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Designed to Succeed, Designed to Fail: Determinants and Reform Options for Local Public Investment Execution in Peru

Kenji Moreno

Javier Beverinotti

Inter-American Development Bank
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Georgia State University

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Abstract

Peruvian local governments manage close to 40% of national public investment, yet they execute on average only 60% of their budget. This study examines the causes of low execution at the project level, using a panel of 197,612 local public investment projects for the period 2012-2024. The results show that project cost, the number of years a project has been active, its funding source, whether it was inherited from a previous administration, and the mayor's experience account for much of why some projects advance and others do not, even when comparing projects within the same municipality and year. Based on these findings, we propose and simulate five policy reforms that, taken together, could raise the execution ratio by 8.6 to 11.4 percentage points and generate fiscal gains equivalent to between 0.25% and 0.42% of annual GDP.

JEL codes: H54, H72, O18, R58.

Keywords: public investment, budget execution, local governments, Peru, investment projects, policy reforms.

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Acronyms

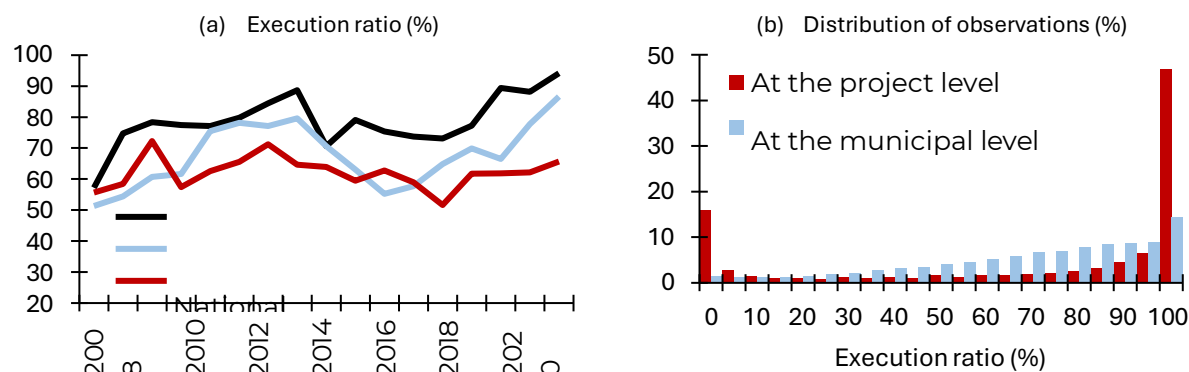
CAF	Development Bank of Latin America and the Caribbean
DGPMI	General Directorate of Multiyear Investment Programming
ECLAC	Economic Commission for Latin America and the Caribbean
FONCOMUN	Municipal Compensation Fund
GDP	Gross Domestic Product
IDB	Inter-American Development Bank
IMF	International Monetary Fund
INCORE	Regional Competitiveness Index
INFOGOB	Governance Observatory
IOARR	Investments in Optimization, Marginal Expansion, Rehabilitation and Replacement
MEF	Ministry of Economy and Finance
OPMI	Multiyear Investment Programming Office
OSCE	Supervisory Agency for Government Procurement
PI	Municipal Management Improvement Incentive Program
PIA	Institutional Opening Budget
PIM	Institutional Modified Budget
PMI	Multiyear Investment Program
RENAMU	National Registry of Municipalities
SEACE	Electronic Government Procurement System
SIAF	Integrated Financial Administration System
SNIP	National Public Investment System
SSI	Investment Monitoring System
UEI	Investment Execution Unit
UF	Project Formulation Unit

1. Introduction

Local governments manage approximately 40% of total public investment in Peru (MEF, 2024). However, between 2008 and 2024 they executed on average close to 60% of their investment budget, a figure significantly below the performance of the national government, at around 80%, and of regional governments, at around 70% (Figure 1a). This persistent gap means that a significant share of already approved resources is not turned into infrastructure or services for citizens: each percentage point of unexecuted budget represents delays in building schools, roads, drinking water systems, and health centers.

Under-execution, moreover, hides a more complex reality than a simple low average. When each project is observed separately (Figure 1b), two extremes appear: many projects reach 100% execution and many others make no progress at all during the year, even within the same municipality. This contrast suggests that project-specific characteristics (design, spending composition, funding source, and sector) can be as decisive for execution as the institutional capacity of the municipality that manages the project.

Figure 1. Public investment execution



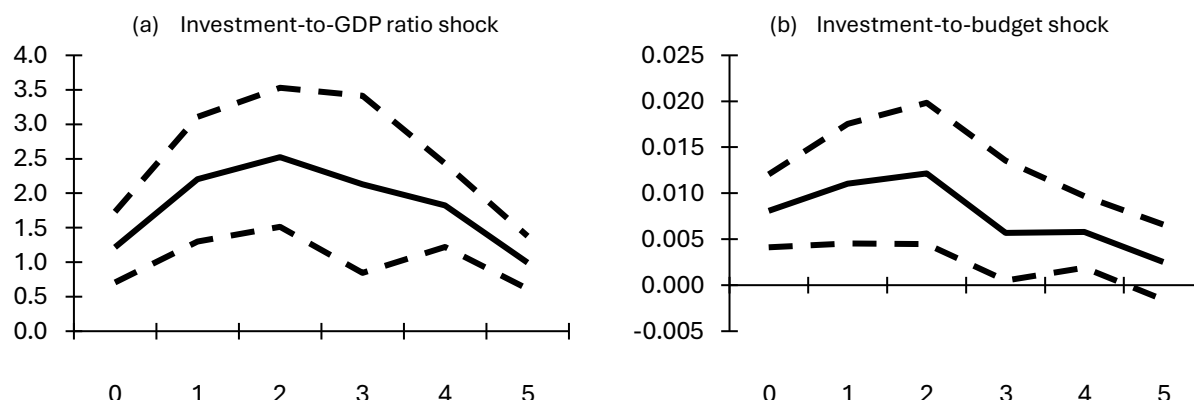
Source: Authors' elaboration with data from the Ministry of Economy and Finance.

Of all types of public spending, public investment is the one that does most to drive the economy. For Peru, Jiménez and Rodríguez (2020) find that each additional sol of capital spending generates more than one sol of economic growth, a result in line with Vtyurina and Leal (2016) and with the IMF (2016) assessment. Unlike current spending, public investment not only boosts demand in the short run but also expands the economy's productive capacity in the medium run through the accumulation of physical and human capital. Figure 2 confirms this result at the local level: extraordinary increases (positive shocks) in local public investment are associated with significant growth in local GDP per capita at horizons of one to four years.

Public investment also has direct effects on people's well-being. Evidence for Latin America shows that a larger stock of public infrastructure is associated with lower poverty rates and narrower territorial gaps (Calderón and Servén, 2012; ECLAC, 2023). For Peru, Fort and Paredes (2015) document that a larger share of subnational governments in public investment is associated with lower levels of rural poverty. Figure 3 illustrates this relationship: departments with higher local

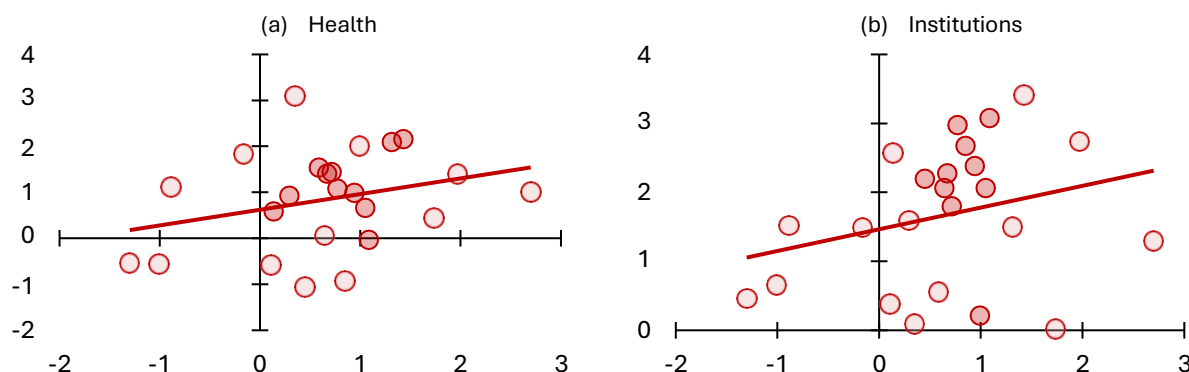
public investment execution ratios tend to show larger improvements in their regional competitiveness indicators, including access to health and the quality of institutions.

Figure 2. Impact of local public investment on local economic growth (percentage points)



Impacts are shown as solid lines and the corresponding 90% confidence intervals as dashed lines. The X-axis represents the years after the fiscal or execution shock. Methodological details are in Appendix 1. Authors' elaboration.

Figure 3. Public investment execution and regional competitiveness



The vertical axis shows the change in INCORE (points) between 2010 and 2024 for each dimension. The horizontal axis shows the average change in the public investment execution rate. Each point corresponds to a region. Source: Authors' elaboration with data from the Ministry of Economy and Finance and the Peruvian Institute of Economics.

We know surprisingly little about what determines whether a local government executes its investment budget well or poorly, especially in developing countries. For Peru, Jiménez, Merino, and Sosa (2020) is the most complete reference available: using a panel of 1,796 local governments for 2010-2018, they find that resource availability, in particular canon revenues and conditional transfers, and the institutional capacities of the municipality are the main determinants of the level of local investment execution. Aragón and Casas (2009) also document that, faced with unexpected increases in resources, many municipalities fail to raise investment spending in the short run because of technical and administrative constraints. In both cases the analysis is conducted at the aggregate local government level, with no project-level evidence available for Peru or for the region.

If project design factors explain a significant share of the variation in execution, improvement policies should not aim solely at strengthening municipal capacities but also at reforming how each project is formulated and designed. This observation leads to two central questions:

- (i) What role does the design of local public investment projects play in their financial execution rate?
- (ii) What policy options can be adopted to raise execution in a structural and lasting way?

To answer these questions, we built a project-level dataset by linking several administrative sources. The result is a panel of 197,612 local public investment projects with 425,031 observations between 2012 and 2024. Beyond the empirical contribution, the findings have direct policy implications: if project design is a key determinant of execution, the central government can improve the situation through formulation standards, process simplification, and incentives, without altering the current decentralization scheme or conflicting with municipal autonomy.

It is worth noting that this study focuses on budget execution as a performance measure and does not directly assess whether projects generate the expected social returns. That is an important question, which we propose as part of the future research agenda.

Regarding stylized facts, three structural patterns characterize the local public investment portfolio. First, the distribution of the execution ratio at the project level is markedly bimodal: in 2024, 22.3% of active projects recorded execution below 5% (stalled projects with a PIM¹ of S/4,036 million, where S/ denotes Peruvian soles) while 40.1% exceeded 99% execution. Second, the portfolio is highly fragmented, with 62% of projects costing less than S/1 million, and the number of active projects grew from 25,000 in 2012 to more than 40,000 in 2024, without closures keeping pace with that expansion. Third, the composition of investment at the project level has shifted steadily from infrastructure toward services. Infrastructure went from 59% of a project's budget in 2012 to 36% in 2024, while spending on services rose from 36% to 58% over the same period. This trend, in a context of high municipal discretion, raises questions about the quality and transparency of spending.

Regarding determinants, the econometric analysis shows that project design explains a significant share of the variation in execution, even after controlling for municipal characteristics. Cost has a negative and persistent effect: a 10% increase reduces total execution by 2.9 percentage points (pp) and also reduces execution of the infrastructure component by 8.7 pp in the recent period (2021-2024). The time a project has remained open, for its part, works as a warning signal: before the no-reelection reform² (2012-2014), average execution peaked at 3.6 years of project life, whereas in the most recent period (2021-2024) it peaks only at 6.8 years. This reflects that projects now take longer to close, in a context of weaker electoral-cycle pressure. In addition, projects inherited from previous administrations suffer an average penalty of 3.3 pp, although this penalty reverses in the

¹ The Institutional Modified Budget (PIM) is the current budget of a public entity at a given point in the year, that is, the amount approved at the start (PIA) plus all modifications made during the fiscal year, such as transfers, supplementary credits, and incorporated carry-over balances.

² In March 2015, Law No. 30305 amended the Constitution to prohibit the immediate reelection of regional presidents and mayors.

first year in office, when new mayors depend entirely on the portfolio they received. The funding source³ also matters: projects financed with Determined Resources outperform those financed with Ordinary Resources by 4.6 pp, whereas Donations and Transfers carry a penalty of 13.2 pp associated with external conditionalities that exceed local technical capacity. Finally, mayoral experience is associated with better execution, a relationship that weakened significantly after the 2015 no-reelection reform, while political alignment shows no consistent relationship with execution, which indicates that the problem is fundamentally one of design and management, not of politics.

As for reform options, we propose and simulate five interventions anchored in the empirical findings. The first reform is a Portfolio Cleanup, which cancels projects with more than 7 years of age and less than 50% cumulative progress, and reactivates those with greater progress. The second reform addresses Project Continuity by eliminating the penalty on inherited projects through a transition protocol and adjustments to the Municipal Incentive Program. The third reform proposes Right-Sizing, which consists of adjusting project costs to each municipality's demonstrated capacity. The fourth reform pursues Funding Source Simplification, eliminating the penalty on projects financed with Donations and Transfers. Finally, the fifth reform seeks to ensure Institutional Continuity, restoring the effect of experience by protecting technical teams during changes of administration. Taken together, the five reforms could raise the execution ratio by between 7.8 and 11.4 pp depending on the year, with fiscal gains of between S/2,374 and S/3,743 million per year, equivalent to between 0.25% and 0.42% of GDP.

The rest of the paper is organized as follows. Section 2 describes the institutional framework of local public investment in Peru. Section 3 presents the stylized facts for 2012-2024. Section 4 analyzes the determinants of execution at the project level. Section 5 proposes and simulates reform options. Section 6 presents the conclusions. Section 7 sets out a pending research agenda. Finally, the Appendices contain the methodology for the fiscal multiplier estimates (Appendix 1), the determinants analysis (Appendix 2), and the reform simulations (Appendix 3).

2. Institutional Framework

2.1 Fiscal organization and decentralization

Peru has three levels of government: the national government, 25 regional governments, and 1,891 local governments, made up of 196 provincial municipalities and 1,695 district municipalities (Law No. 27972, Organic Law of Municipalities). Law No. 27783, the Decentralization Framework Law (2002), formally relaunched the decentralization process, transferring competencies and resources from the national government to subnational levels with the aim of bringing public service provision

³ See Table 1 for further detail on the funding sources of public spending in Peru.

closer to citizens and reducing territorial gaps. Over the following two decades, local governments came to manage approximately 40% of the country's total public investment.

Local governments have political, administrative, and economic autonomy within the national legal framework. On the fiscal side, they have the power to collect their own taxes (such as the property tax, the alcabala real estate transfer tax, and arbitrios, which are municipal service charges), although their tax base is limited and their main source of funding is intergovernmental transfers. The annual Public Sector Budget Law sets the rules for allocating and executing public spending at all levels of government.

Local government investment budgets draw on five funding sources. The distinction between sources matters institutionally because it creates differentiated execution incentives: sources that allow balances to be carried over create less urgency to execute before December 31, whereas those that revert to the Treasury create end-of-year pressure. Table 1 summarizes the five sources and their rules for unexecuted balances.

Table 1. Funding sources of public spending

Funding source	Description and rule for unexecuted balances
Ordinary Resources (RORD)	Come from national tax collection and are administered by the Ministry of Economy and Finance (MEF). Balances not accrued by December 31 revert to the Public Treasury.
Donations and Transfers (DTRA)	Non-reimbursable resources from international organizations or the national government. Balances revert to the Public Treasury.
Resources from Official Credit Operations (ROOC)	Financing through public debt (bonds, external loans). Unexecuted balances revert, although local and regional governments may request reallocation if they have a contract with a supplier registered in SEACE.
Determined Resources (RDET)	Include canon and sobrecanon (revenue sharing from natural resource extraction), royalties, FONCOMUN, and municipal taxes. Balances not accrued remain as a carry-over balance that can be incorporated into the following year's budget. This rule creates execution incentives different from those of the sources above.
Directly Collected Resources (RDRE)	Own revenues generated and managed by the entity (fees, charges, sales of services). Balances are kept as carry-over balances.

Authors' elaboration.

Finally, it is worth distinguishing between the Institutional Opening Budget (PIA), the amount approved at the start of the year, and the Institutional Modified Budget (PIM), which incorporates all adjustments made during the year, such as funds left unspent the previous year or new allocations approved along the way. Another important concept is the accrual (devengado), the accounting moment at which the entity formally recognizes the payment obligation, once delivery of the good or

service has been certified. With these concepts in place, we arrive at the central indicator of this study: the budget execution ratio, which measures what percentage of the modified budget (PIM) was effectively spent (accrued) during the year. The ratio is thus bounded between 0% and 100% by institutional design: no local government can accrue above its current PIM.

2.2 The public investment system: from SNIP to Invierte.pe

Public investment management in Peru has been governed by two successive systems. The first, the National Public Investment System (SNIP), was created by Law No. 27293 in 2000 to establish technical criteria for formulating, evaluating, and prioritizing projects. Although SNIP fostered a culture of ex ante evaluation that did not previously exist, over time it became excessively bureaucratic: projects had to complete multiple study stages with lengthy deadlines, uniform requirements regardless of project size, and centralized approval at the MEF. For local governments with limited technical capacity, SNIP was a significant bottleneck in converting resources into effective investment.

In response to these limitations, Legislative Decree No. 1252 (2016) created the National System for Multiyear Programming and Investment Management, known as Invierte.pe, which came into force in 2017. There were three central changes. First, the formulation process was simplified, removing the mandatory prefeasibility studies for most projects. Second, the IOARR category (Investments in Optimization, Marginal Expansion, Rehabilitation and Replacement) was created, which simplifies the processing of maintenance or incremental improvement interventions without the need for a viability declaration. Third, strategic planning was explicitly linked to budget programming through the Multiyear Investment Program (PMI), which is mandatory for all levels of government.

Under Invierte.pe, the investment cycle has four sequential phases. The first is Multiyear Investment Programming (PMI), in which each entity prepares a portfolio aimed at closing gaps over a three-year horizon. The second is Formulation and Evaluation, which comprises the technical design of the project and the evaluation of its social profitability. The third, Execution, includes the preparation of the technical file and the physical execution of the works, with financial monitoring through SIAF and physical monitoring through the Investment Monitoring System (SSI). The fourth, Operation, comprises the operation and maintenance of the assets generated.

This study focuses exclusively on the Execution phase. The other phases of the cycle are equally relevant for the quality of public investment, but they fall outside the scope of this research.

2.3 Components of public investment spending

Local public investment is classified in the budget under spending category 6-26, Acquisition of Non-Financial Assets. We have broken this category down into four analytical components according to the economic nature of the spending, each with distinct execution characteristics determined mainly by the complexity and duration of the public procurement process involved.

Table 2. Components of public investment

Component	Share (2024)	Description and budget chain	Relative execution
Infrastructure	36%	Sub-categories 1 and 2 (acquisition and construction of buildings and structures) and sub-category 5 (non-produced assets/land). Includes roads, sanitation, schools, health centers, parks, and civil works in general.	Lowest. Requires a technical file, tendering, and physical construction: a lengthy process.
Vehicles, Machinery, and Equipment (VME)	2%	Sub-category 3. Acquisition of vehicles, machinery, IT equipment, furniture, and specialized equipment.	Highest. Acquisition through direct purchase or purchase order is faster than construction.
Goods	4%	Sub-categories 4, 6, and parts of 7 and 8. Includes agricultural assets, cultural goods, software, and intangible assets.	High. Similar to VME; short acquisition timelines.
Services	58%	Service components within sub-categories 2, 7, and 8: technical files, pre-investment studies, supervision, consulting, and direct administration (service labor).	Correlated with infrastructure, since it depends on the physical progress of the works.

Authors' elaboration.

2.4 Key events that affected local execution

The period analyzed (2012-2024) was marked by two institutional and macroeconomic events that generated structural breaks in local public investment execution patterns. Both justify the empirical strategy of the analysis, which estimates the determinants of execution by subperiods (2012-2014, 2016-2019, and 2021-2024) rather than assuming stable relationships over the whole sample.

No-reelection reform for subnational authorities (2015). Law No. 30305 (March 2015) amended the Constitution to prohibit the immediate reelection of regional presidents and mayors. Before this reform, subnational authorities had explicit incentives to maximize execution, especially in the final years of their term, as a signal of performance to citizens. Camacho and Vicuña (2020) document that mayors with the option of reelection recorded higher execution, particularly during the first year in office. With the elimination of that incentive, execution patterns changed significantly.

COVID-19 pandemic and economic reactivation measures (2020-2021). Supreme Decree No. 044-2020-PCM declared a national state of emergency in March 2020 and mandated the halting of all public works. The suspension of contracts and the disruption of supply chains caused an abrupt fall in local investment execution. From mid-2020, the government implemented reactivation measures: Legislative Decree No. 1486 simplified procurement procedures for ongoing investments and enabled mechanisms to complete stalled works. Programs such as Arranca Perú prioritized the completion of small projects with partial progress. The result was a significant rebound in execution from the second half of 2020.

3. Stylized Facts

For the empirical analysis, we built a project-level dataset linking five sources: the Integrated Financial Administration System (SIAF), the Invierte.pe investment portfolio of projects, the National Registry of Municipalities (RENAMU), the Regional Competitiveness Index (INCORE), and complementary records from the Governance Observatory (INFOGOB). The result is a panel of 425,031 observations corresponding to 197,612 local government public investment projects over 2012-2024. The projects included represent, on average, 80% of local public investment nationwide; the remaining 20% corresponds to investment resources not assigned to individually identifiable projects.

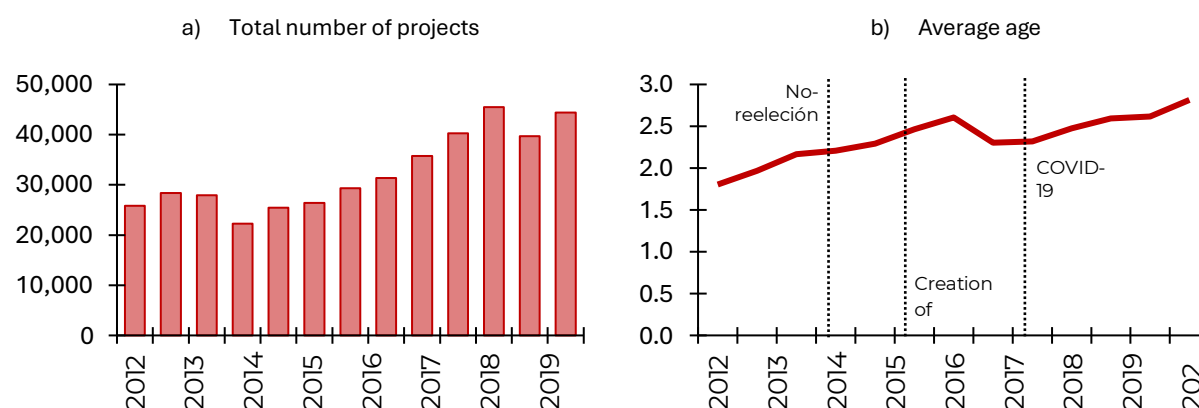
This section presents the most relevant stylized facts of the local investment portfolio. The aim is not to describe every dimension exhaustively but to identify the patterns that motivate the study's central question: why do projects within the same municipality have such different execution ratios, and which project characteristics explain those differences?

3.1 A portfolio that grows and takes longer to close

The total number of active local public investment projects has grown steadily over the period analyzed. In 2012 there were approximately 25,000 active projects; by 2022-2024 that figure exceeds 40,000 projects per year. This increase is not driven solely by the creation of new districts, since the average number of projects per municipality has also risen persistently since 2015.

At the same time, projects take longer to close. Average age, measured as the time elapsed since the project's viability declaration, grew from approximately 1.8 years in 2012 to 2.8 years in 2024 (see Figure 4). This means the system not only takes on more projects but also holds on to them for longer.

Figure 4. Portfolio size and average project age



Project age is measured as the number of years elapsed since the project's viability declaration. Source: Authors' elaboration with data from the Ministry of Economy and Finance.

The combined result is a progressive accumulation of the stock of projects under execution. The inflow of interventions exceeds the capacity for effective closure, producing ever more heavily

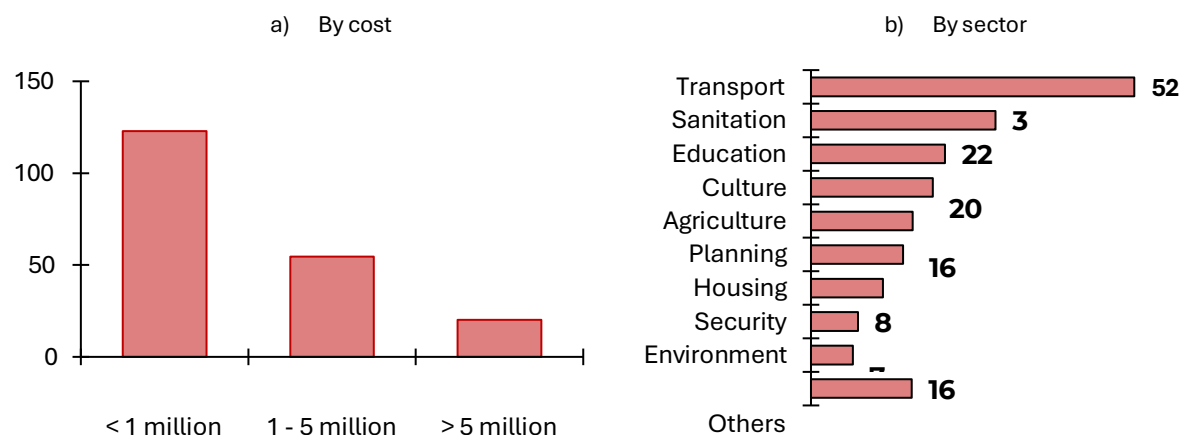
loaded municipal portfolios. Where technical and administrative capacities are limited, managing a larger number of open projects simultaneously raises supervision costs, makes individualized technical follow-up harder, and increases the likelihood of delays and budget modifications. A system with more open projects than closed ones is not necessarily a system with more effective investment.

3.2 A fragmented investment: small and scattered projects

Local public investment is highly fragmented. The distribution of projects by cost shows a marked skew toward small-scale interventions: 62% of projects have a total cost below 1 million soles, 28% fall between 1 and 5 million, and only 10% exceed 5 million (Figure 5, left panel). The average cost of local government projects is S/3 million, far below the average for regional governments (S/15 million) and the national government (S/20 million). This small scale, combined with the multiplicity of active projects, creates a setting of high dispersion that hampers technical specialization and effective supervision.

By sector, local investment is concentrated in three areas: transport, sanitation, and education, which together account for more than half of the portfolio (Figure 5, right panel). This concentration reflects the basic infrastructure gaps that local governments are mandated to close, but also the limited technical specialization available for projects in more complex sectors.

Figure 5. Distribution of projects (in thousands) by cost and sector

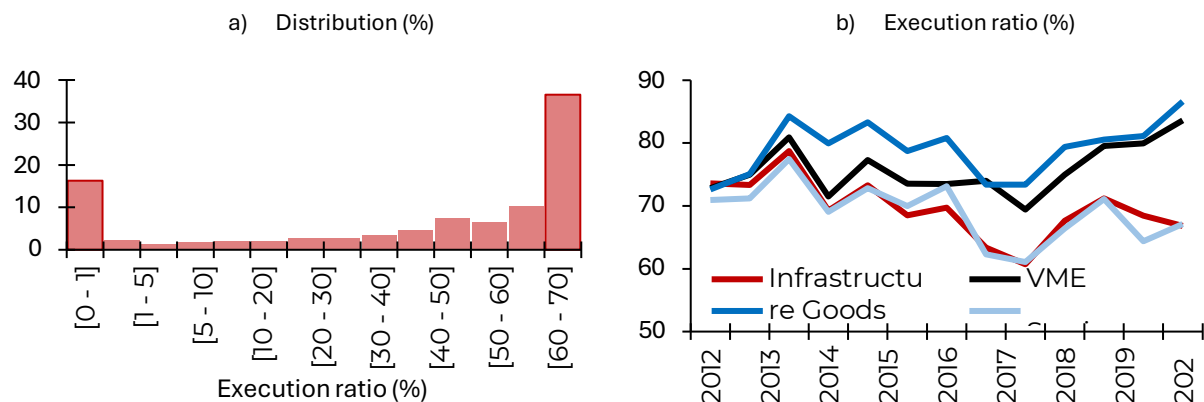


Source: Authors' elaboration with data from the Ministry of Economy and Finance.

3.3 The execution problem: not a low average, but two worlds

The most revealing finding of this section is that, at the project level, execution does not behave like an average but like two opposing realities. Of all projects, 16.3% execute practically nothing (less than 1%) and 36.6% execute almost everything (more than 99%). In 2024 specifically, 22.3% of active projects (9,967 projects) formed the group of stalled projects, with execution below 5%, while 40.1% (17,891 projects) had executed 99% or more of their budget (see Figure 6).

Figure 6. Distribution of projects and execution ratio



VME: Vehicles, Machinery, and Equipment. The correlation in execution ratio between the “Infrastructure” and “Services” components is 92%. Source: Authors’ elaboration with data from the Ministry of Economy and Finance.

This two-worlds pattern is not an aggregate phenomenon: it replicates consistently across all investment components (infrastructure, goods, vehicles, and services), which indicates a structural feature of the system rather than a distortion specific to one sector. The bimodality suggests that projects do not get stuck gradually but split between those that manage to overcome the barriers of the investment cycle and those that remain stalled from the early stages.

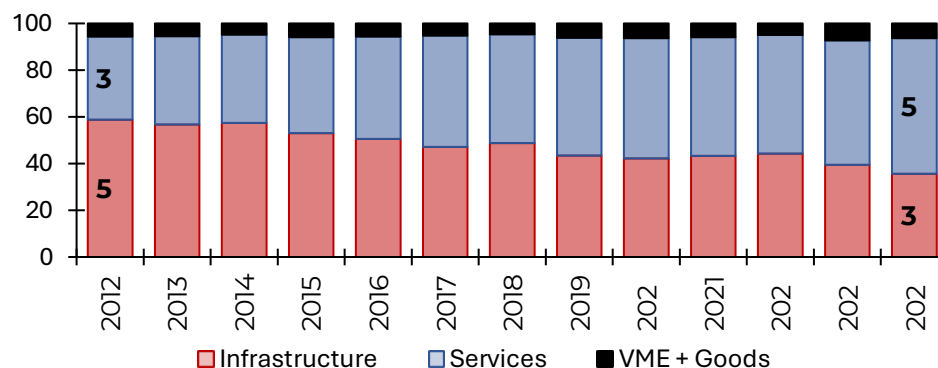
Stalled projects also represent a concrete fiscal problem. In 2024, the PIM of projects with execution below 5% amounted to S/4,036 million, equivalent to 16.2% of the total local government PIM (S/24,839 million). These resources are formally committed to projects that are not advancing, which limits the system’s capacity to reallocate them to more effective interventions. As detailed in Section 5, this pattern directly motivates the first proposed reform.

This polarization is not explained by the municipality itself, since all projects of the same local government in the same year share the same institutional conditions. The explanation must lie in the characteristics of each project. That is precisely the question guiding the econometric analysis in Section 4. As Figure 1b shows, this pattern is much more pronounced at the project level than at the aggregate municipal level, which confirms that there are project design factors that operate independently of the municipality’s institutional capacity.

3.4 Who executes more? Heterogeneity by composition, sector, and cost

A first pattern that organizes execution heterogeneity is the change in the composition of investment spending. Infrastructure accounted for 59% of total spending on local projects in 2012; by 2024 that share had fallen to 36%. The services component (technical files, consulting, supervision, and direct administration) followed the opposite path: from 36% in 2012 to 58% in 2024 (Figure 7). This shift is especially pronounced in projects up to five years old and in projects financed with Determined Resources.

Figure 7. Composition of local public investment (percentage of PIM)



VME: Vehicles, Machinery, and Equipment. Source: Authors' elaboration with data from the Ministry of Economy and Finance.

This trend can be interpreted in three ways that are not mutually exclusive. On the one hand, it may reflect a genuine change in territorial needs, with more capacity-building interventions and fewer large-scale civil works. On the other hand, it could indicate a shift toward spending of lower technical complexity. Finally, and more worrying still, spending on services within investment projects (mainly consulting, supervision, and technical fees) is substantially harder to audit and verify than spending on physical works. A road exists or it does not; a consulting contract is much more opaque. The sustained shift toward service components, in a context where the mayor's discretion over procurement is high, is a pattern that deserves scrutiny to ensure consistency with regular spending practices.

Sectoral heterogeneity is also marked. The sectors with the best historical execution performance are culture, planning, and housing, which consistently exceed 70% average execution (Table 3). At the opposite end, the sanitation, education, and security sectors show the worst results. More recently, since 2021, the transport sector has shown a notable deterioration in execution, despite accounting for the largest number of projects in the portfolio.

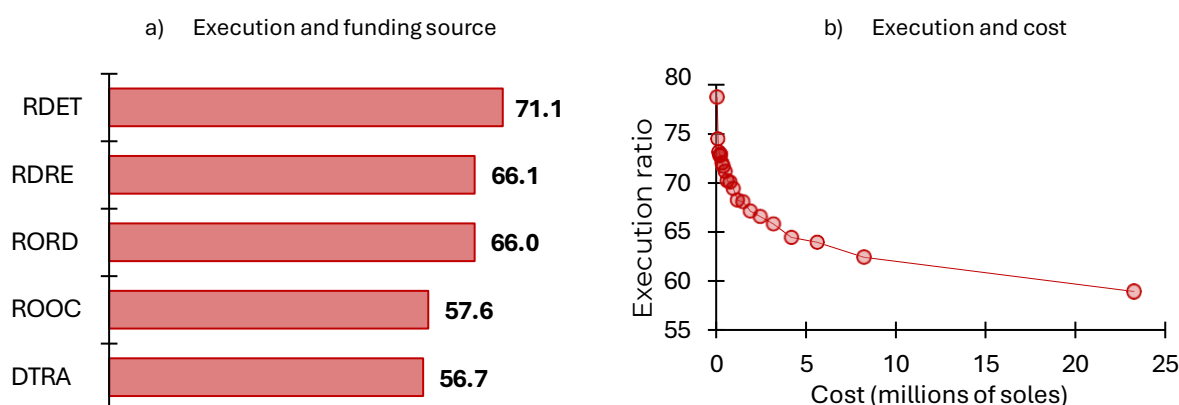
Table 3. Execution ratio by sector and period (percentage)

Sector	Share (%)	2012-2024	2012-2014	2015-2019	2021-2024
Planning	8	74	77	74	74
Culture	11	72	75	72	72
Housing	6	71	77	72	69
Environment	4	71	73	70	71
Agriculture	9	70	76	71	69
Transport	29	69	76	69	66
Security	4	69	73	68	69
Education	12	68	75	70	63
Sanitation	17	65	73	66	62

Green cells highlight higher execution ratios, while red cells highlight lower execution ratios. Source: Authors' elaboration with data from the Ministry of Economy and Finance.

Two additional patterns emerge clearly when examining execution by funding source and by project cost (Figure 8). Projects financed with Determined Resources (RDET) systematically execute more than those financed with Donations and Transfers (DTRA) or Official Credit Operations (ROOC), whose external conditionalities generate frictions that the local technical team is often not equipped to manage. In turn, the higher the project cost, the lower the observed execution ratio. Projects below S/1 million execute on average more than 70% of their budget, while projects above S/5 million rarely exceed 65%, reflecting the greater contractual and logistical complexity of larger works. The mechanisms behind both patterns are analyzed econometrically in Section 4.

Figure 8. Execution ratio by funding source and cost (percentage)



In the right-hand chart, each point represents the average execution ratio for groups (5% quantiles of the sample) of projects with similar investment levels (*binned scatterplot*). Source: Authors' elaboration with data from the Ministry of Economy and Finance.

3.5 The political cycle and the inherited-project penalty

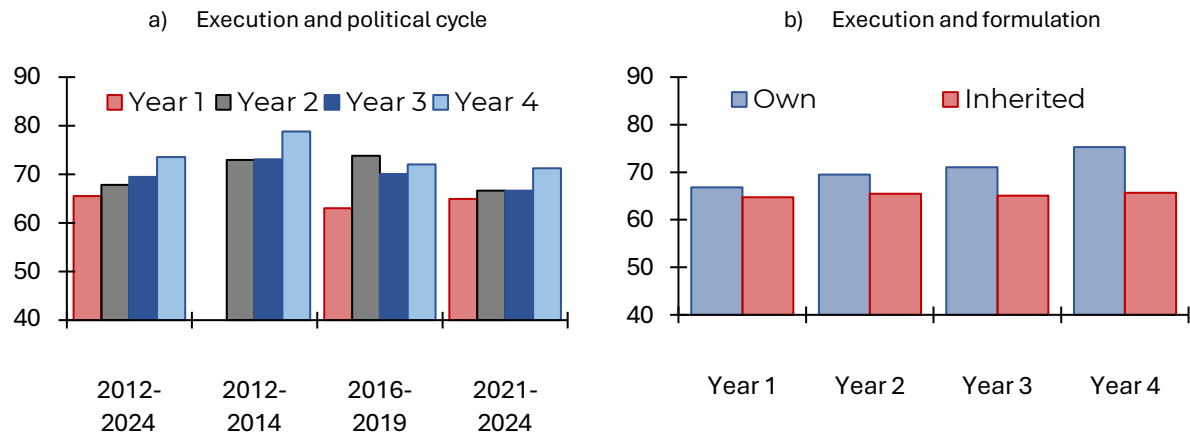
The execution ratio follows a consistent curve over the four-year municipal term: it is lowest in the first year in office, rises gradually, and usually peaks in the fourth year (Figure 9, left panel). This trajectory reflects the institutional learning curve of municipal teams and, before the no-reelection reform, also the authorities' incentives to show results toward the end of their term. The reform introduced by Law No. 30305 changed this pattern: without the possibility of reelection, the incentive to maximize execution at the end of the term weakened, reducing the amplitude of the cycle in the most recent periods.

A second relevant phenomenon is the inherited-project penalty. An inherited project is one that was formulated and started under a previous municipal administration. The data show that, consistently, inherited projects have lower execution ratios than own projects. However, the right panel of Figure 9 reveals an important nuance: the penalty is low in the first year in office, when new authorities must execute a portfolio they inherited in full, and it intensifies from the second year onward, when the new mayor's own projects begin to be available for execution.

Taken together, these patterns reinforce the idea that administrative continuity and institutional knowledge about project design are relevant factors for execution. The ban on reelection, although

it pursues legitimate goals of political alternation, had side effects on the efficiency of local public investment that deserve consideration in the design of improvement policies. These patterns lead into the systematic analysis of determinants in the next section.

Figure 9. Execution ratio by political cycle and formulation (percentage)



Source: Authors' elaboration with data from the Ministry of Economy and Finance.

The documented patterns converge on a clear diagnosis. Peruvian local public investment is characterized by a fragmented, growing portfolio of small projects, where the central problem is not a lack of resources (Determined Resources have guaranteed stable flows) but the system's capacity to convert those resources into investment that is actually executed.

Three findings deserve particular emphasis. First, the bimodal distribution of the execution ratio at the project level shows that the system simultaneously produces projects that execute almost everything and projects that execute almost nothing, a polarization that cannot be explained by municipal characteristics but requires project-specific factors. Second, the composition of spending is changing: infrastructure is losing ground to services, a trend that, although it may have legitimate explanations, also raises questions about the quality and transparency of spending in a context of high discretion. Third, institutional design matters: the political cycle, project inheritance, and funding source leave visible marks on execution, even before controlling for other variables. These facts set the starting point for the econometric analysis of the next section.

4. Design matters: determinants of local public investment execution

As the previous section shows, execution at the project level is polarized: many projects execute almost everything and many almost nothing, even within the same municipality. This suggests that some projects are born, by design, blessed or cursed, with characteristics that anticipate their performance beyond the capacity of the local government managing them.

This section identifies these factors systematically. The statistical analysis examines three groups of characteristics that could explain the execution of each project: those of the project itself, those of the municipality that manages it, and those of the region where it is located, always comparing projects within the same municipality and year to isolate the effect of these variables from any other difference between local governments. Municipality fixed effects absorb any persistent difference between local governments, such as institutional capacity, fiscal history, and geographic access, among others. In this way, the results identify variation within a single municipality over time. Methodological details are presented in Appendix 2.

This strategy substantially limits the risk that the results reflect other differences between municipalities, but it is not equivalent to a controlled experiment. The relationships presented below should therefore be read as robust, consistent associations, not as strict causal effects. This distinction matters more for some variables than for others: project cost, for example, is defined before execution begins, which rules out execution itself determining cost; by contrast, something like mayoral experience calls for greater caution, because mayors who execute well also tend to remain in office longer. Throughout the section we point out these nuances where they matter for interpreting a specific result.

The analysis focuses on total project execution and, when results differ in a relevant way, also examines separately its two main components (infrastructure and services), which together account for more than 95% of local investment.

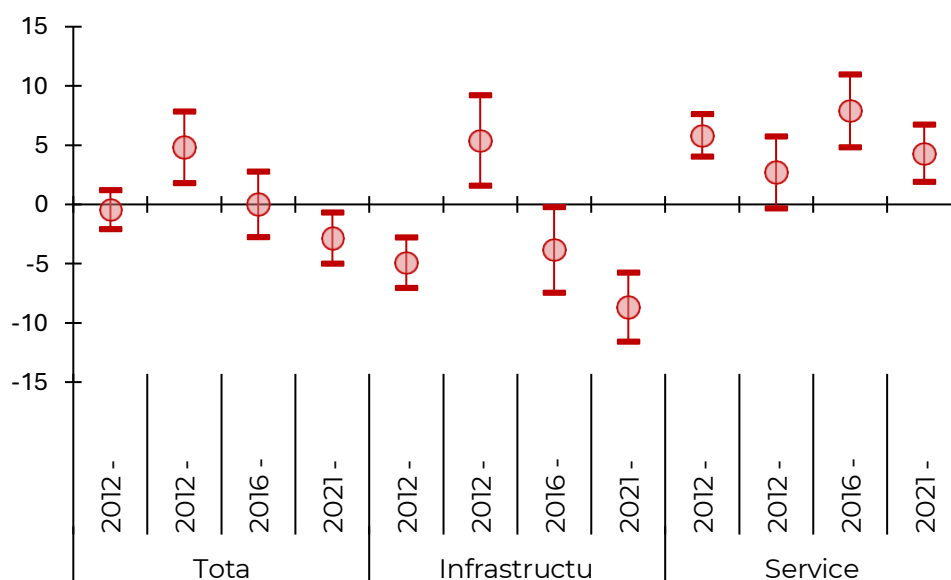
4.1 Cost as a structural drag and age as a warning signal

Two observable variables robustly predict the execution ratio: project cost and the years elapsed since approval. Their nature is fundamentally different. Cost is a characteristic fixed at the formulation stage, a design decision with permanent consequences. Age, by contrast, is not a design variable but an indicator that emerges and accumulates during execution, revealing information about the project's health as time passes. Both are useful as warning signals, but at different moments in the project's life cycle.

Cost as a structural design drag. Project size, measured by cost, is the only variable in this block that is truly decided before execution begins. Its association with the execution ratio is consistently negative: in the full sample (2012-2024), a 10% increase in cost is associated with a reduction of 0.5 percentage points (pp) in total execution and of 4.9 pp in execution of the infrastructure component. This pattern is consistent with the greater technical and contractual complexity of larger projects,

which require more elaborate tenders, more demanding technical files, and contractors with capabilities that are not always available in local markets. A project that is oversized for the technical capacity of the municipality that executes it is associated, from its formulation, with a disadvantage that is hard to offset during execution.

Figure 10. Effect of a 10% higher cost on the execution ratio (percentage points)



Intervals represent a 95% confidence level. Authors' elaboration.

This result also admits a political reading. Before the no-reelection reform (2012-2014), more costly projects executed more (+4.8 percentage points). In the years immediately after the reform (2016-2019), this relationship fades and ceases to be reliable. And in the most recent period (2021-2024) it consolidates in the opposite direction: more expensive projects systematically execute less (-2.9 percentage points). This gradual transition is more consistent with a progressive weakening of the political incentive to prioritize costly projects than with a mechanical change directly tied to the reform. One hypothesis, which we cannot confirm directly with the available data, is that in the earlier period mayors prioritized costly projects for their greater political visibility ahead of reelection, and that this incentive faded after reelection was eliminated. Figure 10 shows this contrast for total and infrastructure execution across the four subperiods.

Age as a diagnosis, not a design feature. Age measures the time elapsed between the project's viability declaration date and the observation period. It is important to understand what this variable does not measure: it is not the originally planned duration of the project, but the actual time it has been active in the system. A project formulated with an expected horizon of two years can accumulate five, seven, or ten years of age if it fails to close. In that sense, age is a measure of the project's execution history, not of its design.

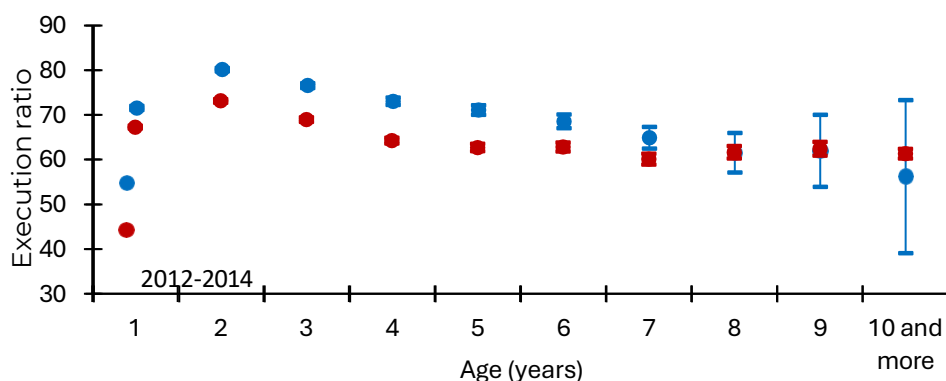
The relationship between age and average execution has an inverted-U shape, as Figure 11 shows: execution rises in the first years of the project's life and begins to decline persistently up to the sixth

or seventh year. This pattern has two distinct readings, for the ascending and the descending portions of the curve, and conflating them would lead to wrong conclusions.

In the early years, the positive relationship reflects a genuine maturation dynamic: projects need time to complete procurement, produce the final technical file, start physical works, and accumulate accruals. The descending portion has a radically different reading: it does not mean that older projects execute worse because of some property of time, but that the projects still open after that threshold are, increasingly, those that could not be closed on time. Projects that executed well have already left the system; what is observed in the tail of oldest is a selected group of projects that accumulate problems. Age does not cause low execution: low execution is what makes project old.

The econometric results corroborate this pattern and reveal an important change over time. Before the no-reelection reform, the peak contribution to execution occurred at 3.6 years of project life, consistent with the four-year terms under which mayors had incentives to close projects. In the most recent period (2021-2024), the peak shifts to 6.8 years, which reflects that projects now take longer to close and that the system tolerates projects remaining open for longer periods without intervention. This shift does not mean that designing projects for six or eight years is desirable; it means that weaker electoral-cycle pressure has lengthened the tolerance horizon for low-execution projects.

Figure 11. Execution ratio by project age



Intervals represent a 95% confidence level. The wide confidence intervals at “10 and more” for 2012-2014 reflect the small number of projects with that observable age within that time window. Authors’ elaboration.

The policy implication is direct: a project with more than six or seven years of age without closure is a warning signal that merits review. The accumulation of such projects, documented in Section 3, is the observable symptom of a system where projects are not closed at the pace at which they are opened. This empirical threshold underpins the design of the first reform proposed in Section 5. That longevity is a diagnosis and not a design variable does not contradict its use in designing that reform: just as a symptom does not cause a disease but indicates where to intervene, age does not cause low execution but pinpoints which projects concentrate the problems and where a portfolio cleanup would free up fiscal space most effectively.

4.2 Funding source: predictability, autonomy, and room for irregular practices

The funding source determines not only how many resources a project has, but also how predictable those resources are, how much autonomy the municipality has to use them, and what level of external control exists over their execution. These three factors largely explain the marked execution differentials observed by source.

Projects financed with Donations and Transfers (DTRA) and with Official Credit Operations (ROOC) are consistently those that execute worst, however the analysis is organized. In the full sample, being financed with DTRA is associated with 13.2 pp lower execution than a project financed with Ordinary Resources (RORD); in 2021-2024, this penalty is 10.1 pp. For its part, ROOC carried a penalty of 6.0 pp in the full sample, although in the recent period that coefficient is not statistically significant. Both sources share a characteristic: they impose external conditionalities that may exceed the technical capacity of many local governments.

The most striking result is that of Determined Resources (RDET). In the full sample, projects financed with RDET execute 4.6 pp more than those financed with RORD; in 2021-2024, this difference rises to 5.9 pp for total execution and to 12.8 pp for infrastructure. One might intuitively expect the opposite, given that RDET balances carry over to the next fiscal year. However, three reasons identified in conversations with officials explain this source's better performance.

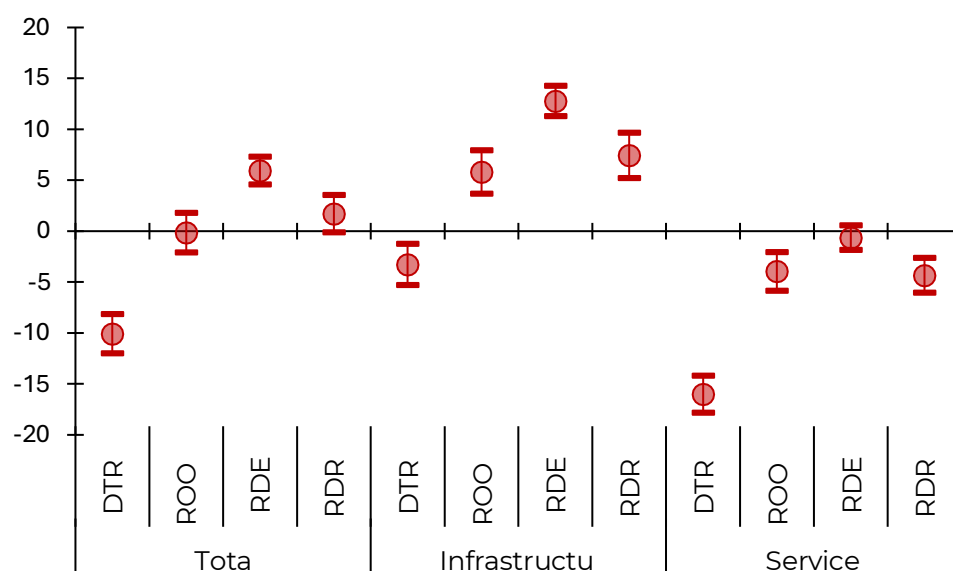
First, predictability. RDET resources (mainly canon, sobrecanon, and FONCOMUN) are known in advance: amounts are determined at the start of the fiscal year and transferred in scheduled installments, which allows municipalities to plan execution more precisely.

Second, perceived autonomy. RDET are perceived as the municipality's own resources, managed with greater discretion than RORD or funds with external conditionalities. This autonomy facilitates decisions about which works to undertake, with which contractors, and under what conditions.

Third, strategic prioritization (and its shadows). Since RDET represent the main volume of resources available for local investment (in 2024, 78% of projects had RDET as their main funding source), mayors focus their attention and technical capacity on these projects. This dynamic has, however, a worrying dimension: the greater autonomy and discretion that RDET offer could also widen the space for irregular practices. With RORD or DTRA, central government standards impose additional controls; with RDET, supervision is weaker and contractor selection more flexible. That same design, which favors agility, also widens the margin of discretion in awarding works.

A further result shows that the RDET advantage is not uniform across project size. For small projects (cost below S/1 million), RDET is associated with 8 pp higher execution than RORD; for medium projects (S/1-5 million), the advantage rises to 10 pp. However, for large projects (more than S/5 million), the effect reverses: RDET is associated with 2.5 pp lower execution. This pattern is not exclusive to RDET: it is observed across all funding sources when moving from medium to large projects, which reinforces the management capacity problem. This reversal directly motivates the right-sizing reform discussed in Section 5.

Figure 12. Effect of funding source on the execution ratio (relative to projects financed with Ordinary Resources, percentage points)



The sample used for this figure corresponds to 2021-2024. DTRA: Donations and Transfers. ROOC: Resources from Official Credit Operations. RDET: Determined Resources. RDRE: Directly Collected Resources. Intervals represent a 95% confidence level. Authors' elaboration.

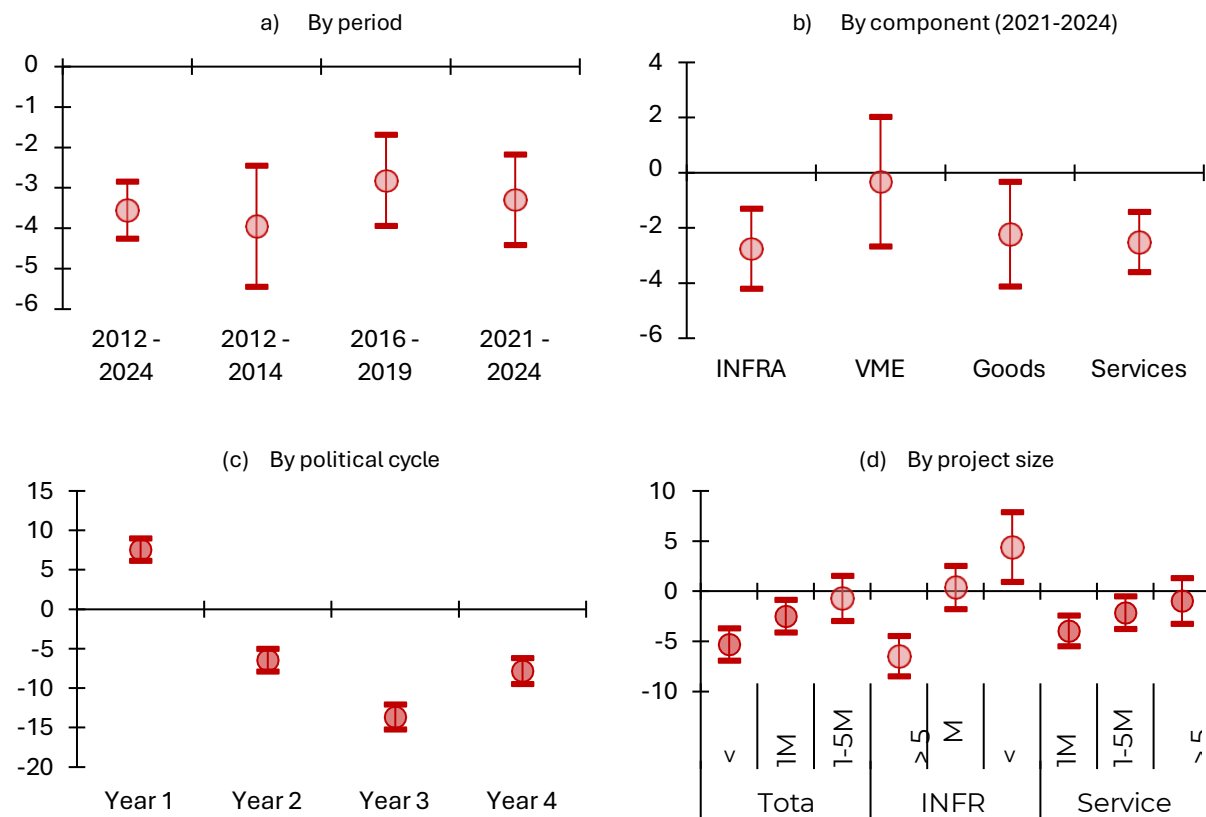
4.3 The inherited-project penalty

A project is inherited when it was formulated and started by a municipal administration prior to the current one. Throughout the period analyzed, inherited projects show significantly lower execution ratios than own projects: in the full sample, the average penalty is 3.6 pp for total execution and 3.4 pp for infrastructure; in 2021-2024, the penalty is 3.3 pp. This gap is robust across all subperiods.

However, this figure aggregates results that conceal a much richer pattern once the political cycle is broken down in more detail. In the first year in office, the coefficient for inherited projects is positive and statistically significant: +7.5 pp. From the second year on, the sign reverses abruptly: -6.5 pp in year 2, -13.7 pp in year 3, and -7.9 pp in year 4.

The most direct explanation for this pattern is instrumental: on taking office, a new mayor inherits a portfolio of projects with approved technical files, awarded contractors, and active budget lines. The mayor's own projects are not ready to be executed in the first months. Executing what was inherited is, in year 1, the only way to show budgetary activity. From year 2 onward, the mayor's own projects begin to be available and the dynamic changes radically.

Figure 13. Effect of being an inherited project on the execution ratio (percentage points)



INFRA: Infrastructure. VME: Vehicles, machinery, and equipment. M: Million soles. Intervals represent a 95% confidence level. Authors' elaboration.

For a mayor, completing an inherited project has limited political value: citizens will not associate it with the administration, and the mayor cannot put a name on the inauguration plaque or hold the symbolic ceremony marking the start of a new work. Own projects, in contrast, allow the mayor to fulfill campaign promises and build a narrative of achievements of their own. Likewise, starting projects could generate immediate political capital; finishing them, especially those of previous administrations, does not.

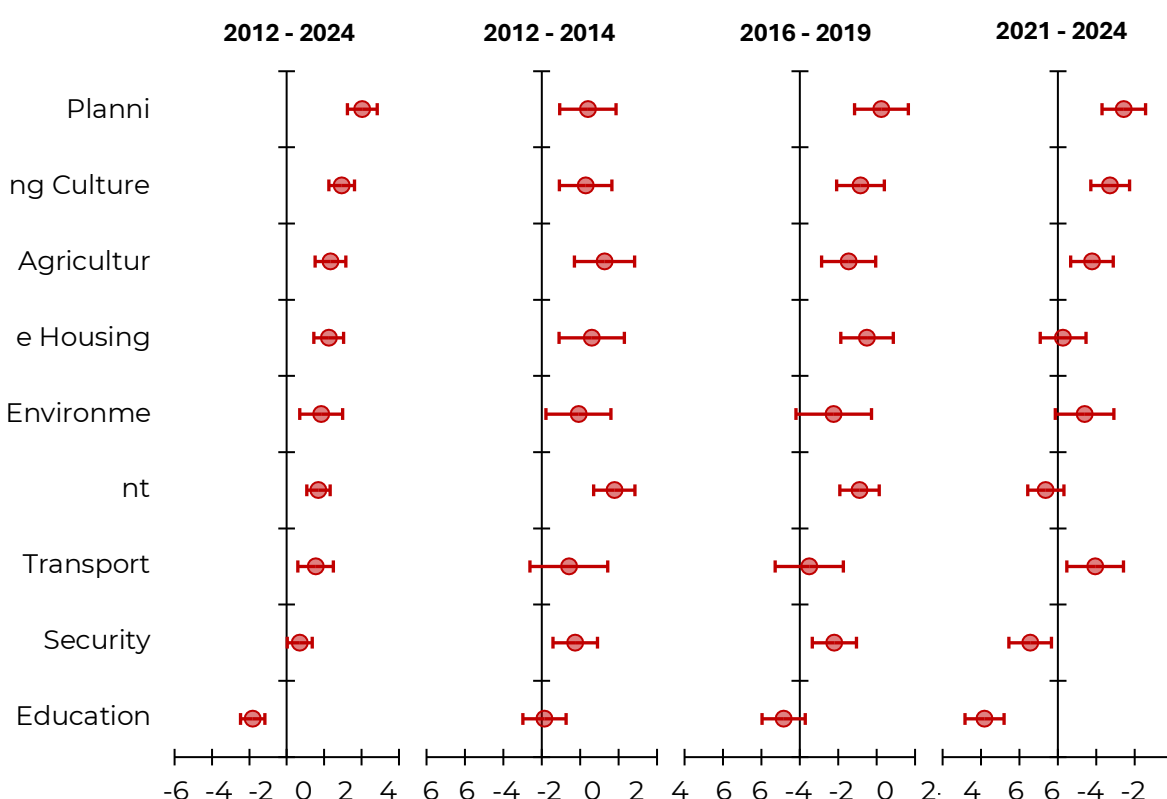
There is also a structural risk that, although it cannot be verified directly with the data, deserves attention: because the system does not require stalled projects to be administratively closed, a project that remains “active” on paper, even if the physical work is not advancing, can continue to be used to hire personnel or services on a discretionary basis. Projects could thus be kept in a state of prolonged execution (even when the physical work is halted) to justify hiring supervisors, technical advisers, and support staff, although the quantitative analysis in this study cannot verify this directly. Own projects are preferable under this scheme because the mayor has greater control over the selection of contractors and staff, whereas inherited projects come with pre-existing contracts that limit that discretion. This hypothesis is consistent with the evidence: the penalty is more intense in years 2 and 3, when the mayor has had time to position their own projects, and eases in year 4, when the end of the term imposes budgetary discipline.

Finally, the inherited-project penalty is not uniform across sizes. For small projects (cost below S/1 million), the penalty is 5.3 pp; for medium projects (S/1-5 million), it is 2.5 pp; and for large projects (more than S/5 million), the effect is not statistically significant. The penalty thus appears most intense where the mayor's discretion is greatest: in small projects, contractor selection could be more discretionary and the scope for redirecting attention toward own works is larger.

4.4 Sectoral heterogeneity

Beyond the characteristics of the individual project, the functional sector to which the investment belongs has an independent and persistent effect on execution. Sector coefficients capture structural differences in technical complexity, type of procurement, and the regulatory framework of each sector, once the other project and municipal characteristics are controlled for.

Figure 14. Effect of sector on the execution ratio (percentage points)



The comparison group is "Others". Intervals represent a 95% confidence level. Authors' elaboration.

The reference category is the "Others" group, which pools projects that do not belong to any of the main functional sectors. Taking that group as the base, the sectors with the best historical performance are planning, culture, and agriculture, which register systematically higher execution than the reference group in all the subperiods analyzed. These sectors combine projects of lower construction complexity, more direct procurement processes, and lower requirements for specialized technical supervision. At the opposite end, the education and sanitation sectors show negative coefficients or coefficients significantly below average, consistent with the high technical

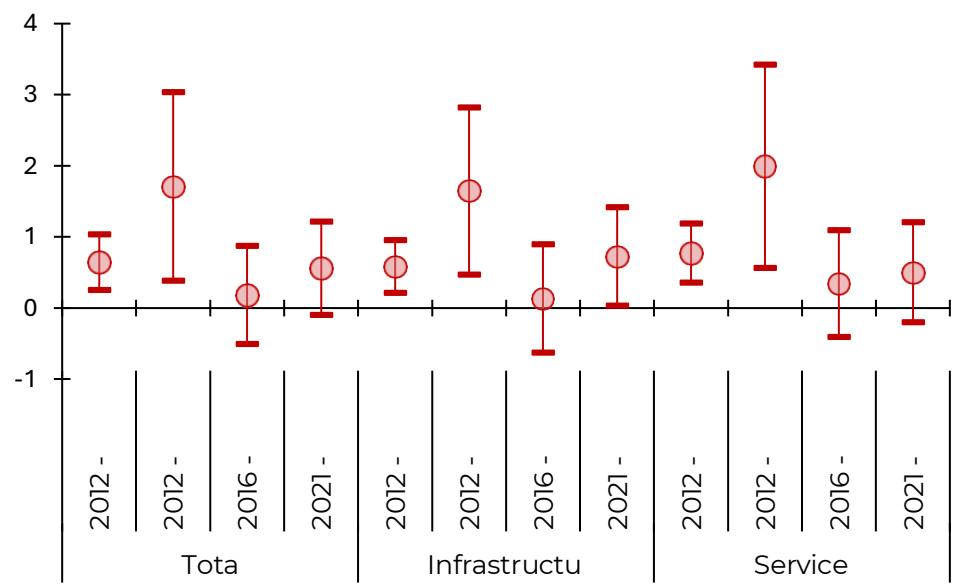
complexity of their interventions and, in the case of sanitation, frequent interface conflicts with utility concessionaires and regulatory bodies.

The transport sector, for its part, shows a notable deterioration over the period. Although its relative execution was positive in the years before the no-reelection reform, in the most recent period (2021-2024) its coefficient has fallen significantly, converging toward or below the reference group (see Figure 14). One hypothesis is that post-pandemic reactivation resources were disproportionately concentrated in transport, generating an accumulation of projects that exceeded municipalities' execution capacity. Another, non-exclusive, hypothesis is that the rise in the price of construction inputs (asphalt, cement, steel) affected road works more severely, leading to stoppages caused by cost renegotiation.

4.5 The role of the mayor: experience and political alignment

Mayoral characteristics have effects on execution that are statistically identifiable but, in magnitude, smaller than project design and funding source factors. This result is itself a finding: a project's fate depends more on how it was designed and where its resources come from than on who manages it.

Figure 15. Effect of 1 more year of mayoral experience on the execution ratio (percentage points)



Intervals represent a 95% confidence level. Authors' elaboration.

Mayoral experience (measured in years accumulated in office historically) has a positive effect with diminishing returns. In the full sample, each additional year of experience raises total execution by 0.6 pp, with an effect that is exhausted at around 8 years. This is consistent with the idea that the institutional learning curve is relevant: more experienced mayors know procurement processes better, have established relationships with suppliers and supervisors, and make fewer errors in budget programming. However, the effect has diminished significantly since the no-reelection

reform: in the 2021-2024 period, the coefficient is no longer statistically significant. By eliminating the possibility of reelection, the reform reduced mayors' incentive to accumulate management capital oriented toward executable results, as Figure 15 shows.

The mayor's gender shows no statistically significant effects on execution in any of the periods analyzed. Similarly, political alignment between the mayor and the central government is not a robust predictor of execution either: neither belonging to the same party as the President, nor the number of the party's seats in Congress, nor regional representation in the legislature shows statistically significant effects in most specifications. This finding has a direct reading: local public investment execution is a problem of management and design, not of politics. Mayors with potential connections to the central government do not execute significantly more than those without such connections, which rules out a class of explanations based on discrimination in resource allocation and directs attention toward capacity and design explanations that are, in principle, more actionable through public policy.

In sum, the results of the econometric analysis identify a clear hierarchy of the factors that determine execution. First, the most decisive design factor is project cost: projects that are oversized for the technical capacity of the executing municipality are born with a structural disadvantage. Second, age is not a design variable but a warning signal: projects with many years of life without closure are the result, not the cause, of execution difficulties, and their accumulation in the system merits policy attention.

Funding source, for its part, reflects the level of autonomy, predictability, and external oversight of the project. RDET resources show better execution, although that same autonomy can open space for irregularities that the analysis cannot rule out. On the other hand, resources with greater external conditionality perform worse because the associated procedures frequently exceed the technical capacity of local governments.

Finally, the political dynamics of the inherited project reveal a structural tension: mayors have incentives (both political and, potentially, rent-seeking) to favor their own projects over inherited ones. The system thus generates a cycle of accumulating unfinished projects that are passed from one administration to the next. Moreover, the statistical irrelevance of political alignment confirms that execution is a problem of design and management, not of politics, which strengthens the case for the reforms presented in the next section.

5. Reform Options

5.1 Analytical framework

The findings of Section 4 make it possible to outline a reform agenda anchored in empirical evidence. The logic is straightforward: if the determinants of execution are identifiable and quantifiable, it is possible to estimate the potential impact of policies that modify those determinants. This section proposes five simulated reforms and a set of complementary institutional reforms.

To quantify the impact of each reform, we simulate, project by project, what its execution would have been had that reform been in force. This exercise, called a counterfactual scenario, applies the statistical results of Section 4 to the specific changes each reform proposes. This scenario should be interpreted as the maximum improvement potential if the reform is implemented fully and effectively. In practice, it is reasonable to expect the real impact to be somewhat smaller. At the project level, the counterfactual is capped at 100%. At the aggregate level, impact is measured both in percentage points of execution and in soles of additional accrued spending. The technical details of the simulation are presented in Appendix 3.

The simulation uses 2024 as the baseline year, with 2022 and 2023 as robustness checks. The baseline shows that stalled projects (execution below 5%) accounted in 2024 for 22% of active projects, with a PIM of more than S/4 billion (16% of the total PIM of S/24,839 million). These projects are the main target of the first reform. The five reforms are named for their central objective: (R1) Portfolio Cleanup, (R2) Project Continuity, (R3) Right-Sizing, (R4) Funding Source Simplification, and (R5) Institutional Continuity.

5.2 R1: Portfolio Cleanup

Motivation. Figure 11 showed that average execution begins to decline persistently up to the seventh year of project life, and the econometric analysis places the peak at 6.8 years in the recent period. Projects that exceed that threshold without closing are not simply old: they are mostly projects with significant problems closing on time that become old precisely because of their execution difficulties. In 2024, 2,324 projects exceeded 7 years of age; of these, 46% (1,064 projects) belonged to the group of stalled projects with execution below 5%.

Design. The reform distinguishes two groups among projects with age of 7 years or more. The first group, with cumulative progress (cumulative accrual / project cost) below 50%, consists of cancelled projects: they have consumed a significant portion of their expected life without completing even half of their financial progress. Once cancelled, their budget is released for reallocation. The second group, with progress of 50% or more, consists of reactivated projects: they have enough progress to be completed and their execution is raised to 60% in the counterfactual, if they do not already exceed that threshold.

As a complementary institutional component, the reform proposes: (i) limiting the execution horizon of new projects to 4 years for projects managed exclusively by the municipality, and to 8 years for projects co-managed with the MEF; (ii) automatically escalating to MEF supervision any project that

exceeds its declared horizon by more than 12 months; and (iii) monitoring the average age of the portfolio at the municipal level and imposing restrictions on the formulation of new projects when that average exceeds a defined threshold.

Result. In 2024, the portfolio cleanup raises the execution ratio by 0.8 pp (from 67.6% to 68.4%) and releases a PIM of S/1,140 million (0.11% of GDP) associated with cancelled projects. In 2022, the contribution is 1.5 pp with a released PIM of S/623 million; in 2023, 1.7 pp with S/491 million. The difference between years reflects the number of cancelled projects: 695 in 2022, 1,248 in 2023, and 1,691 in 2024.

5.3 R2: Project Continuity

Motivation. Inherited projects suffer an execution penalty that is especially intense from the second year of municipal administration onward. In 2022 (Year 4 of the 2019-2022 term), that penalty is 7.9 pp; in 2024 (Year 2 of the 2023-2026 term), it is 6.5 pp. In 2023 (Year 1 of the 2023-2026 term), by contrast, inherited projects execute 7.5 pp more than own projects, because the new authorities do not yet have own projects ready. The reform therefore has no simulated effect in 2023: that is the year when the political-cycle dynamic naturally favors inherited projects.

Design. The reform combines two instruments. The first is a standardized project-level municipal transition protocol: when authorities change, the outgoing municipality formally documents the status of each active project, including the status of the technical file, the current contractor, physical progress, and pending payments. This protocol reduces the information asymmetry between administrations and can be implemented through an MEF directive without new legislation. The second instrument is the inclusion of execution targets for inherited projects in the Municipal Management Improvement Incentive Program (PI), linking an additional transfer to meeting execution ratios for the inherited portfolio. The simulation assumes the complete elimination of the penalty for projects costing less than S/5 million, where the evidence shows significant effects.

Result. In 2024, project continuity contributes 1.5 pp to the execution ratio, with gains of S/348 million (0.03% of GDP). In 2022, the contribution is 0.6 pp with S/172 million. In 2023, the contribution is 0 pp because the penalty does not operate that year: the new mayors elected in October 2022 took office in January 2023 with a portfolio made up entirely of inherited projects and no own projects ready, so in the first year inherited projects are executed more. The difference between 2022 and 2024 reflects that Year 4 carries a slightly larger penalty than Year 2.

5.4 R3: Right-Sizing

Motivation. The negative effect of cost on execution, documented in Section 4, reflects a lack of coherence between project size and the municipality's execution capacity. This problem is especially visible in the recent period (2021-2024), when the cost coefficient reaches -2.9 pp for total execution and -8.7 pp for infrastructure, while the advantages of funding sources reverse for large projects.

Design. The reform sets a municipality-specific cost ceiling, derived from the municipality's own execution history: the median cost of the projects that the municipality has executed at a ratio of 70% or higher in the years prior to each simulation. This threshold is historical, which avoids anticipation bias, and heterogeneous across municipalities, respecting that different local governments have different capacities. Projects with a cost above their respective thresholds and execution below 70% are resized to the ceiling in the counterfactual. As a second-order component, projects that fall below the S/5 million threshold once resized receive an additional benefit derived from the reversal of the negative effect of large projects, differentiated by funding source (DTRA: +11.8 pp, ROOC: +6.9 pp, RDET: +12.5 pp, RDRE: +13.5 pp). The institutional component, for its part, includes cost ceilings by type of municipality in the PMI and the restriction that no project may represent more than 40% of the municipal PIM.

Result. Right-sizing is the reform with the largest individual contribution to the execution ratio. In 2024 it contributes 3.3 pp with gains of S/776 million (0.08% of GDP); in 2023, 4.0 pp with S/962 million (0.10%); and in 2022, 4.5 pp with S/1,221 million (0.14%).

5.5 R4: Funding Source Simplification

Motivation. In principle, this reform seeks to make all funding sources operate at the same execution levels as Ordinary Resources (RORD), which are the reference group in the analysis. However, the results show that ROOC and RDRE have no statistically significant coefficients in 2021-2024 (-0.2 and 1.7 pp, respectively), which indicates that their performance is already comparable to that of RORD. The only source with a significant and correctable penalty is DTRA (-10.1 pp in 2021-2024).

Why not try to bring the sources up to the level of RDET, which outperform RORD by 5.9 pp? The answer lies in the nature of those advantages. RDET have three non-transferable structural advantages: predictability (amounts are known at the start of the year and transferred in scheduled installments), perceived autonomy (municipalities feel they are their own resources), and scale (they represent the main volume of investment). RORD are allocated competitively by design, which removes the perception of own resources. RDRE have the structural advantages of RDET but not the scale, which limits municipal prioritization. Consequently, the reform is in practice an intervention focused on DTRA.

Design. The reform combines three instruments to reduce friction in DTRA projects with execution below 70%: (i) assigning a technical liaison from the MEF or the relevant sector to each DTRA project to handle accountability requirements; (ii) establishing multiyear disbursement commitments with the transferring entities, partially replicating the predictability of RDET; and (iii) simplifying reporting procedures for small-scale DTRA projects. The simulation assumes the complete elimination of the 10.1 pp penalty for DTRA projects with execution below 70%.

Result. Funding source simplification has the smallest individual contribution of the five reforms. In 2024 it contributes 0.5 pp with S/125 million (0.01% of GDP); in 2023, 0.6 pp with S/145 million; and

in 2022, 0.3 pp with S/83 million. The variation between years reflects the composition of the DTRA portfolio in each period.

5.6 R5: Institutional Continuity

Motivation. Mayoral experience contributed significantly to execution before the no-reelection reform: the coefficient was 1.71 pp per year in 2012-2014. In 2021-2024, that coefficient is 0.56 pp and is not statistically significant. The 2015 reform did not eliminate institutional learning as a phenomenon: mayors continue to accumulate knowledge. What it eliminated was the electoral incentive to apply it in favor of execution. In addition, the reform causes a complete turnover of authorities in each cycle, destroying the technical capital accumulated by the teams of the formulating and executing units.

Design. The central component of this reform is protecting the continuity of technical staff of the Project Formulation Units (UF) and Investment Execution Units (UEI) for at least 18 months after the change of authorities. The technical officials in these units have specific knowledge of ongoing projects, current contractors, technical files, and ongoing procurement processes; that knowledge is lost with immediate political turnover. Continuity protection does not remove the new mayor's autonomy to change the political team, but distinguishes between technical project management staff and politically appointed staff. The simulation restores the difference between the pre-reform coefficient and the current one ($\Delta = 1.71 - 0.56 = 1.15$ pp per year of experience) and applies it to all projects according to the mayor's years of experience.

Result. Institutional continuity is the second-largest reform in contribution for 2022 and 2024. In 2024 it contributes 2.6 pp with S/606 million (0.06% of GDP); in 2022, 4.5 pp with S/1,226 million (0.14%); and in 2023, 1.5 pp with S/371 million (0.04%). The variation between years reflects the distribution of mayoral experience: in 2022 (Year 4), many mayors had spent four years in office; in 2023 (Year 1 of the new term), most were new, with zero or few years of experience.

5.7 Complementary institutional reforms

The five simulated reforms quantify the improvement potential attributable to factors whose marginal effect can be derived from the estimated econometric coefficients. However, the execution problem has systemic dimensions that cannot be directly simulated because they operate through behavioral channels, tool adoption, and process quality, whose magnitude depends on implementation factors that the model does not capture. The institutional reforms presented below do not replace the simulated ones; they extend them, creating the systemic conditions for the behavioral changes assumed in the simulations to materialize in a sustained way.

The reforms are organized into three pillars: information and transparency; portfolio management; and technical capacity and formulation.

Pillar 1: Information, transparency, and accountability

Public execution dashboard. The MEF currently publishes execution information in SIAF and SSI, but in technical formats that are not accessible to citizens. Creating a public dashboard of execution by project and municipality, with up-to-date data in a visual format, would generate a reputational accountability mechanism that operates even without reelection. The evidence on the inherited-project penalty shows that mayors respond to political incentives: the public visibility of the abandonment of inherited projects is one such incentive. This dashboard does not require new legislation, only an interface built on data that already exist at the MEF.

Automated early-warning system. SSI collects physical and financial execution data but does not generate automatic alerts. An early-warning system that identifies projects showing signs of difficulty before they accumulate a critical age would allow early intervention by the Multiyear Investment Programming Office (OPMI) and the regional government. Examples of warning signals are zero accrual for three consecutive months during the execution season, a PIM insufficient to complete the technical file, or contractor noncompliance recorded in SEACE. This system is within the MEF's current technological capabilities and its implementation essentially requires a business rule applied to data that are already available.

Mandatory ex-post evaluation. Peru lacks an ex-post evaluation system for local public investment. The absence of such a mechanism means that the financial execution ratio is the only accountability indicator available, which creates incentives to execute quickly rather than to execute well. An ex-post evaluation applied to a random sample of closed projects, with results published on the execution dashboard, would gradually shift the focus of accountability from the financial process to the results delivered.

Pillar 2: Portfolio management

Active portfolio cap. A municipality could not register new projects in the PMI if more than 30% of its active portfolio exceeds an age threshold of six years. This rule forces mayors to close projects before opening new ones and is applicable at the PMI registration stage, where the MEF has direct administrative control.

Incentive for voluntary cancellation. There is currently no positive consequence for a municipality that recognizes that a project cannot be completed and cancels it voluntarily. Creating a mechanism that allows the PIM of voluntarily cancelled projects to be redirected to IOARR investments without going through the full PMI cycle lowers the administrative cost of admitting failure and speeds up the reallocation of resources toward more productive uses.

Control of cumulative spending relative to formulated cost. In the sample, 3% of observations show cumulative accruals above the cost of the projects. This signals a monitoring problem that may have multiple causes, from misclassified operating costs to discretionary allocations that merit review. The MEF should set up automatic alerts when cumulative accruals (or some better measure of financial progress) approach the formulated cost, and require project reformulation before that limit is exceeded.

Pillar 3: Technical capacity and formulation

Standardized project templates by type and sector. A significant share of the time and technical error in formulation is concentrated in the most common project types: rural roads, water and sanitation connections, school classrooms, health posts, and irrigation systems. Developing pre-approved design templates by the MEF and sector ministries for these interventions would drastically reduce the time needed in the Formulation and Evaluation phase, the likelihood of deficient technical files, and the cost of external consultants for small municipalities.

Registry of prequalified contractors by region and type of work. One of the most common bottlenecks in small municipalities is that procurement processes end up void because no qualified bidders show up. A regional registry of prequalified contractors by type of work and cost range, maintained by regional governments under OSCE oversight, would shorten procurement times and reduce the rate of void processes.

One-stop technical support desk for projects in difficulty. Currently, a municipality with a stalled project must coordinate independently with DGPMI, OSCE, the sector ministry, and SEACE to resolve different types of blockages. A one-stop support desk, staffed by MEF sector specialists, would reduce the transaction cost of resolving execution problems and would be especially valuable for municipalities with the least internal technical capacity.

5.8 Aggregate result: the improvement potential

Figure 16 summarizes the combined impact of the five reforms for each of the three years analyzed. Each chart starts from the observed execution level (63.4% in 2022, 63.8% in 2023, and 67.6% in 2024) and shows, reform by reform, how much that percentage could rise until reaching the estimated maximum potential: 74.8%, 71.6%, and 76.2%, respectively.

Table 4 presents the results in terms of contribution to the execution ratio, gains in millions of soles, and percentage of GDP for each reform and year. The five reforms together would raise local government execution by 8.6 pp in 2024 (from 67.6% to 76.2%), by 7.8 pp in 2023, and by 11.4 pp in 2022. Expressed in soles, the gains in additional accruals plus the PIM released by cancellations amount to S/3,180 million in 2024 (0.31% of GDP), S/2,374 million in 2023 (0.25% of GDP), and S/3,743 million in 2022 (0.42% of GDP). In terms of total local government investment, the gains would have represented increases of +18.3% in 2022, +13.1% in 2023, and +16.7% in 2024.

The largest contribution comes from Right-Sizing (R3) in all three years, followed by Institutional Continuity (R5). This reflects that the mismatch between project size and municipal capacity, and the erosion of the effect of mayoral experience, are the two most widespread problems and the most directly correctable through policy changes. The variation of R2 across the three years, with zero contribution in 2023, correctly illustrates that the inherited-project penalty does not operate in the first year of a new municipal administration. The smaller contribution of R4, for its part, does not reflect its conceptual importance but the low weight of DTRA projects in the total portfolio.

Finally, combined with the positive and significant effect of local public investment on local GDP per capita growth, the execution gains estimated here have implications that go beyond the budget: they represent a local growth potential that is currently being lost to correctable inefficiencies in project design and management.

Figure 16. Potential result of the reforms on execution (percentage points)



Authors' elaboration.

Table 4. Summary of results of the simulated reforms (additional investment)

	Contribution to execution (pp)	Millions of soles	pp of GDP
2022			
R1	1.5	417	0.05
R1 (PIM released)	-	623	0.07
R2	0.6	172	0.02
R3	4.5	1,221	0.14
R4	0.3	83	0.01
R5	4.5	1,226	0.14
Total	11.4	3,743	0.42
2023			
R1	1.7	405	0.04
R1 (PIM released)	-	491	0.05
R2	0.0	0	0.00
R3	4.0	962	0.10
R4	0.6	145	0.02
R5	1.5	371	0.04
Total	7.8	2,374	0.25
2024			
R1	0.8	184	0.02
R1 (PIM released)	-	1,140	0.11
R2	1.5	348	0.03
R3	3.3	776	0.08
R4	0.5	125	0.01
R5	2.6	606	0.06
Total	8.6	3,180	0.31

R1: Portfolio Cleanup. R2: Project Continuity. R3: Right-Sizing. R4: Funding Source Simplification. R5: Institutional Continuity. Authors' elaboration.

6. Conclusions

This study analyzed the determinants of local public investment execution in Peru at the project level, using a panel of 197,612 projects with 425,031 observations for 2012-2024. The results show that a significant part of the variation in the execution ratio can be attributed to project characteristics that are, in principle, modifiable through public policy. In this sense, some projects are, from their formulation, blessed or cursed.

The stylized facts reveal three structural patterns. First, the local investment portfolio is highly fragmented and expanding, with more than 40,000 active projects in 2024 and an average age that rose from 1.8 to 2.8 years over the period analyzed. Second, the distribution of the execution ratio at the project level is markedly bimodal: in 2024, 22% of projects recorded execution below 5% and 40% exceeded 99%, which suggests that projects do not get stuck gradually but split between those that overcome the barriers of the investment cycle and those that remain stalled from the early stages. Third, the composition of spending has shifted steadily from infrastructure (59% in 2012 to 36% in 2024) toward services (from 36% to 58%), a trend that deserves attention both for its implications for the quality of investment and for the questions it raises about spending transparency in a context of high discretion.

The statistical analysis identifies five main factors, always comparing projects within the same municipality and year to ensure that results are not distorted by differences between local governments. First, project cost has a negative and persistent effect on execution in the recent period: -0.5 pp for total execution and -4.9 pp for infrastructure for every 10% increase in cost; before the no-reelection reform this coefficient was positive, passing through a stage of statistical insignificance in 2016-2019 before consolidating as negative; one possible reading is that it reflects a political incentive for mayors to execute costly, visible projects that faded after the reform. Second, age acts as a warning signal: average execution peaks at around 7 years and then declines, because the projects that exceed that threshold without closing are a selected sample of projects with structural difficulties. Third, the funding source affects execution through channels of autonomy, predictability, and external oversight: RDET outperform RORD by 4.6 pp in the full sample, while DTRA lag them by 13.2 pp. Fourth, inherited projects suffer an average penalty of 3.6 pp, with a political-cycle dynamic that reverses this penalty in the first year of a new administration. Finally, mayoral experience is associated with better execution, a relationship that disappeared after the 2015 no-reelection reform.

Based on these findings, five reforms are proposed and simulated. Right-Sizing (R3) is the reform with the largest contribution: 3.3 to 4.5 pp depending on the year. Institutional Continuity (R5) contributes between 1.5 and 4.5 pp. Portfolio Cleanup (R1) contributes 0.8 to 1.7 pp and releases a PIM of S/491 to S/1,140 million, depending on the year. Project Continuity (R2) contributes between 0.0 and 1.5 pp, with zero contribution in the first year of a new administration for electoral-cycle reasons. Funding Source Simplification (R4), for its part, contributes 0.3 to 0.6 pp, mainly through the elimination of the DTRA penalty. Taken together, the five reforms could raise the execution ratio

by 8.6 to 11.4 pp and generate fiscal gains of S/2,374 to S/3,743 million per year (0.25% to 0.42% of GDP).

This study has important limitations that point to a complementary research agenda. A key one is that we focus on the budget execution ratio, which measures financial performance but not the social welfare obtained. A project can execute 100% of its budget and produce infrastructure that nobody uses, or it can execute 60% and generate transformative impacts. In addition, several findings (such as the autonomy of RDET, the inherited-project penalty, and the deterioration in the composition of spending) are consistent with patronage and discretionary allocation practices that the analysis cannot confirm with the available data, but that merit specific research and oversight attention.

The central contribution of this study is to show that the problem of under-execution of local public investment is neither uniform nor inevitable. It is a problem with identifiable patterns, modifiable determinants, and administratively viable reforms that could generate substantial gains without altering the current decentralization scheme. The window for action lies in the formulation, sizing, and monitoring of projects, not in the political structure of the system.

7. Pending Research Agenda

This study answers questions about the determinants of budget execution and quantifies the improvement potential of a set of reforms. In doing so, it opens new questions relevant for both academic research and policy design. The questions are organized into three groups: data and measurement gaps, heterogeneity within the categories analyzed, and an evaluation agenda for the proposed reforms.

Group 1: Data and measurement gaps

Quality versus quantity of execution. This study measures budget execution: the ratio of accrued to budgeted amounts. This metric does not capture whether the work was physically completed, whether it functions properly, or whether it generates the social returns for which it was formulated. The pending question is to what extent the financial execution ratio is a good predictor of investment quality and beneficiary welfare. Answering it requires linking SIAF and SSI data with community-level outcome evaluations or service-provision indicators, which constitutes a highly relevant ex-post evaluation agenda for Peru.

Oversight and transparency as a mechanism. Several findings of this study point to opportunities to strengthen oversight and transparency mechanisms in local investment: the greater discretion in the use of RDET, the preference for own projects over inherited ones, the persistence of active projects without physical progress, and the larger weight of service components, whose verification is more complex. A research agenda combining SEACE data on award patterns with findings from the Comptroller General's Office (Contraloría) and the determinants of execution identified here would make it possible to assess to what extent stronger controls can improve execution.

Group 2: Heterogeneity within the categories analyzed

Heterogeneity within RDET: FONCOMUN versus extractive resources. This study treats Determined Resources as a homogeneous category. Within RDET, however, FONCOMUN (redistributive, predictable, and universal) coexists with resources from extractive activities (canon, sobrecanon, and royalties), whose amount is volatile and concentrated in municipalities in mining and hydrocarbon areas. The RDET execution premium may be concentrated in FONCOMUN, because of its greater stability, or in extractive resources, because of their greater scale. This distinction has direct implications for policy design in municipalities highly dependent on canon and for the literature on the natural resource curse at the local level.

Heterogeneity within ROOC: sovereign bonds versus multilateral loans. Resources from Official Credit Operations (ROOC) pool projects financed with sovereign bonds and projects financed with loans from multilateral organizations such as the IDB, the World Bank, and CAF. The conditionalities of these two sources are substantially different: sovereign bonds follow the national procurement standard, whereas multilateral loans require specific procurement procedures and disbursement schemes tied to audited milestones. The penalty observed for ROOC in the full sample may be concentrated in multilateral loans, in which case the funding source simplification reform should be targeted at that subgroup.

Mechanisms of sectoral heterogeneity. This study documents that the sanitation sector systematically under-executes and that the transport sector has deteriorated in performance since 2021, but it does not identify the mechanisms. For sanitation, the hypotheses range from conflicts with regulated concessionaires and the geological complexity of the works to interinstitutional coordination difficulties. For transport, the rise in construction input prices and the over-programming of post-pandemic reactivation are plausible candidates. Distinguishing among these hypotheses would allow more precise sectoral interventions to be designed.

Spatial spillovers between municipalities. The econometric model controls for municipality fixed effects, which absorbs persistent differences between local governments but does not capture spatial interactions. Contractor markets, supervisor availability, and project formulation teams are regional, not municipal, in nature. A municipality surrounded by peers with high technical capacity could benefit from a larger supply of bidders in tenders and from shared knowledge of good practices. Spatial econometric models that exploit variation in the capacity of neighboring municipalities could identify these spillovers and guide policies of municipal clustering or associations (mancomunidades).

Group 3: Evaluation agenda for the proposed reforms

Causal evaluation of the municipal transition protocol. Reform 2 proposes a standardized transition protocol and execution targets for inherited projects in the Incentive Program. Both instruments can be implemented through a gradual rollout across municipalities, which would generate treatment variation that can be exploited for an impact evaluation. Comparing, within the same electoral cycle, municipalities that adopted the protocol with those that did not would make it

possible to estimate the causal effect of the reform, turning the counterfactual simulation presented here into experimental evidence.

What happens to the PIM released by cancellations? Reform 1 releases between S/491 and S/1,140 million per year in PIM previously committed to projects with no prospect of closure. The pending empirical question is whether those resources are reallocated to more productive investments or absorbed by current spending, accumulated as carry-over balances, or reprogrammed to new low-execution projects. Answering this requires tracking the subsequent budgetary destination of the PIM of cancelled projects in historical episodes of mass cancellation, an analysis that is feasible with the SIAF panel.

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Appendix 1: Methodology for estimating local fiscal multipliers

To estimate the effect of local public investment on local economic growth, we use the Local Projections method of Jordà (2005). This approach directly estimates the impulse response function at each horizon h through a series of separate regressions, which makes it more flexible than traditional VAR methods in the face of possible nonlinearities and specification errors.

A1.1 Dependent variable

The dependent variable is the cumulative growth of real local GDP per capita from period $t - 1$ to period $t + h$, expressed in percentage points. Local GDP data come from the update by Seminario et al. (2019), which provides annual GDP series at the district level for 1993-2018, constructed from satellite images of nighttime light intensity. At the intersection of local GDP data and subnational finance data, the sample is restricted to 2009-2018.

A1.2 Fiscal shocks

Fiscal shock: Change in local capital spending as a share of lagged local GDP, expressed as a deviation from the national average change in the same year. Specifically, from each district's change in a given year we subtract the average of that change across all districts in that year. This shock thus removes spending movements common to all districts in a given year and retains only the district-specific variation.

Execution shock: Follows the logic of the fiscal shock, but applied to the change in local capital spending (accrued) as a share of lagged local capital PIM. In this way, this shock measures district-specific surprises in the execution rate, removing the common annual component.

A1.3 Estimation equation

For each horizon $h = 0, 1, \dots, 5$, the following equation is estimated:

$$g_{it}^h = \alpha_i^h + \alpha_t^h + \beta_h s_{it} + X_{it}' \delta_h + \varepsilon_{it}^h$$

Where g_{it}^h represents cumulative local growth between $t - 1$ and $t + h$; α_i^h and α_t^h are the district and year fixed effects, respectively; s_{it} represents the shock under evaluation (fiscal or execution); and X_{it} is a vector of controls that includes lags of growth, of current and capital spending as a share of local GDP, per capita revenue from specific sources, national and regional government spending as a percentage of local GDP, and the logarithm of population. Standard errors are clustered at the province level. Estimates exclude Lima and Callao. Figure 2 presents the results for the capital spending component only, with 90% confidence intervals.

Appendix 2: Methodology of the determinants analysis

A2.1 Baseline model

The econometric model estimates the execution rate (E) of each project p of municipality m in region r in year t as a function of characteristics of the project (P), the municipality (M), and the region (R), according to the following equation:

$$E_{pmrt} = \lambda_m + \lambda_t + \beta_P P_{pmrt} + \beta_M M_{mrt} + \beta_R R_{rt} + \epsilon_{pmrt}$$

where λ_m and λ_t are municipality and year fixed effects, respectively. The results shown in this study correspond to the OLS estimator with multiple levels of high-dimensional fixed effects. Standard errors are clustered at the province level to account for the correlation among projects within the same province. Likewise, the confidence intervals in the figures correspond to 95%.

The results are robust to those obtained using the fractional logit model (Papke and Wooldridge, 1996) with fixed effects, which properly handles the bounded nature of the execution ratio (between 0 and 100) by always generating predictions within the feasible interval. OLS was chosen as the main estimator because of its advantages in interpretation, comparability with previous studies, and usefulness for the reform simulations.

A2.2 Explanatory variables

Project characteristics (P): log of real cost, years of age (lagged), age (lagged) squared, inherited-project indicator, funding source indicator, and functional sector indicator.

Municipality characteristics (M): state capacity of the municipality (categorical), years of mayoral experience, experience squared, mayor's gender (female indicator), political alignment with the central government, seats held in Congress by the municipality's party, seats in Congress of the region where the municipality is located.

Regional characteristics (R): regional competitiveness indices for economy, infrastructure, and institutions.

A2.3 Identification strategy and subperiods

Municipality fixed effects absorb any persistent difference between local governments, so identification comes from time variation within each municipality. Since several key determinants changed in magnitude and sign over the period analyzed, four specifications are estimated separately: the full sample (2012-2024), pre-reform (2012-2014), post-reform pre-pandemic (2016-2019), and post-pandemic (2021-2024).

It should be noted that this identification strategy controls for unobserved heterogeneity that is constant over time within each municipality, but is not a causal identification strategy in the strict sense. The reported coefficients should be interpreted as robust conditional associations. This distinction is particularly relevant for variables whose value could be correlated with unobserved factors at the project or municipal administration level, as discussed in Section 4.

Appendix 3: Methodology of the reform simulations

A3.1 General framework

The simulations use a project-level counterfactual microsimulation approach. For each reform, a set of affected projects is defined and the counterfactual execution ratio is computed by applying the coefficients estimated in Appendix 2. The individual counterfactual is capped at 100%. Aggregate results are obtained by converting changes in execution ratios into soles of additional accruals and summing over all active projects. The baseline is 2024; 2022 and 2023 are used as a temporal robustness check. All coefficients used come from the 2021-2024 regression, which is the most representative of the current institutional context.

A3.2 Parameters of each reform

R1: Portfolio cleanup. Projects with age equal to or greater than 7 years and cumulative accruals below 50% of cost are cancelled. Projects with age equal to or greater than 7 years but with cumulative accruals equal to or greater than 50% of cost, for their part, are reactivated to 60% if their observed execution is below 60%.

R2: Project continuity. For inherited projects with cost below S/5 million: in 2022 (Year 4) +7.867 pp is added and in 2024 (Year 2) +6.484 pp is added. In 2023 (Year 1) no correction is applied because the penalty is already positive that year.

R3: Right-sizing. First, the historical median cost of projects with an execution ratio equal to or greater than 70% is computed at the municipal level. Then, for projects with a cost above that median cost and with execution below 70%: the counterfactual cost is the computed historical median cost. The effect is computed with the coefficients of the regressions specific to the infrastructure component (linear term = -8.68, quadratic term = +0.18) and the services component (linear term = +4.30, quadratic term = -0.26), converting the changes to soles via the PIM of each component. Projects that cross the S/5 million threshold when resized receive a premium by funding source: DTRA +11.8 pp, ROOC +6.9 pp, RDET +12.5 pp, RDRE +13.5 pp.

R4: Funding source simplification. For projects with DTRA funding and total execution below 70%: +10.1 pp is added (DTRA coefficient in 2021-2024 in absolute value).

R5: Institutional continuity. For all projects of municipalities with mayors with experience greater than 0 years: 1.15 multiplied by the number of years of experience is added (difference in coefficients 2012-2014 vs 2021-2024: $1.71 - 0.56 = 1.15$ pp per year). There is no execution filter.

A3.3 Aggregation and impact measurement

The aggregate counterfactual execution ratio is computed as the sum of observed accruals plus the sum of each reform's gains in soles, divided by the active PIM (excluding the PIM of projects cancelled under R1). The total fiscal impact includes both the accrual gains from reforms R2 to R5 and the total PIM of the projects cancelled under R1, which represents the resources that become available for reallocation.

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REA_CAN@iadb.org