}$ are several contract-level outcome variables described in Section 5. All variables are defined in Appendix A.

¹⁸Prior to 2012, the DSP effectively required municipalities with a population above 5,000 to operate under a balanced budget requirement. Beginning in 2013, the DSP became applicable to all municipalities with a population above 1,000. We therefore control for whether the municipality is subject to the DSP.

4.3. Identification Assumptions

Our research design relies on three distinct sets of assumptions. Our first-stage difference-in-differences analysis assumes that, absent the IMU reform, *OwnRevShare* would have trended similarly for municipalities that were more or less exposed to the reform, i.e., the “parallel-trends assumption.” This assumption could be violated if, for example, the financial or sovereign debt crises affected municipalities with different property tax base values differently, and these differences were correlated with changes in own revenue share. In Figure 3, we plot the coefficients on $IMURevShare \times Post$ from Equation (3) in Table 3 Panel A column (1), after replacing *Post* with each year in our sample and omitting 2008, which serves as the benchmark. The figure shows that *OwnRevShare* trends very similarly with municipalities’ exposure to the IMU prior to the reform, and that municipalities with higher exposure to the IMU experience a stark jump in *OwnRevShare* in 2012 and onward (with a slight drop in 2013 when the primary residence was excluded from the tax base). This suggests that the IMU reform had an immediate and persistent effect on municipalities’ own revenue share.

Second, our design assumes that $IMURevShare \times Post$ is a relevant instrument for *OwnRevShare*, which we assess using the results from our first-stage model in Table 3, Panel A. The coefficient on $IMURevShare \times Post$ is significantly positive across all fixed effects specifications (described in Section 5), indicating that the IMU reform increased municipalities’ *OwnRevShare*, as shown in Figure 3. Specifically, a one percentage point increase in $IMURevShare$ is associated with a 1.1 to 1.2 percentage point increase in *OwnRevShare* following the reform. Moreover, the F-Statistic for the instrument is well over 100, making it unlikely that the instrument is weak (Stock and Yogo, 2002).

Finally, our instrumental variables design must satisfy the exclusion restriction, which

assumes that *IMURevShare* did not affect our procurement outcomes of interest in any way other than through its impact on *OwnRevShare*. In this regard, the institutional features of our setting, as described in Section 4.2, are useful. Municipalities had no control over the size of their transfer cuts, meaning any increase in *OwnRevShare* to replace these cuts is likely unaffected by concurrent changes unrelated to the reform, such as changes in procurement needs. Moreover, public procurement is governed by rules that are distinct from municipal tax laws. Because the IMU reform was unrelated to municipal procurement, it is unlikely that the IMU affected our outcomes in ways other than through its impact on *OwnRevShare*. Finally, by controlling for municipalities' interest payments, we alleviate concerns that affected municipalities changed their debt levels and spending behavior in response to increased monitoring by lenders.

5. Results

5.1. Contract Pricing and Execution

We first examine how the IMU reform affected the price of municipal government contracts. To do so, we use the instrumented $\widehat{OwnRevShare}$, i.e., the exogenous component of *OwnRevShare*, to estimate the effect of decentralized revenues on contracts' final price discounts. The final price discount (*FinalPriceDiscount*) is equal to the percentage difference between the contract's final price (which includes any cost overruns incurred after the initial contract award price) and the contract's reserve price (i.e., the maximum price for which the contract can be awarded). We multiply the variable by -1 so that a higher value reflects a greater discount and implies better cost management.

Our second-stage results from Equation (4) appear in Table 3 Panel B. Column (1) includes Province and Work-Type fixed effects to control for differences in procurement practices across geographic provinces and types of public works, and year fixed effects to control for nationwide shocks. In column (2), we refine the fixed effects structure to include Work-Type \times Region \times Year fixed effects to control for differences in input reserve prices which are set annually by regional engineers. Finally, column (3) adds more granular municipality fixed effects to control for differences in procurement practices across municipalities.

In all three columns, we find a significant increase in the final price discount following the IMU reform. Depending on the fixed effects specification, a one percentage point increase in $\widehat{OwnRevShare}$ leads to a significant 11 to 13.1 basis point increase in the final price discount, an increase of 1.2% to 1.4% relative to the average price discount in our sample (e.g., $0.11/9.103 = 0.012$). In terms of economic magnitude, an average increase in $OwnRevShare$ in our sample equals 7.5 percentage points, implying a 9% to 10.5% increase in the final price discount, for a EUR 3,197 to EUR 3,807 decrease in the final price per contract and a total annual savings of EUR 19.2 to EUR 22.8 million per year in our sample.¹⁹ Notably, although the $\widehat{OwnRevShare}$ coefficient magnitude changes very little across columns, the statistical significance drops to the 10% level in column (3), suggesting that municipality fixed effects absorb a substantial part of the variation used to estimate the coefficient and decrease its precision.

In Table 4, we examine two auction features that could lead to this price reduction:

(i) a focus on price at the award stage, as measured by a binary indicator equal to one if the

¹⁹E.g., $7.5 \times 0.11/9.103 \times 100 = 9$ percent increase in final price discount; $7.5 \times 0.11 \times 387,542/100 = 3,197$ EUR average price decrease per contract; $3,197 \times 5,993$ annual average number of post-IMU contracts = 19.160 million per year.

contract used the “lowest price” criterion rather than the “scoring rule” (*LowestPrice*); and (ii) the price discount awarded to the winning vendor (*WinningDiscount*), measured as the percentage difference between the contract’s initial award price (i.e., before any cost overruns are incurred) and the contract’s reserve price, multiplied by -1.

Because the ANAC data is more widely populated for contracts’ tender and award-stage observables, Table 4 examines a larger sample for which we tabulate the first stage of our model in Panel A. The results are very similar to those reported in Panel A of Table 3. Panel B presents the second-stage results. In columns (1) - (3), we use *LowestPrice* as the dependent variable, mirroring the fixed effects structure in Table 3. We find a strongly significant coefficient on $\widehat{OwnRevShare}$ in all three columns. A one percentage point increase in $\widehat{OwnRevShare}$ makes it 0.5 to 0.6 percentage points more likely that municipalities award contracts based price, depending on the fixed effects specification. In columns (4) - (6), we use *WinningDiscount* as the dependent variable and find that a one percentage point increase in $\widehat{OwnRevShare}$ increases the winning discount between 6.9 and 13.5 basis points. Similar to our findings in Table 3, the result weakens with the inclusion of municipality fixed effects in column (6) (t-stat = 1.64). These results imply that an average increase in own revenue share (7.5 percentage points) leads to a 6% to 7% increase in the likelihood of using price as the sole award criterion and a EUR 2,006 to EUR 3,924 decrease in the award price per contract.²⁰ Overall, our findings suggest that the reform caused local officials to more seriously consider price at the contract award stage and negotiate lower prices.

To assess whether lower prices came at the cost of performance, we next examine how the IMU reform affected contract execution. In Table 5, we estimate the effect of an increase in

²⁰E.g., $7.5 \times 0.005/0.624 = 0.06$; $7.5 \times 0.135/100 \times \text{EUR } 387,542 = \text{EUR } 3,924$.

own revenue share on three observable measures of contract performance at the execution stage: a binary indicator equal to one if the contract is modified due to unforeseen circumstances (*Modification*) in columns (1) and (2), the percentage of cost overruns relative to the initial award price (*CostOverrun*) in columns (3) and (4), and a binary indicator equal to one if the contract incurs an above-average delay in execution (i.e., over 180 days past the due date) (*Delay*) in columns (5) and (6). For ease of exposition, we only tabulate the specifications including Work-Type \times Region \times Year and Province or Municipality fixed effects. We do not find any evidence of contract performance deterioration after the reform. Instead, we find some evidence of improvement: the coefficient on $\widehat{OwnRevShare}$ is negative and statistically significant in columns (1) and (2), suggesting that an increase in $\widehat{OwnRevShare}$ decreases unexpected contract modifications. We also find significantly negative coefficients at the 10% level in columns (3) and (5), suggesting a decrease in cost overruns and major delays, although the specifications including municipality fixed effects in columns (4) and (6) become statistically insignificant (t-stats = -1.2 and -1.4, respectively). Overall, the results in Tables 4 and 5 suggest that local officials procure more affordable public works after the IMU reform without sacrificing contract performance.

5.2. Vendor Selection

To better understand the potential mechanisms explaining our results, we next turn to how the reform affected local officials' vendor selection. First, we examine whether the decrease in prices is driven by an increase in competition among vendors, as measured by the natural logarithm of the number of bids per tender (*LogNo.Bidders*). Our results appear in columns (1) and (2) of Table 6, where we include Work Type, Year, and Province or Municipality fixed

effects, respectively. We do not see any evidence that an increase in $\widehat{OwnRevShare}$ led to a change in the number of bids per contract in either specification, which is inconsistent with an increase in competition among vendors.

Second, we consider local officials' preferences for vendor location. Prior work shows that Italian municipalities favor local vendors by awarding them more contracts and paying them higher prices, especially when the mayor has a longer tenure in office (Coviello and Gagliarducci, 2017). Together with our results in Tables 4 and 5, this suggests that one way local officials can obtain more affordable contracts without sacrificing performance is by switching to non-local vendors. To examine the potential reduction in local vendor favoritism, we test whether the reform leads to a change in (i) the geographic distance between the municipality and the vendor (in logged kilometers, $LogDistance$), and (ii) the likelihood that the contract is awarded to a non-local vendor (i.e., a binary indicator for whether the vendor's zip code is outside the municipality, $NonLocal$).

Columns (3) and (4) ((5) and (6)) of Table 6 show results using $LogDistance$ ($NonLocal$) as our dependent variable. In columns (3) and (4), we see that a 1 percentage point increase in $\widehat{OwnRevShare}$ leads to a significant 1.2% to 1.3% increase in $LogDistance$. Similarly, column (5) shows a significant 0.5 percentage point increase in the likelihood that the winning vendor is non-local. In column (6), the coefficient on $OwnRevShare$ remains positive, but the significance is weakened by the inclusion of municipality fixed effects (t-stat = 1.4). Overall, these results provide evidence consistent with local officials selecting different vendors and reducing local favoritism after the reform.

5.3. *Political Incentives*

Finally, we examine how our results vary with municipalities' political incentives. Political agency theories predict that public officials engage in less rent-seeking actions (e.g., low effort or collusion) when subject to the discipline of the electoral process (e.g., [Besley, 2006](#)). For example, prior work finds that Italian mayors spend more on public services and less on remuneration when facing greater political competition (e.g., [Shi and Tulli, 2022](#); [Bianchi et al., 2023](#)). We thus examine whether our results are concentrated in times when the political benefits of engaging in fiscally responsible procurement are expected to be higher.

We identify municipalities as having greater political incentives to manage costs more effectively when the incumbent mayor is (i) eligible for re-election, and (ii) early enough in their term for procurement contracts to be completed and paid before they run for re-election. By focusing on cost management in the first few years of their term, mayors can avoid reporting deficits or other budget issues, which can reduce their re-election prospects ([Brender and Drazen, 2008](#); [Granoff et al., 2016](#)). Italian municipal elections are held every 5 years. The mayor is directly elected by local citizens, subject to a term limit of two consecutive mandates.²¹ Using data from the Italian Ministry of Internal Affairs, we construct a binary indicator equal to one for a given municipality-contract if (i) the incumbent mayor is in his or her first term (or first/second term for municipalities with populations below 3,000 inhabitants after April 2014), and (ii) given an average contract duration of 1.4 years, is in the first 3 years of his or her term (*IncumbentPressure*).

In Table 7, we replicate our main tests from Table 3 in sub-samples of municipalities where $IncumbentPressure = 1$ and $IncumbentPressure = 0$ for each of our three fixed

²¹In April 2014, a new law approved by the Italian Parliament (Law n.56) allowed mayors to re-run for a third term in municipalities with populations below 3,000 inhabitants.

effects specifications. Consistent with political incentives explaining improvements in cost management, we find that our results are largely concentrated in municipalities with incumbent mayors up for re-election and early in their term. Following a one percentage point increase in $\widehat{OwnRevShare}$, the final price discount increases by a significant 29.2 to 35.4 basis points (depending on the fixed effects specification) in municipalities where $IncumbentPressure = 1$. In terms of economic magnitude, an average 7.5 percentage point increase in $OwnRevShare$ leads to a 24% - 29% increase in the final price discount, for a price reduction of EUR 8,487 to EUR 10,289 per contract.²² In contrast, we find no significant effect in municipalities where $IncumbentPressure = 0$. The differences in $\widehat{OwnRevShare}$ coefficients are also significant between subsamples, except for the specification including municipality fixed effects where the z-statistic drops to -1.2. Overall, these results support the notion that decentralized revenues discipline local government spending by increasing officials' accountability towards their citizens, particularly when the political benefit of practicing fiscal discipline is expected to be higher.

6. Conclusion

Citizens rely on local governments to be responsible stewards of public resources, which are used to invest in essential public services. We ask whether and to what extent revenue decentralization affects local government cost management. We use an Italian tax reform that replaced a substantial amount of intergovernmental transfers with a corresponding increase in municipalities' own revenues through property taxes. We find evidence of lower contract

²²E.g., $7.5 \times 0.292 = 2.19/9.103 \times 100 = 24$ percent increase in final price discount; $2.19/100 \times 387,542$ average reserve price = 8,487 EUR average price decrease per contract.

prices for public works in municipalities that were more affected by the reform. We find that public works contracts are increasingly awarded using price as the sole criterion and at significantly greater discounts. Despite these price discounts, however, contracts do not face subsequent performance problems, such as greater cost overruns or delays in execution, resulting in overall cost savings. Collectively, these results suggest that the reform caused local officials to negotiate lower prices or more seriously consider price at the contract award stage with no reduction in service quality.

We also provide evidence on how local public officials secure more favorable contracts after revenue decentralization. Consistent with officials reducing local vendor favoritism after the reform, we find a significant increase in geographical distance between the awarding municipality and vendor location, as well as a greater likelihood that contracts are awarded to vendors located outside of the contracting municipality.

Finally, we examine whether our results are concentrated in municipalities where there are greater political incentives to improve cost management. We find stronger effects for municipalities where the incumbent mayor is up for re-election, suggesting that revenue decentralization disciplines local government spending by increasing public officials' accountability towards their citizens.

Our study contributes to the literature on the effects of revenue decentralization on local government spending. Whereas prior studies primarily focus on changes in types of expenditures, we focus on cost management, which is an important determinant of fiscal responsibility and the efficient allocation of public resources. We also contribute to a growing literature on local government procurement. Our results highlight the importance of coupling the devolution of both expenditure and revenue generation decisions in improving public

spending efficiency.

We also provide important insights for policymakers and government monitors regarding the incentives driving local government spending decisions. Central governments provide a substantial amount of transfers to subnational governments to fund local public services. Although these transfers can be useful and even necessary in many cases, our study suggests that one benefit of increasing local governments' own-source revenue is improved government spending efficiency. The cost savings can be used to fund other goods and services to increase public welfare.

Appendix A: Variable Definitions

This table describes the variables used in our analyses.

Contract Variables	
Award Price	Price of awarded contract.
Competitive Auction	Indicator equal to one if the auction was tendered using an open or restricted procedure.
Contract Duration	Number of years between contract tender and completion.
Cost Overrun	Contract's cost overruns divided by the contract's award price (in percentage points).
Delay	Indicator equal to one if the contract's execution is significantly delayed (i.e., over 180 days past the due date).
Distance	Distance between the contracting municipality and vendor address (in km).
Final Price Discount	Percentage difference between the contract's final price and reserve price: $-1 \times (\text{final price} - \text{reserve price}) / \text{reserve price}$.
Lowest Price	Indicator equal to one if a tender is awarded based on the lowest price criterion.
Modification	Indicator equal to one if contract has an unforeseen modification.
No. Bidders	Number of bids per tender.
Non Local	Indicator equal to one if the vendor zip code is not within the contracting municipality.
Reserve Price	Contracting agency's maximum acceptable price for the contract.
Winning Discount	Percentage difference between the contract's award price and reserve price: $-1 \times (\text{award price} - \text{reserve price}) / \text{reserve price}$.
Municipality Variables	
DSP	Indicator equal to one if a municipality was subject to the domestic stability pact in a given year (i.e., municipalities with population above 5,000 inhabitants before 2013 and above 1,000 inhabitants thereafter).
<i>IMURevShare</i>	Fraction of standardized IMU revenue to total revenue in 2011.
Incumbent	Indicator equal to one if the incumbent mayor is eligible for re-election.
Incumbent Pressure	Indicator equal to one if the incumbent mayor is eligible for re-election and in the first 3 years of his/her term.
Interest Payments	Municipality's interest payments scaled by total revenue.
<i>OwnRevShare</i>	Fraction of total revenue attributable to own tax revenue.
Population	Municipality's population at the beginning of a year (in thousands).
<i>Post</i>	Indicator for fiscal years after the IMU reform (i.e., after 2011).
Total Revenue	Total annual municipal revenue.

Appendix B: Anecdotal Evidence

This appendix provides excerpts of Italian newspaper articles (translated into English) illustrating citizen backlash against the IMU and local officials' responses. See Section IA-2 of the Internet Appendix for the original article excerpts in Italian.

Section 1: Examples of citizen backlash against the IMU

LA NAZIONE

“Marina di Pietrasanta: Committee of 40 businesses wants to meet with Lombardi; Hotels also against the IMU burden” April 18, 2012.

First the citizens, now the businesses: the introduction of the IMU announced by Mayor Lombardi is causing committees to spring up like mushrooms. Yesterday, we witnessed the establishment of the Businesses salvation Committee, comprised of 40 hotels in Marina di Pietrasanta [...]. “We will immediately ask for a meeting with the Mayor to tell him clearly that we do not accept the increase in the IMU.[...] This is not about quarrels, but about saving the businesses and their families.”

ANSA

“Fiumicino, sit-in protest against IMU on lands” May 30, 2012.

A group of citizens, including the leader of the Italy of Values party, Claudio Cutolo, staged a sit-in at the foot of the Bridge of June 2nd in Fiumicino this morning. Wearing signs that read “Prone to flooding, no to IMU,” they protested and requested an exemption from the new tax [...].

il Resto del Carlino

“Porto Viro, committee of entrepreneurs collects hundreds of signatures” December 6, 2012.

A group of entrepreneurs and citizens has launched a petition to request a reduction in the IMU. The petition, which started a few months ago, has already gathered a significant number of signatures. The initiative originated from the FPA committee, an acronym for Independent Productive Forces of Porto Viro, chaired by Claudio Mancin. The organization represents 284 citizens and entrepreneurs from the town. “We are very worried” says Claudio Mancin, given the particularly difficult moment the entire nation is facing [...] A request, he explains, “to avoid further burdening the wallets of merchants and citizens who are already in enormous

difficulty.”



“Rome, signs of IMU, Prestipino’s blitz to request lower rate” December 17, 2012.
“On Sunday, a new blitz in the capital: at iconic locations in Rome and all the nativity scenes in the historic center, a sign reading “The right IMU for Rome” [...] Patrizia Prestipino, center-left candidate for mayor of Rome, claimed responsibility for the initiative this morning [...] “It is necessary to restore a situation of balance for citizens who, among other things, do not see a correlation between their economic sacrifices and the services provided by the local administration.”

Section 2: Examples of local officials’ responses to IMU-related backlash

The following examples show mayors responding to citizen backlash against the IMU with promises that the increased local tax revenue will serve to improve local public goods and services:



“Rome, IMU: Marino, important to use tax money locally” August 22, 2013.
The Mayor of Rome, Ignazio Marino, commented on a proposal by ten budget council members of the capital for a federal reform of the IMU: “If citizens realize that the money coming out of their family budget to pay the tax is reinvested in services [...] they will understand that their money is being well spent. That is why [...] it makes sense to use the fiscal tool in a way for citizens to directly perceive how that taxation is actually used for services.”



“Cavriago, Mayor Vincenzo Delmonte will not stand for it: ‘we must have the courage to tell the citizens the whole truth’” November 22, 2012.
“To complete the Roncaglio kindergarten, 1,200,000 euros are needed; to renovate the “Rodari” elementary school, two million are required, and to expand the municipal shelter, four million

euros are needed. There are currently no feasibility studies for the Cavriago Corte Tegge cycle-pedestrian paths, but just for the connection with the industrial area, well over 510,000 euros are needed. The truth is that [...] we could only find the missing funding by increasing the IMU.”

Some mayors responded by promising that the allocation of local procurement contracts will favor local businesses:

il Resto del Carlino

“Castrocaro Terme, IMU, special consideration for category businesses” May 10, 2012.

The new mayor of Castrocaro Terme has just taken office and already the first SOS calls are being heard. CNA and Confartigianato [two Italian organizations representing SMEs and artisans] are asking the administration to keep local small businesses in mind. “We are facing a very particular moment from an economic perspective but we have no intention of abandoning the protagonists of the local economic fabric,” says the Mayor. The primary concern is the determination of the IMU, a scare not only for citizens but also for businesses [...]. “We will do everything we can to meet the needs of the companies that make up the local economic fabric [...]. We will try to favor the allocation of large-scale project contracts for the benefit of local entrepreneurs.”

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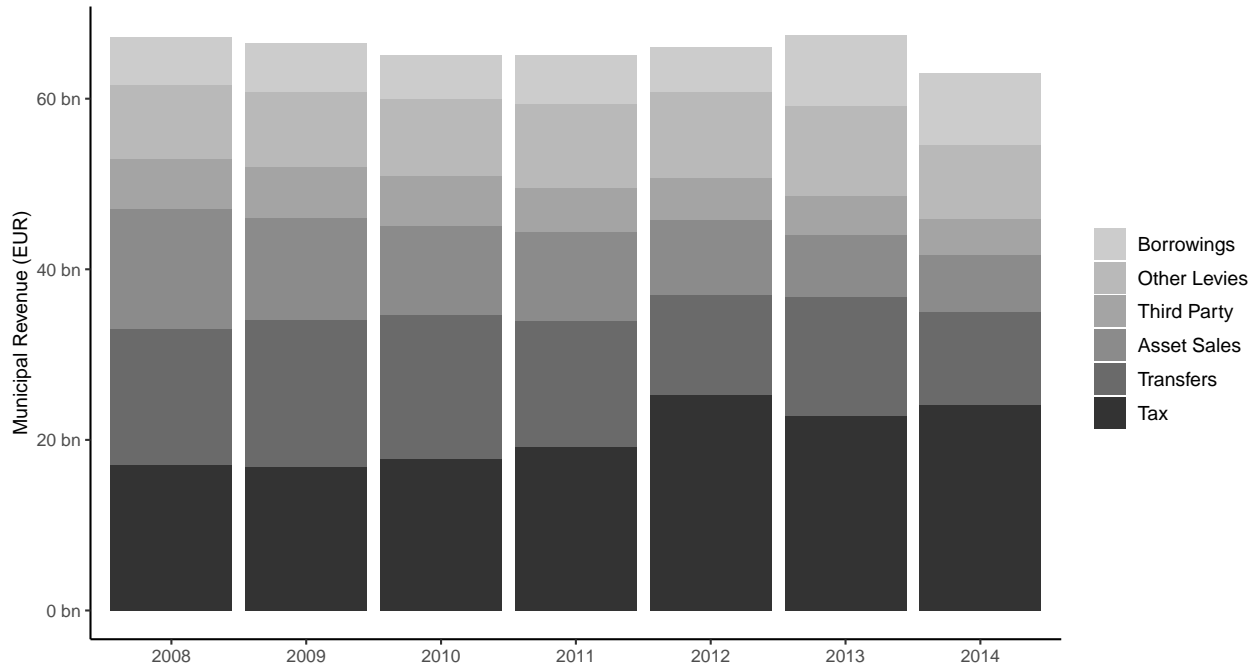
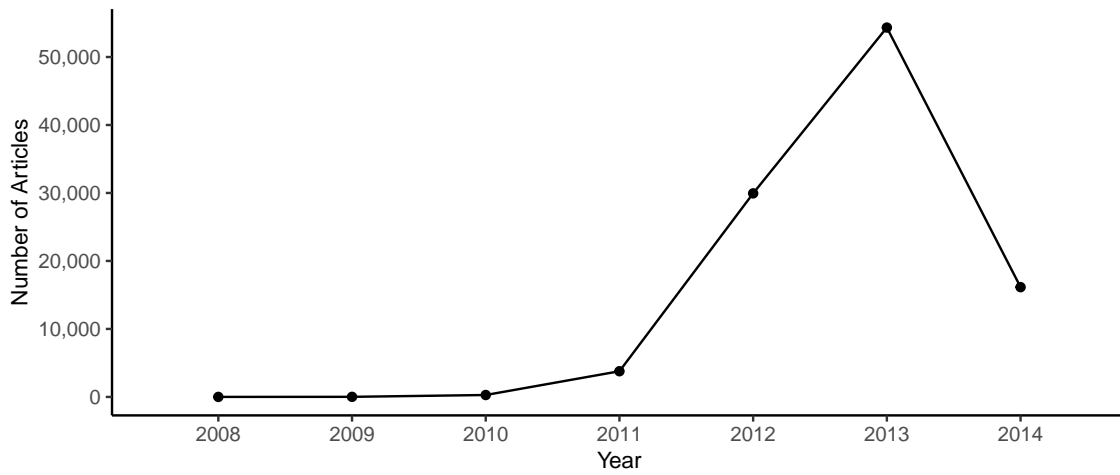
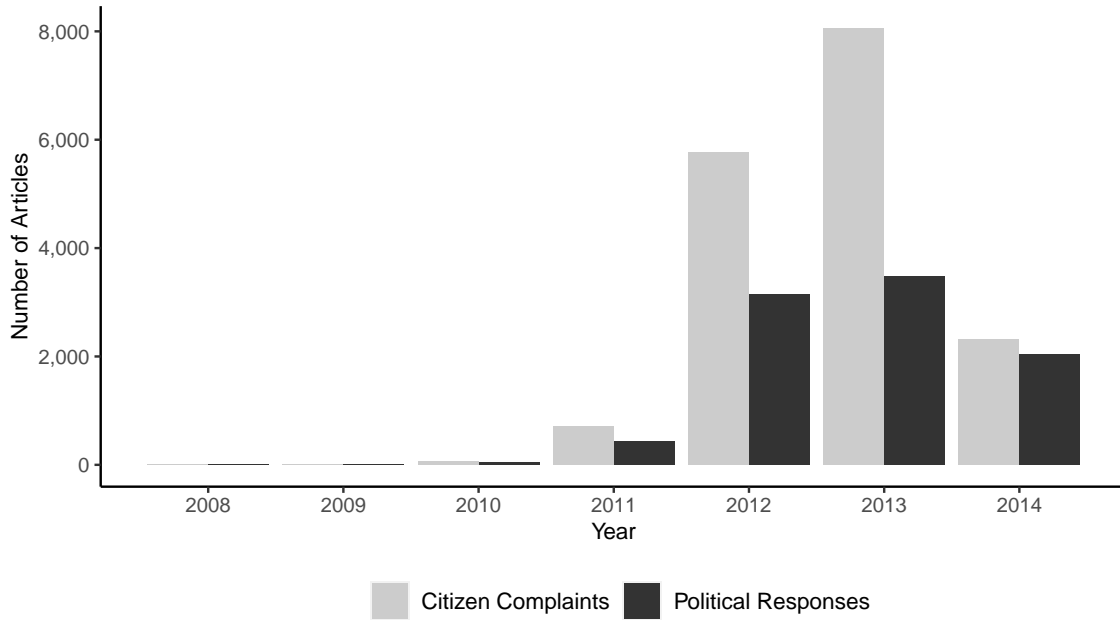


Fig. 1 Municipal Budgets

This figure shows the aggregate size and composition of municipal budgets in our sample period.



(a) News Articles on IMU



(b) Context of IMU Articles

Fig. 2 IMU News Coverage

This figure shows aggregate news coverage statistics of the IMU reform between 2008 and 2014. Panel (a) aggregates the total annual number of articles in the Italian press covered by *Factiva* mentioning the IMU reform. Panel (b) aggregates the total annual number of articles mentioning the IMU in conjunction with (i) citizen backlash and (ii) local officials and public goods and services. See the Internet Appendix for details on the keywords used to identify the articles.

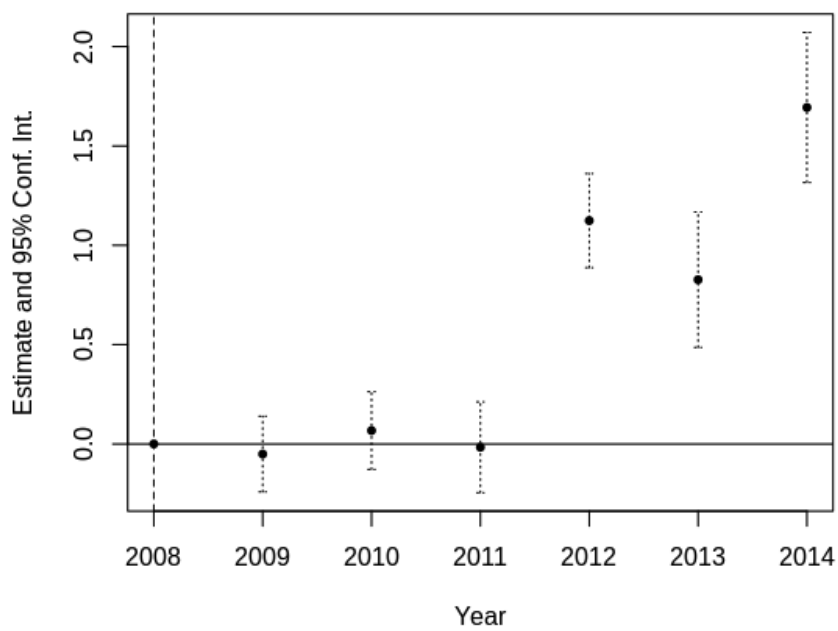


Fig. 3 Trends in Own Revenue Share

This figure plots the $IMURevShare \times Post$ coefficients from our first-stage regression (Equation (3) and Table 3 Panel A Column (1)) after replacing $Post$ with indicators for each year in our sample and omitting 2008 (the benchmark year).

Table 1
Sample

Panel A: Sample Selection			
	Contracts	Amounts (€ Mill.)	Municipalities
Public works contracts tendered in 2008 – 2014	103,248	54,994	
Contracts tendered by municipalities	56,322	17,527	6,364
Municipalities outside of special regions	45,144	13,919	5,234
with IMU and budget information	41,765	13,079	4,861
with sociodemographic information	41,400	12,992	4,794

Panel B: Sample by Year			
Year	Contracts	Amounts (€ Mill.)	Municipalities
2008	4,172	1,986	1,675
2009	4,851	1,954	1,954
2010	6,312	2,205	2,452
2011	8,089	1,918	2,884
2012	6,790	1,597	2,646
2013	5,526	1,489	2,154
2014	5,664	1,842	2,157

Panel C: Sample by Work Type		
Worktype	Contracts	Amounts (€ Mill.)
OG1 – Civic and Industrial Buildings	19,690	8,899
OG2 – Restoration and Maintenance of Historical Buildings	3,590	1,960
OG3 – Roads, Highways, Bridges, Viaducts, Railways, Subways	17,311	5,864
OG4 – Underground Works	35	81
OG5 – Dams	5	4
OG6 – Aqueducts, Pipelines, Irrigation and Evacuation Works	2,767	1,646
OG7 – Maritime and Dredging Works	350	299
OG8 – River Protection, Hydraulic Systemation and Reclamation Works	1,160	527
OG9 – Plants for the production of electric energy	729	242
OG10 – Electric distribution systems and public lighting	2,308	1,191
OG11 – Technological Systems	3,490	2,718
OG12 – Environmental Protection and Cleanup	524	389
OG13 – Environmental Engineering Works	581	201

Panel A summarizes the sample selection process. Panel B shows the breakdown of observations by year. Panel C shows the breakdown of observations by work type. “Contracts” refers to single contracts awarded by a municipality, Amounts (€ Mill.) is the total value of those contracts as measured by their reserve price expressed in million Euro, and Municipalities is the number of awarding municipalities.

Table 2
Summary Statistics

	Mean	StDev	p ^{25%}	p ^{50%}	p ^{75%}	N
Contract Variables						
Award Amount (€ Thsd)	313.769	768.921	80.363	157.090	301.673	41,400
Contract Duration	1.387	0.954	0.734	1.159	1.762	21,268
Cost Overrun	11.660	17.049	0.000	6.139	19.249	23,039
Delay	0.759	0.428	1.000	1.000	1.000	21,268
Distance (km)	66.742	207.079	7.090	19.641	48.139	27,708
Final Price Discount	9.103	14.557	0.137	7.539	18.619	23,039
Lowest Price	0.624	0.484	0.000	1.000	1.000	41,400
Modification	0.364	0.481	0.000	0.000	1.000	41,400
Non Local	0.808	0.394	1.000	1.000	1.000	27,708
Number of Bidders	16.493	32.146	0.000	4.000	13.000	41,400
Own Revenue Share	32.704	13.624	23.210	32.479	41.541	15,922
Population (Thsd.)	15.006	73.154	2.066	4.889	12.207	15,922
Reserve Price (€ Thsd.)	387.513	924.828	96.901	191.416	370.871	41,400
Winning Discount	17.944	11.800	7.130	18.200	26.842	41,400
Municipality Variables						
DSP	0.407	0.491	0.000	0.000	1.000	15,922
IMURevShare	3.080	3.169	1.017	2.569	4.779	4,794
Incumbent	0.489	0.500	0.000	0.000	1.000	41,338
Incumbent Pressure	0.267	0.442	0.000	0.000	1.000	15,529
Interest Payments	0.031	0.018	0.018	0.029	0.042	15,921
Time to next election	2.169	1.382	0.934	2.047	3.255	39,381
Total Revenue (€ Mill.)	21.211	154.626	2.562	5.183	12.455	15,922

This table presents descriptive statistics for the variables used in our analyses. Euro amounts are reported in thousands (€ Thsd.) or millions (€ Mill.). All variables are as defined in Appendix A.

Table 3
Price Effects

Panel A: First Stage			
	<i>OwnRevShare</i>		
	(1)	(2)	(3)
<i>IMURevShare</i> × <i>Post</i>	1.219*** (10.565)	1.189*** (11.074)	1.061*** (10.885)
<i>IMURevShare</i>	-0.240*** (-2.872)	-0.234*** (-2.874)	
Log(Reserve Price)	-0.320** (-2.169)	-0.165 (-1.068)	0.017 (0.242)
Log(Population)	-1.350*** (-4.980)	-1.452*** (-5.574)	15.484* (1.947)
DSP	-8.259*** (-11.714)	-8.498*** (-12.695)	0.363 (0.558)
Interest Payments	26.100** (2.123)	28.357** (2.266)	133.366*** (6.616)
Work Type	Yes	No	No
Year	Yes	No	No
Work Type × Region × Year	No	Yes	Yes
Province	Yes	Yes	No
Municipality	No	No	Yes
Observations	23,039	23,039	23,039
Adjusted R ²	0.374	0.404	0.778
F-Stat	111.619	122.634	118.483

Table 3
Price Effects

Panel B: Second Stage			
	Final Price Discount		
	(1)	(2)	(3)
$\widehat{OwnRevShare}$	0.110** (1.996)	0.131** (2.273)	0.120* (1.799)
$IMURevShare$	-0.057 (-0.993)	-0.057 (-0.979)	
Log(Reserve Price)	0.075 (0.452)	0.056 (0.348)	0.260 (1.484)
Log(Population)	1.417*** (8.494)	1.467*** (8.643)	14.803* (1.846)
DSP	-0.504 (-0.826)	-0.501 (-0.769)	1.741*** (2.674)
Interest Payments	-17.514** (-1.985)	-15.013* (-1.668)	6.915 (0.366)
Work Type	Yes	No	No
Year	Yes	No	No
Work Type \times Region \times Year	No	Yes	Yes
Province	Yes	Yes	No
Municipality	No	No	Yes
Observations	23,039	23,039	23,039
Adjusted R ²	0.092	0.105	0.204

This table presents first and second-stage regression results for our instrumental variables analysis estimating the effect of own revenue share on contracts' final price discounts. Panel A presents first-stage estimates, i.e., the effect of the IMU reform ($IMURevShare \times Post$) on municipalities' own revenue share ($OwnRevShare$). F-Statistics are reported for the instrument ($IMURevShare \times Post$). Panel B reports second-stage estimates for the $FinalPriceDiscount$ outcome. All variables are as described in Appendix A. T-statistics based on robust standard errors, clustered by municipality, are reported in parentheses. Levels of significance are presented as follows: *p<0.1; **p<0.05; ***p<0.01.

Table 4
Auction Characteristics

Panel A: First Stage			
	<i>OwnRevShare</i>		
	(1)	(2)	(3)
<i>IMURevShare</i> × <i>Post</i>	1.202*** (13.293)	1.177*** (14.215)	1.067*** (14.727)
<i>IMURevShare</i>	-0.235*** (-3.067)	-0.222*** (-2.946)	
Log(Reserve Price)	-0.321*** (-2.690)	-0.257** (-2.074)	-0.012 (-0.249)
Log(Population)	-1.038*** (-3.767)	-1.116*** (-4.217)	16.181*** (2.582)
DSP	-8.227*** (-12.037)	-8.516*** (-13.154)	0.479 (0.979)
Interest Payments	43.110*** (3.440)	48.789*** (3.846)	161.906*** (10.654)
Work Type	Yes	No	No
Year	Yes	No	No
Work Type × Region × Year	No	Yes	Yes
Province	Yes	Yes	No
Municipality	No	No	Yes
Observations	41,400	41,400	41,400
Adjusted R ²	0.366	0.387	0.781
F-Stat	176.704	202.054	216.873

Table 4
Auction Characteristics

Panel B: Second Stage						
	Lowest Price			Winning Discount		
	(1)	(2)	(3)	(4)	(5)	(6)
$\widehat{OwnRevShare}$	0.005*** (2.626)	0.005*** (2.589)	0.006*** (2.583)	0.135*** (3.406)	0.080** (2.071)	0.069 (1.643)
$IMURevShare$	-0.004*** (-2.674)	-0.004*** (-2.606)		-0.052 (-1.291)	-0.028 (-0.713)	
Log(Reserve Price)	0.113*** (21.605)	0.126*** (23.140)	0.115*** (19.495)	0.824*** (5.645)	0.974*** (6.739)	1.044*** (8.013)
Log(Population)	0.017*** (5.056)	0.015*** (3.670)	-0.330 (-1.473)	1.887*** (12.522)	1.798*** (12.005)	0.564 (0.116)
DSP	0.009 (0.576)	0.005 (0.244)	-0.080*** (-4.790)	1.414*** (3.225)	0.823* (1.758)	1.173*** (3.231)
Interest Payments	-0.524** (-2.431)	-0.285 (-1.293)	-1.427** (-2.530)	-3.585 (-0.368)	5.844 (0.637)	5.207 (0.473)
Work Type	Yes	Yes	No	No	No	No
Year	Yes	No	No	Yes	No	No
Work Type \times Region \times Year	No	No	Yes	Yes	Yes	Yes
Province	Yes	Yes	No	Yes	Yes	No
Municipality	No	No	Yes	No	No	Yes
Observations	41,400	41,400	41,400	41,400	41,400	41,400
Adjusted R ²	0.222	0.247	0.312	0.194	0.224	0.352

This table presents first and second-stage regression results for our instrumental variables analysis estimating the effect of own revenue share on contracts' award criteria and award discounts. Panel A presents first-stage estimates, i.e., the effect of the IMU reform ($IMURevShare \times Post$) on municipalities' own revenue share ($OwnRevShare$). F-Statistics are reported for the instrument ($IMURevShare \times Post$). Panel B reports second-stage estimates for the *LowestPrice* outcome in columns (1) - (3), and the *WinningDiscount* outcome in columns (4) - (6). All variables are as described in Appendix A. T-statistics based on robust standard errors, clustered by municipality, are reported in parentheses. Levels of significance are presented as follows: *p<0.1; **p<0.05; ***p<0.01.

Table 5
Performance Effects

	Modification		Cost Overrun		Delay	
	(1)	(2)	(3)	(4)	(5)	(6)
$\widehat{OwnRevShare}$	-0.003** (-2.213)	-0.003* (-1.682)	-0.134* (-1.928)	-0.099 (-1.234)	-0.003* (-1.917)	-0.003 (-1.389)
$\widehat{IMURevShare}$	0.000 (0.169)		0.044 (0.578)		-0.001 (-0.436)	
Log(Reserve Price)	0.193*** (46.946)	0.200*** (42.678)	1.350*** (3.940)	1.105*** (4.088)	0.111*** (24.168)	0.111*** (23.798)
Log(Population)	-0.014*** (-3.282)	0.090 (0.450)	0.721** (2.569)	-14.075 (-1.425)	-0.038*** (-8.332)	-0.072 (-0.278)
DSP	-0.074*** (-4.499)	-0.053*** (-3.487)	1.275* (1.661)	-1.421* (-1.919)	-0.067*** (-3.434)	-0.039* (-1.828)
Interest Payments	0.555** (2.032)	0.412 (0.945)	40.721*** (2.902)	9.661 (0.448)	0.530* (1.927)	0.805 (1.316)
Work Type \times Region \times Year	Yes	Yes	Yes	Yes	Yes	Yes
Province	Yes	No	Yes	No	Yes	No
Municipality	No	Yes	No	Yes	No	Yes
Observations	41,400	41,400	23,039	23,039	21,268	21,268
Adjusted R ²	0.213	0.298	0.106	0.199	0.112	0.159
F-Stat (1st stage)	202.054	216.873	122.629	118.481	104.968	87.460

This table presents second-stage regression results for our instrumental variables analysis estimating the effect of own revenue share on contracts' execution performance. Columns (1) and (2) report estimates for the *Modification* outcome; columns (3) and (4) report estimates for the *CostOverrun* outcome; and columns (5) and (6) report estimates for the *Delay* outcome. First-stage regressions are omitted for brevity, and F-Statistics are reported for the instrument ($\widehat{IMURevShare} \times Post$). All variables are as described in Appendix A. T-statistics based on robust standard errors, clustered by municipality, are reported in parentheses. Levels of significance are presented as follows: *p<0.1; **p<0.05; ***p<0.01.

Table 6
Vendor Characteristics

	Log(No. Bidders)		Log(Distance)		Non Local	
	(1)	(2)	(3)	(4)	(5)	(6)
$\widehat{OwnRevShare}$	0.006 (1.057)	0.006 (0.889)	0.013** (2.343)	0.012* (1.695)	0.005*** (2.805)	0.003 (1.392)
$\widehat{IMURevShare}$	0.003 (0.773)		0.005 (0.984)		0.002 (1.241)	
Log(Reserve Price)	0.727*** (64.993)	0.711*** (52.211)	0.337*** (24.448)	0.322*** (22.573)	0.046*** (12.208)	0.044*** (12.647)
Log(Population)	0.053*** (3.201)	-0.113 (-0.198)	-0.033** (-2.388)	0.526 (0.675)	-0.045*** (-7.762)	0.140 (0.694)
DSP	-0.099 (-1.553)	-0.021 (-0.439)	0.012 (0.198)	0.036 (0.659)	-0.039** (-2.189)	0.022 (1.573)
Interest Payments	0.359 (0.533)	0.386 (0.268)	-1.449* (-1.888)	-0.960 (-0.593)	-0.330 (-1.322)	-0.070 (-0.170)
Work Type	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Province	Yes	No	Yes	No	Yes	No
Municipality	No	Yes	No	Yes	No	Yes
Observations	41,400	41,400	27,708	27,708	27,708	27,708
Adjusted R ²	0.417	0.475	0.090	0.191	0.054	0.174
F-Stat (1st stage)	176.704	161.011	140.044	139.949	140.044	119.684

This table presents second-stage regression results for our instrumental variables analysis estimating the effect of own revenue share on vendor characteristics. Columns (1) and (2) report estimates for the $\widehat{LogNo.Bidders}$ outcome; columns (3) and (4) report estimates for the $\widehat{LogDistance}$ outcome; and columns (5) and (6) report estimates for the $\widehat{NonLocal}$ outcome. First-stage regressions are omitted for brevity, and F-Statistics are reported for the instrument ($\widehat{IMURevShare} \times Post$). All variables are as described in Appendix A. T-statistics based on robust standard errors, clustered by municipality, are reported in parentheses. Levels of significance are presented as follows: *p<0.1; **p<0.05; ***p<0.01.

Table 7
Political Incentives

Incumbent Pressure	Final Price Discount					
	No (1)	Yes (2)	No (3)	Yes (4)	No (5)	Yes (6)
$\widehat{OwnRevShare}$	0.031 (0.430)	0.292*** (2.864)	0.059 (0.792)	0.305*** (2.676)	0.102 (1.065)	0.354* (1.912)
$\widehat{IMURevShare}$	-0.040 (-0.608)	-0.112 (-1.091)	-0.028 (-0.428)	-0.116 (-1.059)		
Log(Reserve Price)	0.070 (0.393)	0.212 (0.660)	0.017 (0.094)	0.364 (1.052)	0.313 (1.548)	0.327 (0.787)
Log(Population)	1.310*** (6.841)	1.706*** (7.035)	1.385*** (7.098)	1.610*** (6.148)	12.762 (1.298)	48.898 (1.404)
DSP	-1.056 (-1.409)	1.171 (1.085)	-0.959 (-1.215)	1.028 (0.895)	2.040** (2.462)	-1.996 (-0.889)
Interest Payments	-19.692** (-2.018)	-5.453 (-0.340)	-17.495* (-1.738)	0.222 (0.013)	8.599 (0.362)	-107.551** (-2.170)
Difference	-0.261**		-0.246*		-0.253	
z-stat	(-2.093)		(-1.803)		(-1.212)	
Work Type	Yes	Yes	No	No	No	No
Year	Yes	Yes	No	No	No	No
Work Type \times Region \times Year	No	No	Yes	Yes	Yes	Yes
Province	Yes	Yes	Yes	Yes	No	No
Municipality	No	No	No	No	Yes	Yes
Observations	17,119	5,400	17,119	5,400	17,119	5,400
Adjusted R ²	0.090	0.085	0.111	0.110	0.200	0.269
F-Stat (1st stage)	53.981	78.285	51.485	90.138	58.778	73.535

This table presents second-stage regression results for our instrumental variables analysis estimating the effect of own revenue share on contracts' final price discount, in subsamples where the incumbent mayor is or is not up for re-election in the first three years of their term (*IncumbentPressure*). *Difference* shows the difference between the $\widehat{OwnRevShare}$ coefficients and *z-stat* is the corresponding test statistic. First-stage results are suppressed for brevity, and F-Statistics are reported for the instrument ($\widehat{IMURevShare} \times Post$). T-statistics based on robust standard errors, clustered by municipality, are reported in parentheses. Levels of significance are presented as follows: *p<0.1; **p<0.05; ***p<0.01.

Internet Appendix for “The Role of Revenue Decentralization in Disciplining Local Government Spending”

IA-1 Anecdotes

Section 1 of this appendix provides the original Italian newspaper article excerpts used in Appendix B. Section 2 describes our methodology to retrieve the data used in Figure 2.

Section 1: Original Italian newspaper article excerpts used in Appendix B

LA NAZIONE

“Marina di Pietrasanta: Comitato di 40 aziende vuole incontrare Lombardi; Anche gli hotel contro la stangata Imu” 18 Aprile 2012.

Prima i cittadini, ora le attività economiche: l'introduzione dell'Imu annunciata dal sindaco Lombardi sta facendo spuntare comitati come funghi. Ieri infatti si è costituito il Comitato di salvezza delle imprese, formato da 40 alberghi di Marina di Pietrasanta[...]. “Chiederemo subito un incontro al Sindaco per dirgli in modo chiaro che non accettiamo l'innalzamento dell'Imu.[...] Qui non si tratta di discutere, ma di salvare le imprese e le loro famiglie.”



“Fiumicino, sit-in di protesta contro IMU su terreni.” 30 Maggio 2012.

Un gruppo di cittadini, tra i quali il capogruppo dell'Italia dei valori Claudio Cutolo, questa mattina hanno inscenato, a Fiumicino, un sit in ai piedi del Ponte Due Giugno. Indossando cartelli con la scritta “Esondabili, no all'Imu” hanno protestato e chiesto l'esonazione della nuova tassa [...].

il Resto del Carlino

“Porto Viro, comitato di aziende raccoglie centinaia di firme” 6 Dicembre 2012.

Un gruppo di imprenditori e di cittadini ha lanciato una petizione per chiedere di ridurre l'Imu. La petizione partita alcuni mesi fa ha già raccolto tantissime adesioni. L'idea è partita dal comitato FPA, sigla che sta per forze produttive autonome sezione di Porto Viro, presieduto da Claudio Mancin. L'organismo rappresenta 284 tra cittadini e imprenditori del paese. “Siamo molto preoccupati” dice Claudio Mancin visto il momento particolarmente difficile che l'intera

nazione sta attraversando [...] Una richiesta, spiega, “per non gravare ulteriormente nel portafogli dei commercianti e cittadini già in enorme difficoltà.”



“Roma, IMU: Marino, importante utilizzare localmente soldi tasse.” 22 Agosto 2013.
Così, il sindaco di Roma, Ignazio Marino ha commentato la proposta di dieci assessori al bilancio di Comuni capoluogo di una riforma federale dell’Imu: “Se il cittadino con una forma di tassazione, comunque la chiamiamo, si rende conto che i soldi che escono dal proprio bilancio familiare vengono reinvestiti in servizi [...] capirà che vengono investiti bene i propri danari. Ecco perché [...] ha un senso, quello cioè di utilizzare lo strumento fiscale in modo che sia direttamente percepibile dal cittadino come quella tassazione viene effettivamente utilizzata in termini di servizi”.

il Resto del Carlino

“Cavriago, Vincenzo Delmonte non ci sta: ‘bisogna avere il coraggio di dire ai cittadini tutta la verità’”; il sindaco va al contrattacco 22 Novembre 2012.

“Per completare la scuola d’infanzia di Roncaglio ci vogliono 1.200.000 euro; per ristrutturare la scuola elementare “Rodari” occorrono due milioni, per ampliare la Casa protetta comunale servono addirittura quattro milioni di euro. Non ci sono studi di fattibilità per le piste ciclopedonali Cavriago Corte Tegge, ma solo per il collegamento con la zona industriale servono ben più di 510.000 euro. L’altra verità che va detta è che [...] potremmo reperire i finanziamenti mancanti solo aumentando l’IMU”.



“Roma, cartelli su IMU, blitz Prestipino per chiedere di abbassare aliquota”. 17 Dicembre 2012.

Nella giornata di domenica un nuovo blitz nella capitale: nei luoghi simbolo di Roma e su tutti i presepi del centro storico, un cartello con la scritta “L’Imu giusto per Roma” [...] Patrizia Prestipino, candidata alle primarie del centrosinistra per sindaco di Roma, che questa mattina ha rivendicato la paternità dell’iniziativa [...] “E’ necessario ristabilire una situazione di equilibrio e andare incontro ai cittadini che, tra l’altro, non vedono riscontro tra i loro sacrifici economici e i servizi prestati dall’Amministrazione capitolina.”

“Castrocaro Terme, IMU, un occhio di riguardo per le aziende di categoria”. 10 Maggio 2012.

Il nuovo sindaco di Castrocaro Terme si è appena insediato e già si levano i primi SOS. CNA e Confartigianato chiedono di mantenere alta l’attenzione sulle piccole imprese locali. “Stiamo affrontando un momento molto particolare dal punto di vista economico ma non abbiamo alcuna intenzione di abbandonare i protagonisti del tessuto economico locale”, afferma il Sindaco. La prima preoccupazione è data dalla determinazione dell’Imu, spauracchio non solo dei cittadini ma anche delle imprese [...]. “Faremo di tutto per venire incontro, in particolare, alle aziende che costituiscono il tessuto economico locale [...]. Cercheremo di favorire il frazionamento degli appalti di grandi opere a vantaggio degli imprenditori locali.”

Section 2: Methodology to retrieve newspaper article data

In this section, we describe our methodology to collect the newspaper article data used to generate Figure 2. Using Factiva, which covers articles published by Italian newspapers headquartered in the 20 largest Italian regions and 4 largest municipalities, we counted the number of articles mentioning the IMU between 2008 and 2014 to generate Panel A of Figure 2. To construct Panel B, we read a large number of articles to compile a list of keywords describing (i) citizen complaints and backlash, (ii) local public officials and (iii) public goods and services. We provide the keywords and search logic used to generate Panels A and B of Figure 2 below:

- Keywords to identify articles mentioning the IMU (Panel A of Figure 2):
IMU or imposta municipale unica
- Keywords to identify articles mentioning the IMU in conjunction with citizen backlash (Grey bars in Panel B of Figure 2):
(IMU or imposta municipale unica) and (preoccupa* or protest* or comitat* or rivolt* or ribella* or minacc*)
- Keywords to identify articles mentioning the IMU in conjunction with local public officials and public goods and services (Black bars in Panel B of Figure 2):
(IMU or imposta municipale unica) and (assessore bilancio or sindaco or sindaci or prim* cittadin*) and (appalt* or "servizi pubblici" or "bandi di gara" or "contratti pubblici" or serviz* or educazione or scuol* or scolastic* or sanit* or trasport* or infrastruttur* or manutenzion*)