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## LOCAL GOVERNMENTS' CAPACITY AND PERFORMANCE: EVIDENCE FROM PERUVIAN MUNICIPALITIES

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LA CAPACIDAD Y DESEMPEÑO DE LOS GOBIERNOS LOCALES: EVIDENCIA DE LAS MUNICIPALIDADES PERUANAS

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RESUMEN

Este estudio explora el efecto que tienen las carencias de capacidad técnica e el desempeño del gasto de los gobiernos locales. Utilizamos para ello los significativos ingresos inesperados que han tenido las municipalidades peruanas en los últimos años y que han estado condicionados a gastos de capital de tal manera de estimar cuán efectivos han sido en incrementar el gasto público. Encontramos evidencia robusta que las municipalidades que carecen de habilidades relacionadas a gestión de proyectos, contabilidad y finanzas, planeamiento y coordinación con otras entidades públicas fueron menos capaces de gastar los recursos adicionales. En promedio, las restricciones de capacidades técnicas reducen la propensión a invertir en al menos 6%. También encontramos evidencia que la experiencia de las autoridades locales puede contribuir positivamente a la capacidad de gasto de una municipalidad.

Palabras clave: gobiernos locales, transferencias, Perú

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ABSTRACT

This paper explores the extent of technical capacity constraints in Peruvian local governments. To do that, we study how effective municipalities are in using a significant income windfall due to central government transfers mostly earmarked to capital expenditures. We find evidence that in the short-term municipalities are unable to use all the additional resources. The inability to spend additional resources seems to be linked to lack of project management and administrative skills. Mayor experience is another important factor. These results provide powerful insights to the design of training programs in countries like Peru.

Keywords: local governments, transfers, Peru

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# Local governments' capacity and performance: evidence from Peruvian municipalities

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## Abstract

This paper explores the extent of technical capacity constraints in Peruvian local governments. To do that, we study how effective municipalities are in using a significant income windfall due to central government transfers mostly earmarked to capital expenditures. We find evidence that in the short-term municipalities are unable to use all the additional resources. The inability to spend additional resources seems to be linked to lack of project management and administrative skills. Mayor experience is another important factor. These results provide powerful insights to the design of training programs in countries like Peru.

## 1 Introduction

A main concern in any decentralization process is to provide subnational governments with the appropriate means to perform their new responsibilities (Bahl & Martinez-Vasquez, 2006). Traditionally, the main focus has been on decentralization of tax capacity and intergovernmental transfers. However, with the growing decentralization in developing countries, practitioners have also recognized the need to improve local institutions and develop managerial and planning skills (Litvack, Ahmad, & Bird, 1998). This concern has led to a surge on technical assistance and training programs for local governments, usually complementary to fiscal decentralization (Parker & Serrano, 2000).

The economic rationale behind this argument is that managerial and planning skills are part of the "technology" by which local governments provide public goods and

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respond to local needs. Moreover, these capacities are relatively fixed in the short term, because local governments need time to learn, acquire experience or recruit skilled personnel<sup>2</sup>. In this view, local governments are constrained not only by financial resources but also by their human capital and expertise endowments.

This paper evaluates empirically how relevant capacity constraints are for local governments' performance. We address this question indirectly by estimating the effect of additional revenues on the propensity to spend. The intuition behind this approach is that if a local government is capacity-constrained, then it may be unable to effectively spend additional financial resources. Hence, their propensity to spend would be smaller. For example, a local government with limited capacity to design and implement an investment project may be unable to complete the necessary steps to claim a grant and built a local road widely demanded by the population even if the budget is available.

We focus on the case of Peruvian district municipalities. There are several reasons for this case to be an interesting testing ground. Firstly, the current intergovernmental transfer system includes revenue sharing of the corporate tax paid by firms exploiting natural resources. This situation has left local governments exposed to the commodity boom which significantly increased local revenues in a short time period and provides an exogenous source of variation of municipalities' budgets. Secondly, these type of transfers are earmarked to capital expenditures. However, capital expenditures are subject to strict controls and regulation set by the central government and therefore require more specialized skills<sup>3</sup>. Finally, there is detailed information of local governments' finances and self-reported needs for technical assistance and training. This information can be use to obtain measures of local governments' performance and capabilities.

We found that propensity to spend new resources can be reduce if there is lack of capacity in several issues where the most important is project management. Other important factors are population and mayor experience. This is the first aim to provide a quantitative estimation of the impact of skill shortage over municipalities' administration.

These results have a great impact in the design of training programs that until now were focused in traditional learning. There is a great necessity of a training-on-the-job strategy. Instability of staff is another important factor and the design of an incentive scheme that provides stability to trained workers must be desirable.

The rest of the paper is organized as follows. Section 2 describes the institutional background to understand the Peruvian case and describes the main empirical regu-

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<sup>2</sup> The capacities need not be fixed over time. For example, some anecdotal evidence from Colombian municipalities suggests that local governments invest in capacity building as response to additional responsibilities (World Bank, 1995). For the argument to work what is required is only that capacities adjust more slowly than revenue decentralization.

<sup>3</sup> There is anecdotal evidence that some sub-national governments are not being able to use the additional resources or meet the earmarking rates (Ahmad & Garcia-Escribano, 2006).

larities. Section 3 discusses the data and empirical strategy. Section 4 presents the main results and robustness checks. Section 5 concludes.

## **2 Background**

Peru has started a new decentralization attempt in 2002. That year 25 Regional Presidents were elected for every department for the first time. This new decentralization process implies elected governors in addition to mayors of districts and Provinces that are elected since XIX century.

Peru is a unitary country with three levels of governments. Intermediate levels are the departments that can join to become a region by a referendum process. The local level has two sub-levels: provinces and districts. So, district municipalities are the lower tier of autonomous sub-national government in Peru.

There are around 1650 district municipalities and they are highly heterogeneous in terms of size and spending capabilities. Local authorities (mayor) are locally elected and have a 4-year mandate without term limits. In the last local elections, the proportion of incumbents being reelected was almost 20%. District municipalities are below the jurisdiction of provincial municipalities and must coordinate with them in legal aspects but not in budget issues. There is a high degree of autonomy of district municipalities but they must comply with national legislation. Regional governments don't have any hierarchical relation with municipalities. There is a need of formal coordination mechanisms between all levels of government.

There is significant interaction between different district municipalities with central government agencies. District municipalities need to coordinate with other agencies due to overlapping of responsibilities in particular regarding infrastructure projects. The assignment of expenditure responsibilities is not clear. Actual legislation establishes that almost all level of governments have responsibilities in education and health for example.

District municipalities receive transfer from central government and need to report budgetary and financial information. The information is used to prepare the national budget, national accounts and to monitor the activity of local governments. More importantly, they need to comply with central government directives and regulations on budget preparation, accounting, public spending, personnel and procurement.

### **Expenditures**

District municipalities' responsibilities are set in Organic Municipalities Act 2003 (Ley Nº. 27792) of 2002. They play a key role on local development by providing local services and infrastructure, regulating building construction and granting businesses licenses. Exclusive competences of district municipalities are some of the public services like waste collection, health inspections, measures controls, local police and civil register. Regarding provision of local infrastructure, district municipalities are responsible of construction and maintenance of roads, bridges, schools, health centers, irrigation projects, water and sanitation, parks, markets, etc. The main limitation is that the

infrastructure should have a local impact. However in practice there is overlapping with other government agencies and confusion regarding the scope of municipalities' competences as we mentioned above. In addition, they participate as local liaisons in central government programs related to poverty reduction, food support, health and education.

District municipalities' expenditures –as well all public entities- are classified in three categories: current and capital expenditures and debt service. Provision of local infrastructure, and more generally investment projects, are considered capital expenditures. Our main concern in this study will be this kind of expenditure.

## Revenues

Municipalities have a limited tax capacity and in practice rely heavily on transfers from the central government. Their main tax revenue comes from property taxes however they cannot set the tax rate nor define the tax base. Other taxes such as income tax, VAT and duties are administered exclusively by the central government. In addition to taxes, they can levy user charges for public works and services. In 2007 local taxes represent 8% of total revenues and user charges (tasas and contribuciones) 7.6%.

Intergovernmental transfers are mostly sharing schemes of taxes administered by the central government<sup>4</sup>. The most important transfer is the Municipal Compensation Fund, an equalization grant funded by a share of the VAT. Other relevant transfers are linked to the corporate taxes and royalties collected from extractive industries such as oil and gas, mining, fishing, energy generation and forest extraction. Together, transfers represented around 70% of total municipal budget in the period of analysis<sup>5</sup>. Depending of the type of transfer, their use is totally or partially earmarked to capital expenditures. As we will see below, this revenue source has experienced the most significant increase in the period of analysis meaning that an even larger proportion of the municipal budget had to be allocated to capital expenditures.

Transfers are allocated to municipalities following pre-established weights. The weights are obtained by a formula defined and calculated by the Ministry of Economics, based on criteria established in a national law. The formulae vary between different types of transfers but overall the weights are proportional to population size and poverty measures.

## Budgeting process

The process of budget allocation implies matching a revenue source to an expenditure item until all the resources are depleted. The budget allocation is continuously

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<sup>4</sup> There is one transfer earmarked to provide food support to children and old people (Vaso de Leche) which is funded with ordinary resources from the central government and not linked to any particular tax revenue.

<sup>5</sup> For example, the Municipal Compensation Fund is financed with 2/19 of the total VAT while the *canon* (a mining related transfer) receives 50% of the corporate tax paid by mining companies.

updated during the year before the expenditure are made and approved at the end of the year. Once approved it represents a cap on how much the municipality can spend in each type of expenditure. Since the budget is only an upper limit on expenditure, it is possible that the amount budgeted exceeds the actual spending. In this case, unused budget allocations are rolled forward to the next period.

Municipalities have almost total autonomy on the budget allocation. However, they need to comply with national budgeting, treasury and accounting regulations as well as with earmarking conditions imposed to the revenue source. Capital expenditures are subject to additional regulations like all regional and national entities. Firstly, investment projects need a detailed design, demand estimation and feasibility study before they are approved by the municipality planning department and consider for the budgeting process. The criteria and procedures to perform feasibility studies are set by the central government and are similar for all the public sector. Secondly, they require, since their implementation may last several years, forecasts of revenues and costs over a longer horizon periods. This feature makes the planning process more complex. Finally, due to overlapping of competences, they require additional coordination with other government agencies as well as obtaining the required authorizations and permits if the expenditure will be made in issues where there is not clearly assignment of responsibilities or is an exclusive competence of another level of government.

In practice, these additional requirements make capital expenditures more difficult to implement than current expenditures. There is a lot of criticism from local and regional governments to the National System of Public Investment (SNIP) that set all technical requirements. They say that the national standards are very high and that SNIP regulations are very hard to accomplish. There is a lot of debate now about the nature and regulations of SNIP and a lot of pressure (including the national government) to relax SNIP standards, but it has proved to be a desirable system which aim is to assure a high quality of capital expenditure in order to respond to communities needs.

#### Evolution of budget and spending

In the last years there have been a lot of changes in municipal budgets. Firstly, we observe a significant increase on municipal budget (see Figure 1) mostly driven by additional transfers from the central government. In a 7-year period total budget increased almost three-fold from around S/.2.5 billion to S/.6 billion with most of the growth occurring since 2003. In comparison, the revenue from local taxes and fees (owned revenues) remained relatively constant around S/.1 to S/.1.5 billion.

Two factors explain this increase in transfers. In first place, the GDP growth which increased the VAT collection and the associated Municipal Compensation Fund. Secondly, the higher mineral prices and new mining operations contributed to the growth of mining companies' profits and of mining-related transfers.

Figure 1: Evolution of municipal budget



This sudden increase on the municipal budget provides the variation to explore empirically whether lack of technical capabilities constrained local governments and reduced their ability to exploit the additional revenue.

As a preliminary analysis, we investigate the evolution of budget underspending, defined as the proportion of the available budget not spent in a given year (see Figure 2). We can see an increase on budget underspending since 2003 both as a proportion of the total budget and in absolute terms. Between 2000-2002 the average municipality did not spend around 15% of its available budget. After 2003, the proportion increased up to more than 20%. This is a sizeable amount and represented nearly S/. 1.2 billion in 2006.

Figure 3 decomposes budget underspending by type of expenditure. For example, budget underspending of capital expenditure is defined as the proportion of the budget allocated to capital expenditures that was not spent. We observe that budget underspending occurs mainly for capital expenditures. Before 2003, the proportion not spent in both expenditure categories was similar and around 12%. However, since 2003 the underspending of capital expenditures steadily increased and reached 25% in 2005.

Overall this preliminary evidence suggests that when revenues increased significantly municipalities spent a smaller proportion of their available budget in particular for capital expenditures. This evidence may reflect inability to spend the additional resources due to lack of technical capacities (which are mostly required for investment projects).

Nonetheless it can also reflect municipal savings. In this alternative explanation local governments may perceive the increase on revenue as transitory and thus save



part of it by not increasing spending and just rolling the surplus forward in the budget<sup>6</sup>.

In this paper, we will not be able to rule out this possibility. However, we will attempt to disentangle how relevant technical capacities are. To do that, we explore differences on the propensity to spend associated to measures of capabilities. As long as these measures are uncorrelated to the determinants of municipal savings our results will capture the importance of local government capacities on their spending effectiveness.

Figure 2: Evolution of budget underspending

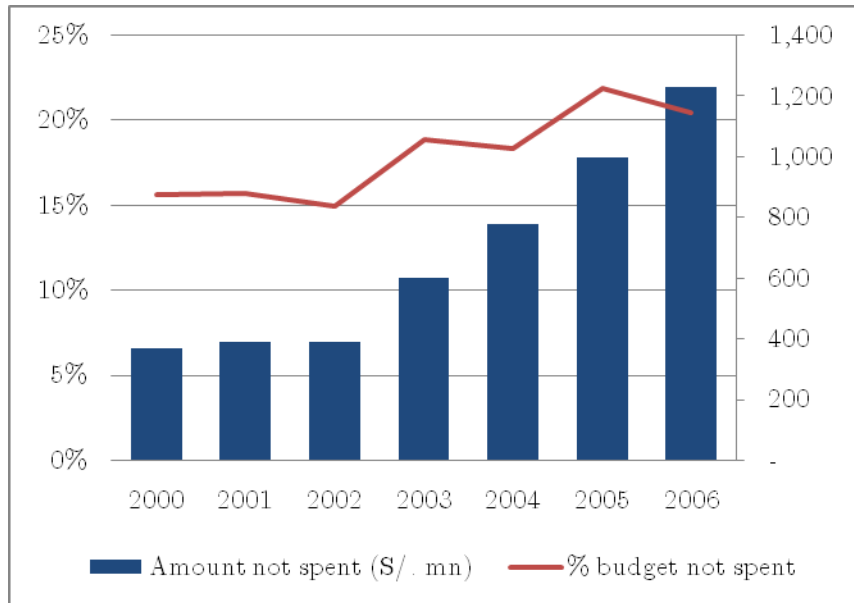
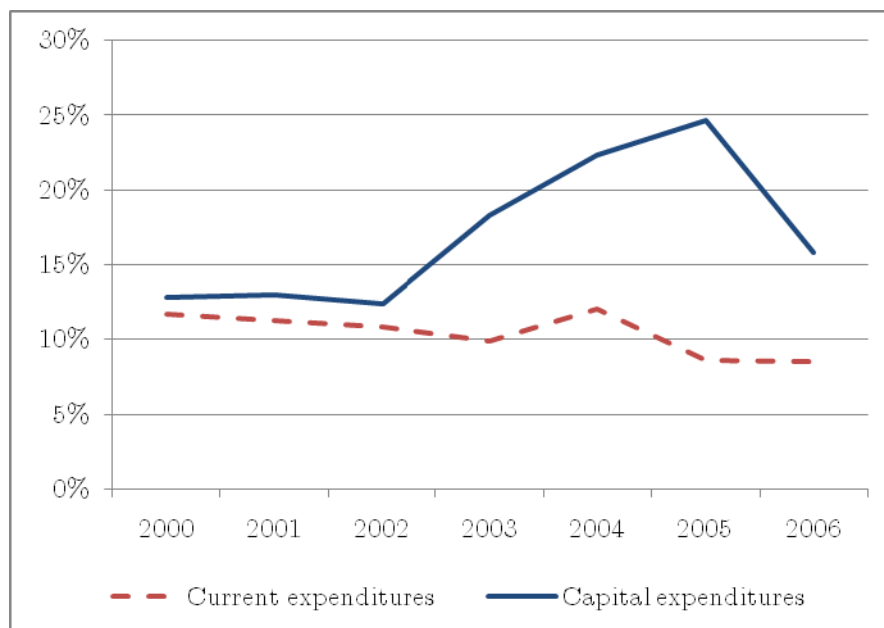


Figure 3: Budget underspending by type of expenditure



<sup>6</sup> In practice it means that municipalities may keep the money in a bank account but register the available resources as part of the annual budget.

### 3 Data and methodology

We use a dataset of Peruvian district municipalities. The data includes 1650 municipalities which correspond to the universe of districts, except for few cases in which data is unavailable. For each municipality we have detailed annual information including the available budget, actual expenditures and transfers from the central government for the period 2000-2006.

The budget data comes from reports prepared by the local governments and transfers records from the Ministry of Economy. The budget reports have official status and are used for national accounting and auditing by different government agencies.

Table 1 presents a summary of the main financial variables during the period 2000-2006. The annual budget of the average municipality was around S/. 3.7 million and the total expenditure was smaller. In average, 14% of the available budget was not spent. As mentioned above municipalities are highly dependent on transfers from the central government which comprises almost 70% of their budget. In addition, almost half of their expenditures are capital expenditures.

Table 1: Summary statistics

Variables	Mean	St.Dev.
Budget	3.763	19.025
Total expenditure	3.010	14.584
% budget not spent	0.143	0.126
Transfers as % budget	0.683	0.203
Canon as % budget	0.121	0.165
Capital exp. as % total exp.	0.510	0.166

Notes: Budget and total expenditures are annual values in millions of Nuevos Soles. Period of analysis is 2000-2006

#### 3.1. Measures of technical capabilities

The budgetary data is complemented with annual municipality surveys collected by the National Statistics Institute<sup>7</sup> during the period 2003-2005. Filling these surveys is compulsory for municipalities and there is a very high response rate. The survey' primary objective is to maintain a register of municipalities, their authorities as well as resources and practices. A feature relevant for this paper is that they collect data on self-reported needs of training and technical assistance that we use as measures of technical capabilities. These variables are binary indicators that adopt value 1 if the municipality request technical assistance or training in a particular category.

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<sup>7</sup> The name of the survey is RENAMU (Registro Nacional de Municipalidades)

We consider four categories of technical assistance and training related to project management, accounting and finance, planning, and coordination with other government agencies. The reason we choose these categories is that they are closely related to activities required for implementing investment projects. As we mentioned before, the budget earmarked to capital expenditures increased significantly over the period of analysis and thus we could expect capacity constraints to be more binding in this type of expenditure.

As a comparison we also consider other categories of technical assistance and training related to the overall operation of the municipality such as general management, politics, legislation and information technologies (IT). For each of these variables we take the average value over the period 2003-2005. This procedure reduces the volatility and also complete the series for variables not collected regularly. In all the cases, a larger value indicates a relatively larger scarcity of a particular technical capability.

Table 2 presents summary statistics for the proposed measures of technical capabilities. Note that the average values are different and in particular among capabilities related to capital expenditure the mean ranges from 0.3 to 0.8. This evidence suggest the measures are not identical and capture different aspects of technical capacities. To further explore this aspect we evaluate the pairwise correlation and find a positive but relatively low value<sup>8</sup>. For that reason, we do not aggregate them in a single indicator but instead we study them separately.

Table 2: Measures of technical capabilities

Municipality requested technical assistance or training on	Mean	St.Dev.
Project management	0.838	0.276
Accounting and finance	0.378	0.308
Development plans	0.638	0.306
Coordination with other government agencies	0.330	0.470
Municipal management	0.738	0.274
Municipal politics	0.722	0.278
Municipal legislation	0.629	0.316
IT	0.671	0.285

Note: value of variable is the average over years 2003, 2004 and 2005.

Source: RENAMU Survey

<sup>8</sup> The pairwise correlation between the measures of capabilities, not reported, ranges from 0.10 to 0.40 with an average of 0.27.

### 3.2. Empirical strategy

We evaluate indirectly the relevance of technical capabilities by estimating the differences on the propensity to spend the available budget. The rationale for this approach is that a municipality lacking technical capabilities would be less able to transform the budget allocation into capital expenditures due to their additional complexity and requirements of specialized skills. In this case, we should expect a smaller propensity to spend on capital expenditures.

In contrast, we would expect a smaller or insignificant difference on the propensity to spend on current expenditures since the budget earmarked to this expenditure did not increase so much and because their technical requirements are less sophisticated. This strategy only focuses on capabilities related to investment projects since most of the additional revenue was earmarked to this type of expenditure. A caveat of this paper is that we cannot identify how relevant other skills are for a local government's performance.

To test these hypotheses we use the following regressions:

$$Y_{it} = \alpha_i + \eta_t + \beta_1 X_{it} + \beta_2 (X_{it} \times C_i) + \varepsilon_{it} \quad (1)$$

where  $Y$  is the municipality capital or current expenditure,  $X$  is the available budget and  $C$  is the measure of a municipality's technical capabilities. Both measures of budget and expenditures are normalized at municipality level. The indexes  $i$  and  $t$  refer to municipality and year respectively. The parameter of interest is  $\beta_2$  since it captures the difference in the propensity to spend.

This specification exploits within municipality variation and includes both municipality and year fixed effects. These features allow us to control for time-invariant municipality characteristics as well as for shocks affecting all municipalities such as changes in the funding of transfers or municipal legislation.

Note that this methodology uses the ability to spend as a measure of performance. This is clearly a limited view of a local government's role since it does not consider how the resources are allocated. For example, a municipality may be able to spend the entire budget by allocating it to useless projects or simply redistributing it among voters or the political elite. Hence, the inability of spend the resources only provides a lower bound of the underperformance due to technical capacities. In reality, the losses may be even larger.

## 4 Empirical results

### 4.1. The relevance of technical capabilities

Table 3 shows the estimates of the baseline specification (1) using capital expenditures as the dependant variable and several measures of technical capabilities related to investment projects. In all the cases, the estimate of beta1 is positive and close to 1

suggesting that an increase of a standard deviation in the budget is related to a standard deviation increase in capital expenditures.

However, the propensity to spend is smaller among municipalities that report requiring technical assistance or training on project managements, accounting and finance, planning or coordination with other government agencies. We interpret these results as evidence that the lack of technical capabilities reduced the ability of municipalities to use the additional revenues.

On average, technical capacity constraints may have reduced the propensity to spend in capital expenditure by at least 5%. If the lack of capacity is in project management the effect increase to 8%. This figure implies that one of the main restrictions to transform revenues from transfers to capital expenditure is related to the formulation of investment projects. This result may imply that a great effort has to be made in order to increase local governments' capabilities in the pre-investment phase.

The indicators of technical capabilities are proxies for the true municipality capacity and may be measured with error. The presence of a measurement error would imply an attenuation bias and hence the underestimation of  $\beta_1$  and  $\beta_2$ . However, this potential problem would make our results even more conservative.

A relevant question is whether other municipality skills would also be relevant to explain investment performance. We address this question by estimating the baseline regression using measures of broader, less specialized capabilities such as general management, politics, legislation and IT. Table 4 displays the results. In contrast to the baseline results, there is not a significant difference on the propensity to spend with these alternative capability measures. This result is reassuring since most of the budget increase was earmarked to capital expenditures. Thus the relevant capacity constraints should have been associated to lack of investment related skills not to broader abilities.

Moreover, these results also shed doubt of the argument that municipalities with lower propensity to spend systematically request technical assistance or training. For example municipalities having problems to increase expenditure could 'tick all the boxes' if they believe it would increase the assistance they require. In that case, our estimates could be reflecting this over-reporting instead of actual technical constraints. However, if municipalities engage in this strategic behavior we should also observe smaller propensities to spend in capital expenditure with all the measures of capabilities not only with the ones related to investment projects.

Table 3: Technical capabilities and capital expenditure

Variables	(1) Capital expenditure	(2) Capital expenditure	(3) Capital expenditure	(4) Capital Expenditure
Budget size	0.999*** (0.026)	0.968*** (0.023)	0.982*** (0.025)	0.961*** (0.020)
Budget size x technical capability	<b>-0.081***</b> (0.030)	<b>-0.056*</b> (0.032)	<b>-0.058*</b> (0.031)	<b>-0.056**</b> (0.025)
<u>Measure of technical capability</u>				
Municipality requested technical assistance or training on	Project man- agement	Accounting and finance	Development plans	Coordination with other gov. agen- cies
Observations	10310	10303	10303	10157
Number of id	1627	1626	1626	1601
R-squared	0.68	0.68	0.68	0.68

Notes: Robust standard errors in parentheses. Standard errors are adjusted for clustering at municipality level. \* denotes significant at 10%, \*\* significant at 5% and \*\*\* significant at 1%. All regressions include municipality and year fixed effects

Table 4: Other measures of municipality's capabilities

Variables	(1) Capital expenditure	(2) Capital ex- penditure	(3) Capital ex- penditure	(4) Capital ex- penditure
Budget size	0.926*** (0.031)	0.950*** (0.029)	0.931*** (0.025)	0.940*** (0.028)
Budget size x technical capability	<b>0.027</b> (0.034)	<b>-0.005</b> (0.032)	<b>0.025</b> (0.028)	<b>0.011</b> (0.031)
<u>Measure of technical capability</u>				
Municipality requested technical assistance or training on	Municipal management	Municipal politics	Municipal legislation	IT
Observations	10303	10310	10310	10310
Number of id	1626	1627	1627	1627
R-squared	0.68	0.68	0.68	0.68

Notes: Robust standard errors in parentheses. Standard errors are adjusted for clustering at municipality level. \* denotes significant at 10%, \*\* significant at 5% and \*\*\* significant at 1%. All regressions include municipality and year fixed effects

## 4.2. Confounding effects

A main concern with specification (1) is that the measures of technical capabilities would be capturing other systematic differences on municipalities also affecting spending decisions. For example, municipalities lacking capabilities may also have a systematic different saving rate. In this case, the parameter  $\beta_2$  could not be interpreted as the difference on the propensity to spend due to lack of technical capabilities.

To address this concern we first explore the determinants of technical capabilities and evaluate whether there are systematic differences based on observables. In particular, we estimate an OLS regression of the measures of technical capabilities on several municipality characteristics such as budget size, population, poverty and region fixed effects<sup>9</sup>.

The results are shown in Table 5. Notice that in all the cases there is no systematic and significant correlation between the measures of technical capabilities and the explanatory variables<sup>10</sup>.

While not conclusive, these results shed doubts on the possibility that the measures of technical capabilities are picking up other characteristics associated to spending decisions. If that was the case we would expect a significant relation with measures of expenditure needs such as population size, budget size or poverty. To further explore this possibility, we include poverty and population size interacted with budget size as explanatory variables. The modified empirical specification is:

$$Y_{it} = \alpha_i + \eta_t + \beta_1 X_{it} + \beta_2 (X_{it} \times C_i) + \beta_3 (X_{it} \times P_i) + \varepsilon_{it} \quad (2)$$

where  $P$  is either the log of population size or a poverty index at district level. In this specification, the parameter  $\beta_2$  still captures differences on propensity to spend by level of technical capability while  $\beta_3$  reflects differences by population size or poverty.

Tables 6 and 7 present the OLS estimates of expression (2). The evidence suggests that population size and poverty play a role on explaining differences in propensity to spend in capital expenditures. In particular, the propensity to spend is larger among poorer, smaller municipalities<sup>11</sup>.

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<sup>9</sup> We also tried other measures of needs such access to water, sewage and electricity, proportion of population lacking health centers or schools. The estimates, not reported, are also insignificant.

<sup>10</sup> There is a positive correlation that suggests municipalities requiring technical assistance or training have smaller budgets and larger populations. However, the correlations are in general insignificant.

<sup>11</sup> A possible interpretation of these results is that the municipal spending is driven by population needs but hindered by the scale and complexity of public projects, proxied by the population size.

A possible interpretation of these results is that the municipal spending is driven by population needs but hindered by the scale and complexity of public projects, proxied by the population size. However, in all the cases, the estimates of  $\beta_2$  are similar to the baseline results even after controlling for poverty or population size.

As an additional robustness check, we exploit the specificity of the measures of technical capabilities to investment projects. Since most of the additional revenue is earmarked to capital expenditures and the measures of technical capabilities are related to investment projects, we should not observe significant differences on the propensity to spend in current expenditures or using measures of broader, less specific, technical capabilities.

Table 8 presents the estimates of the baseline specification using current expenditures instead of capital expenditures as dependant variable. Note that in this case the estimates of  $\beta_2$  are insignificant for three measures of capabilities. The estimate is negative and significant for the case of project management skills suggesting that this ability may be also relevant for current expenditures. However, the magnitude is smaller than in the case of capital expenditures.

Taken together, these results suggest that the measures of technical capabilities are robust to other confounding effects and are not picking up other municipality characteristics also related to spending decisions.



Table 5: Determinants of technical capabilities

Explanatory Variables	Municipality requested technical assistance or training on							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Project management	Accounting and finance	Development plans	Coordination with other gov. agencies	Municipal management	Municipal politics	Municipal legislation	IT
Ln (total budget)	-0.023 (0.021)	-0.028 (0.020)	-0.006 (0.021)	-0.025 (0.024)	-0.023 (0.020)	-0.007 (0.020)	0.012 (0.021)	-0.014 (0.018)
Ln(population)	0.016 (0.015)	0.017 (0.014)	0.012 (0.015)	0.039** (0.017)	0.007 (0.014)	0.006 (0.014)	0.004 (0.015)	-0.001 (0.013)
Poverty index	-0.191*** (0.074)	0.083 (0.071)	-0.085 (0.070)	0.014 (0.095)	0.137** (0.064)	0.014 (0.067)	0.029 (0.072)	0.052 (0.066)
Observations	1494	1493	1493	1471	1493	1494	1494	1494
R-squared	0.044	0.051	0.039	0.023	0.049	0.029	0.049	0.049

Notes: Robust standard errors in parentheses. \* denotes significant at 10%, \*\* significant at 5% and \*\*\* significant at 1%. All regressions include region fixed effects. Total budget refers to the sum of the budget during the period 2000-2006.

Table 6: Including poverty index

Variables	(1) Capital ex- penditure	(2) Capital ex- penditure	(3) Capital ex- penditure	(4) Capital expen- diture
Budget size	0.944*** (0.049)	0.905*** (0.046)	0.924*** (0.048)	0.899*** (0.045)
Budget size x technical ca- pability	<b>-0.081***</b> (0.030)	<b>-0.055*</b> (0.031)	<b>-0.058*</b> (0.031)	<b>-0.052**</b> (0.025)
Budget size x poverty index	0.123 (0.081)	0.138* (0.081)	0.130 (0.081)	0.135* (0.082)
<u>Measure of technical capability</u>				
Municipality requested technical assistance or train- ing on	Project man- agement	Accounting and finance	Development plans	Coordination with other gov. agencies
Observations	10222	10215	10215	10079
Number of id	1610	1609	1609	1586
R-squared	0.69	0.68	0.68	0.69

Notes: Robust standard errors in parentheses. Standard errors are adjusted for clustering at municipality level. \* denotes significant at 10%, \*\* significant at 5% and \*\*\* significant at 1% . All regressions include municipality and year fixed effects.

Table 7: Including population size

Variables	(1) Capital ex- penditure	(2) Capital ex- penditure	(3) Capital ex- penditure	(4) Capital expen- diture
Budget size	1.204*** (0.078)	1.187*** (0.079)	1.190*** (0.079)	1.174*** (0.077)
Budget size x technical ca- pability	<b>-0.078***</b> (0.029)	<b>-0.055*</b> (0.031)	<b>-0.054*</b> (0.030)	<b>-0.048*</b> (0.025)
Budget size x Ln(population)	-0.025*** (0.009)	-0.026*** (0.009)	-0.025*** (0.009)	-0.026*** (0.009)
<u>Measure of technical capability</u>				
Municipality requested technical assistance or train- ing on	Project man- agement	Accounting and finance	Development plans	Coordination with other gov. agencies
Observations	10222	10215	10215	10079
Number of id	1610	1609	1609	1586
R-squared	0.69	0.69	0.69	0.69

Notes: Robust standard errors in parentheses. Standard errors are adjusted for clustering at municipality level. \* denotes significant at 10%, \*\* significant at 5% and \*\*\* significant at 1% . All regressions include municipality and year fixed effects.

Table 8: Technical capabilities and current expenditures

Variables	(1) Current expenditure	(2) Current expenditure	(3) Current expenditure	(4) Current expenditure
Budget size	0.329*** (0.026)	0.291*** (0.023)	0.311*** (0.025)	0.298*** (0.021)
Budget size x technical constraint	<b>-0.045**</b> (0.023)	<b>0.021</b> (0.022)	<b>-0.019</b> (0.022)	<b>0.003</b> (0.020)
<u>Measure of technical capability</u>				
Municipality requested technical assistance or training on	Project man- agement	Accounting and finance	Development plans	Coordination with other gov. agencies
Observations	10310	10303	10303	10157
Number of id	1627	1626	1626	1601
R-squared	0.79	0.79	0.79	0.79

Notes: Robust standard errors in parentheses. Standard errors are adjusted for clustering at municipality level. \* denotes significant at 10%, \*\* significant at 5% and \*\*\* significant at 1%. All regressions include municipality and year fixed effects

### 4.3. The role of mayor's experience

Among practitioners and policy makers, there is the perception that the experience of local administrations plays an important role on a municipality's performance. The argument is that many skills required for a proper operation of a municipality are learnt by doing. Moreover, the periodical replacement of the mayor and key officers in the local administration may hinder a municipality capability if there is not a mechanism to transmit the accumulated institutional experience<sup>12</sup>. In this view, a mayor's experience may be an important part of the set of a municipalities' capabilities.

To explore this argument, we estimate the baseline regression (1) using measures of a mayor's experience instead of municipality self-reported needs of technical assistance or training. We restrict attention to the period 2003-2006 since it corresponds to a mayor's mandate<sup>13</sup>. As measures of experience we use a binary variable that adopts the value 1 if the incumbent mayor held office before in the same municipality, and also a continuous variable with the number of previous mandates. In average, almost 20% of mayors held office before and the average number of mandates among re-elected politicians is 1.16.

<sup>12</sup> This may be the case among Peruvian municipalities because there is not an organised civil service. Thus in practice the replacement of the political head is associated to significant changes in the local bureaucracy.

<sup>13</sup> In Peru all municipal elections are simultaneously held and the mayors' mandates cover similar time periods.

Table 9 presents the results. Columns (1) and (3) use capital expenditure as dependant variable. In this case the estimates of beta2 are positive and significant suggesting that mayor's experience is associated to a larger propensity to spend in capital expenditures. Columns (2) and (4) use current expenditure as a dependant variable. In contrast to the previous case, there is no significant difference in the propensity to spend. The results support the argument that mayors with office experience are more able to use additional revenues to increase public investment. The differences between current and capital expenditures behavior may reflect the fact that current expenditure has a great degree of hysteresis showing the low degree of flexibility that current expenditure has in all public entities in Peru. Capital expenditure instead reflects the skill of the mayor and his or her technical staff.

A relevant question is how relevant mayor's experience relative to other investment-related technical skills. To address this question we estimate a specification similar to equation (2) including the mayor's experience interacted with budget size in addition to the measures of technical capabilities. Table 10 reports the results. Note that in all cases the propensity to spend is smaller when the municipality reports a lack of a technical capacity. The estimates are similar in magnitude to the baseline results and strongly significant.

Similar to the previous results the propensity to spend is larger when a mayor had more experience; however the estimates are less significant. Overall this evidence suggests that most of the effect of mayor's experience on capital expenditures is indirect, through better technical skills, instead of through a direct channel.

It is possible that mayor's experience is just picking up differences in politicians' innate ability instead of skills acquired during experience in office. For example, if the majority of voters prefer more spending on infrastructure projects then reelected politicians would be the ones more able to implement capital expenditures.

In this paper we are unable to disentangle both possible mechanisms linking office experience to technical ability. However the existence of this effect is suggestive in the sense that mayor's characteristics may play a role on municipality's performance.

Table 9: The role of mayor's experience

Variables	(1) Capital ex- penditure	(2) Current ex- penditure	(3) Capital ex- penditure	(4) Current ex- penditure
Budget size	1.027*** (0.029)	0.235*** (0.024)	1.027*** (0.029)	0.238*** (0.024)
Budget size x mayor's experience	0.068* (0.040)	0.048 (0.034)	0.057* (0.033)	0.022 (0.028)
Measure of mayor's ex- perience	Mayor held office before		Number of previous man- dates	
Observations	6068	6068	6068	6068
Number of id	1621	1621	1621	1621
R-squared	0.65	0.55	0.65	0.55

Notes: Robust standard errors in parentheses. Standard errors are adjusted for clustering at municipality level. \* denotes significant at 10%, \*\* significant at 5% and \*\*\* significant at 1%. All regressions include municipality and year fixed effects. Sample covers only period 2003-2006 which corresponds to the mayor's mandate.

Table 10: Technical capabilities and mayor's experience

Variables	(1) Capital expenditure	(2) Capital ex- penditure	(3) Capital expenditure	(4) Capital expenditure
Budget size	0.991*** (0.027)	0.959*** (0.024)	0.974*** (0.026)	0.952*** (0.021)
Budget size x technical capability	-0.081*** (0.030)	-0.054* (0.032)	-0.058* (0.031)	-0.054** (0.025)
Budget size x mayor's experience	0.035 (0.022)	0.033 (0.021)	0.035 (0.021)	0.035 (0.022)
<u>Measure of technical capability</u>				
Municipality requested technical assistance or training on	Project man- agement	Accounting and finance	Development plans	Coordination with other gov. agencies
Observations	10267	10260	10260	10114
Number of id	1620	1619	1619	1594
R-squared	0.68	0.68	0.68	0.68

Notes: Robust standard errors in parentheses. Standard errors are adjusted for clustering at municipal-ity level. \* denotes significant at 10%, \*\* significant at 5% and \*\*\* significant at 1%. All regressions in-clude municipality and year fixed effects. The measure of mayor's experience is *mayor held office before*.

## 5 Concluding remarks

In this paper we have assess the impact of technical capacity over peruvian municipalities' performance. We have captured this effect by estimating the propensity to spend resources over current and capital expenditure. Data suggests that underspending (defined by the execute budget over approved budget ratio) is higher in capital expenditure than in current expenditure.

Our estimation covers the 2000-2006 period and has included almost all the district municipalities for those years. During these years we have observed an increase in municipal revenues of almost 300% explained basically by transfers. Transfers now represent 70% of municipal revenues and their increase is explained by GDP growth (in the Municipal Compensation Fund case) and high mineral prices (transfers related to mining companies' profits). This assures a high degree of exogeneity of our explanatory variables.

The estimation has considered split the expenditure in current and capital ones. This strategy is supported because anecdotal evidence suggest that execution of current expenditure has a high degree of hysteresis and the impact of lack of capacity will be lower than in the capital expenditure case where there is a need of more technical skills.

Our main result is that lack of capacity, measured by reported need of training by the municipalities in several issues, affects the propensity to spend in capital expenditure in the sense that a higher necessity of training programs implies a lower propensity to spend. All the results are significant and the magnitude is greater when we take in account project management issues. This result suggests that if the government can improve municipalities' performance in pre-investment issues we can expect more expenditure.

We also control by other factors like population and poverty index. We found that poorer districts spend more than the average district and districts with more population have a lower propensity to spend. This results suggest that where there are a great number of basic needs (poorer districts) it can be more popular pressure or consensus in the jurisdiction about the relevance of capital expenditure and municipalities tend to be more proactive in terms of execution of capital expenditure.

In the case of population we find that districts with a higher number of residents tend to spend less. This result may imply a scale issue. With more population, investment projects demands more technical and financial resources and skills. In these cases the restriction of capabilities will be binding. If districts where population is large (probably the urban ones) have a lower propensity to spend the attitude of the voters will be adverse to local governments and will support critics from central government. This result can explain the revoke of a significant number of mayors mainly in urban areas. Voters feel that there is a great amount of resources in municipalities' accounts but

mayors and officials are incapable of transform these resources into investment projects.

Another important issue related with propensity to spend is mayor's experience. We find that districts with experienced mayors tend to spend more in investment projects. This result can be related with the characteristics of civil service in Peru. There are no incentives to good performance and several regimes coexist. Sometimes the technical staff of a municipality has no stability. For that reason every new mayor come with his staff and there is a learning period in which spending can decrease until the new staff acquired the necessary skills to make good and feasible investment projects. On the other hand mayors that are reelected maintain the technical staff and there is no learning period.

Today in Peru there is a great debate about the performance of municipalities in expenditure terms. Critics from the central government mention that local governments are incapable of use efficiently all the new resources they receive from increased transfers. From the side of local government the main argument to explain underspending relies in severe controls by national government like the National System of Public Investment, procurement regulations and budget controls.

On the other side poor people resident in districts with more resources from transfers has a lot of unsatisfied needs and press for more investment projects. There is a trap. In a international economic crisis environment and as a part of countercyclical fiscal policy, increase of public investment is desirable.

This paper is the first attempt to give quantitative estimates of factors that affect underspending of local governments in investment projects. Notwithstanding we think that additional work has to be made in order to shed light in this issue. The first caveat is that in a decentralized context in which heterogeneity is the rule we have estimate average results. It would be desirable to develop an empirical strategy that permits to obtain results by different groups of municipalities paying attention to socioeconomic characteristics and geographic factors.

Another line or further research will be to build an information system about technical capabilities of district municipalities. There is a lot of anecdotal evidence about lack of capacity but doesn't exist a baseline about technical skills of municipalities. If the government doesn't have information no integral policy of training can be done.

Several policy implications arise from our results. Firstly, a great effort can be done to improve technical skills of municipalities' staff in investment projects preparation. Our main result implies that lack of capacity in these matters can reduce propensity to spend. In recent years we have observe several initiatives from the donors and the Ministry of Economy to design and provide training programs but some evidence suggest that this programs only imply a group of sessions where trainers inform municipalities staff about investment regulation and some successful cases but there is no training on the job programs that imply an effective knowledge transfer. Evidence also suggests that efforts must be made in other issues like accounting and finance, devel-

opment plans and coordination with other government agencies. All training programs can be complementary and overall programs must include this approach.

Secondly, relative staff stability is very important. The actual incentives system don't encourage it. Almost always personnel with job stability don't have the incentive to increase their skills because is impossible to remove them unless they committed a serious fault. In Peruvian civil service there is another labor regime that imply no stability at all and personnel under such regime have all the incentives to increase their skills. But this staff is related directly with the mayor and if the mayor is not reelected in next elections they go with the mayor and all the technical skills developed during the previous years are lost and a new cycle begins when the new mayor arrives. Is necessary to design an incentive scheme by which trained personnel must have some degree of stability not related with the local political cycle.



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