

Second Year Policy Analysis

Achieving fiscal sustainability in Peru's local governments

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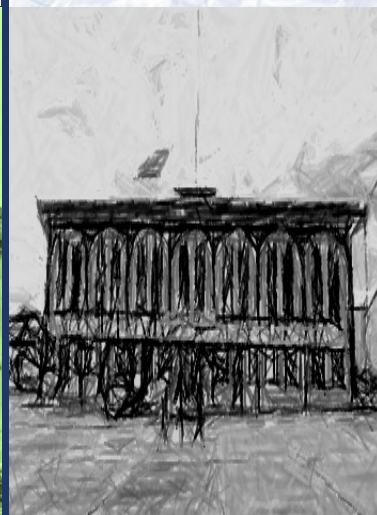
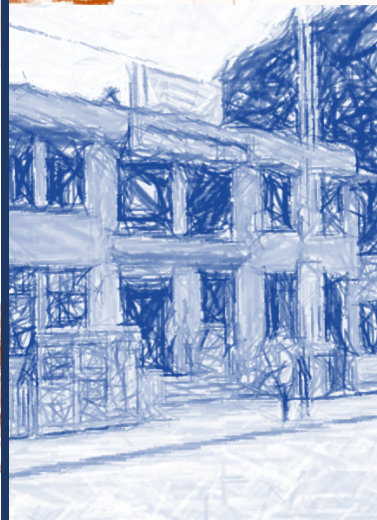
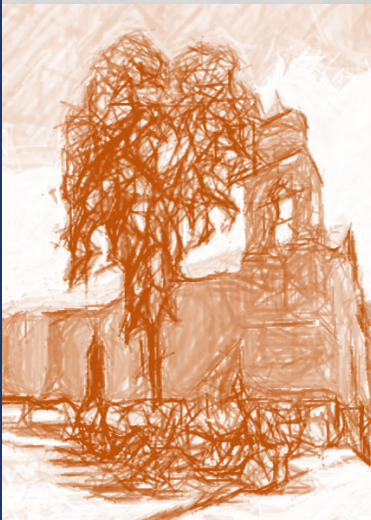
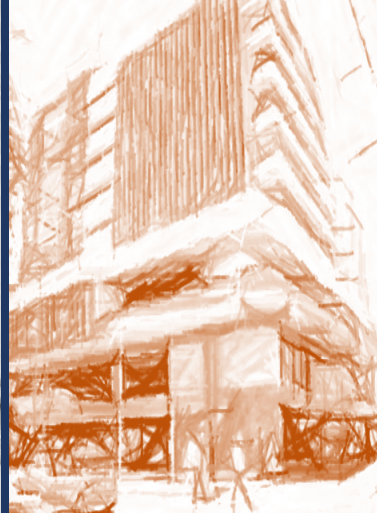
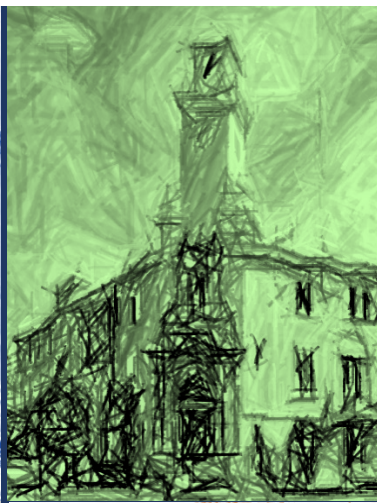


TABLE OF CONTENTS

LIST OF FIGURES	iv
LIST OF TABLES.....	iv
ACRONYMS	v
ACKNOWLEDGEMENTS	1
EXECUTIVE SUMMARY	2
I. FISCAL UNSUSTAINABILITY: PERU'S MINING DEPENDENCY	3
a. The Commodity Cycle	3
b. Impact of the cycle at local level.....	5
c. The importance of fiscal sustainability in local governments.....	7
II. ARGUMENTS FOR COUNTERCYCLICAL LOCAL POLICIES.....	9
a. Empirical Strategy.....	9
i. Local governments' fiscal position: Diagnostics	9
ii. Selected policy options.....	10
iii. Assessing fiscal sustainability: Methodology	13
b. Viability of the policy options.....	15
i. Expanding the tax base	16
ii. Initial Endowments: Investment in human resources and infrastructure.....	19
iii. Incentives Mechanisms	21
iv. Counter-cyclical mechanisms: Savings and stabilization funds	27
III. BOTTOM UP: IMPROVING LOCAL GOVERNMENT'S FISCAL POSITION ...	28
a. What we have so far?	28
b. One problem, several solutions	31
i. Fiscal sustainability policy package	32
ii. Custom solution: A new local governments classification	33
iii. Main stakeholders for a joint intervention	36
iv. Incentive Program's restructure	37
v. Implementation schedule	38
c. Recommendations for further analysis	40
IV. BIBLIOGRAPHY	41
V. APPENDIX	43

LIST OF FIGURES

Figure 1. GDP fluctuations in Peru's economic performance	3
Figure 2. GDP cyclical variation.....	4
Figure 3. Local Governments' budget composition.....	5
Figure 4. Local governments' expenditure cyclical variation.....	6
Figure 5. National budget, by levels of government	6
Figure 6. Municipalities with positive current balance by institutional strength quintiles.....	11
Figure 7. Income/liabilities ratio, by level of intensity.....	11
Figure 8. Tax base and fiscal sustainability	17
Figure 9. Fiscal Sustainability (1) and tax base, by institutional strength quintiles	18
Figure 10. Fiscal Sustainability (3) and tax base, by institutional strength quintiles	18
Figure 11. Tax base and income per capita, by economic strength quintiles	19
Figure 12. Tax base and income per capita, by institutional strength quintiles.....	19
Figure 13. First social capabilities quintile HHRR and infrastructure expenditure	20
Figure 14. Fiscal Sustainability (2) and HHRR expenditure, by social capabilities quintiles.....	20
Figure 15. Local governments' budget concentration curve, 2015	34
Figure 16. Incentive Plan's new classification.....	35
Figure 17. Incentive Plan: Goals and budget evolution.....	38
Figure 18. Proposed implementation scheme	39

LIST OF TABLES

Table 1. Policy Options.....	10
Table 2. Methodologies.....	15
Table 3. Data sources by policy option	15
Table 4. Incentives Plan impact on property tax	26
Table 5. Summary of policy options and their viability	31

ACRONYMS

BCRP: Central Bank of Peru

CCT: Conditional Cash Transfer

DGPMyDF: Macroeconomic Policy and Fiscal Decentralization General Department

DGPP: Public Budget General Department

ENSO: El Niño Southern Oscillation

FSP: Fiscal Sustainability Program

GD: Growth Diagnostics

HHRR: Human resources

IADB: Inter-american Development Bank

INEI: National Institute of Statistics and Informatics

LG: Local Government

MEF: Ministry of Economics and Finance

NG: National Government

PEN: Peruvian local currency (Soles, S/)

PpR: Performance Based Budgeting

RENAMU: National Register of Municipalities

RG: Regional government

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EXECUTIVE SUMMARY

Peru is an upper middle-income country, with the fifth largest economy in Latin America and the Caribbean, having a remarkable economic growth rate of 4.5% annually within the past 15 years. However, most of this economic growth has been driven by the revenue derived from the exploitation of natural resources. This fact makes the Peruvian economy highly sensitive to commodity price fluctuations and this fiscal volatility extends to all levels of government, especially to local governments.

Peru as a country is extremely susceptible to external demand shocks: its top exports include metal or metal content products, which account for 41% of total exports, given the high rate of taxation, it represents one of the primary sources of public revenue. This export basket structure makes Peru's economy volatile and highly dependent on revenue generated from the exploitation of natural resources. Given that local governments (a total of 1844 by 2015) have a budget which is composed by more than 60% of national government's transfers, local governments are much more sensitive to market fluctuations. This fact generates fiscal imbalances on the local level, harming local governments' fiscal sustainability position, which in turn also has negative repercussions on the national level. This problem is widely described in Section I.

According to several studies, one way to deal with these cyclical fluctuations and improve fiscal stability is by implementing countercyclical mechanisms. That is applying policies that help to ameliorate the commodities cycle adverse effects and improve the income predictability at the local level. After an in depth analysis of the local governments' fiscal position and the complementarity of possible solutions, results suggest the implementation of a three-component policy package under the umbrella of a conditional monetary transfer scheme.

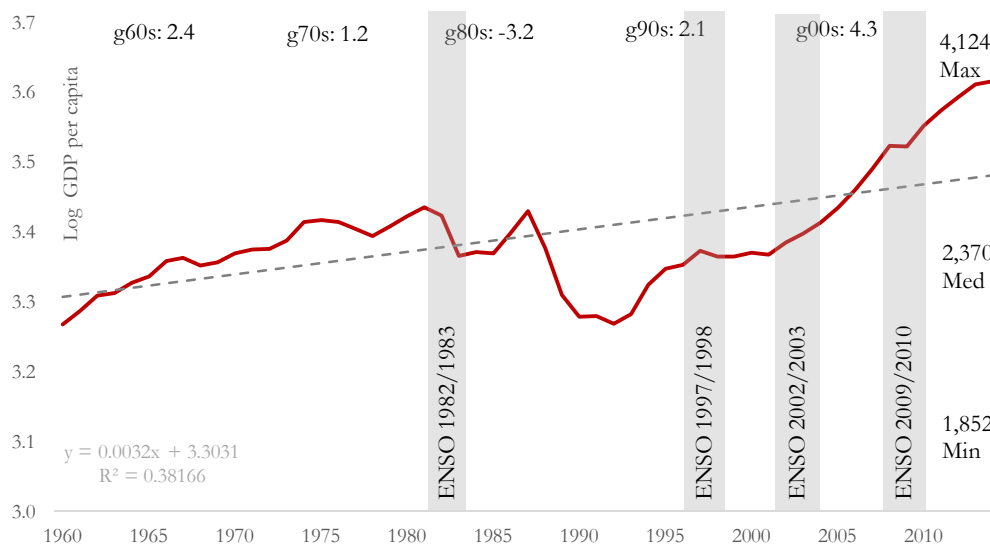
In specific, the first component aims to increase monetary resources for those local governments which are institutionally strong having enough capabilities to implement tax collection actions. This component will allow improvement of local governments' tax collection efforts, properties data standardization, and geolocation technological adaptation. The second component is designed to strengthen the local governments' institutionally. Through providing technical assistance and transferring budgetary resources to specific areas, the most vulnerable local governments will generate mechanisms to collect and manage their resources. Finally, the third component's objective is to reduce volatility in local governments that are highly dependent on revenue derived from mining of natural resources, implementing saving mechanisms at the local level.

I. FISCAL UNSUSTAINABILITY: PERU'S MINING DEPENDENCY

a. The Commodity Cycle

Peru is an upper middle income country, with the fifth largest economy (in nominal GDP terms) in Latin America and the Caribbean (LAC). This country has performed better than the Latin American average in recent years (2011-2015) in terms of both real GDP growth and controlling for inflation. Also, it records an annual average growth rate of 5.6% and 4.5%, in terms of nominal GDP and per capita GDP, respectively, from 2002 to 2014¹. However, the history of Peru records several episodes of financial and economic crisis: The most important, regarding GDP contractions (Figure 1), were the external and domestic default from 1984 to 1997, a duration of 14 years (See Table A.2.1. for details.)

Figure 1. GDP fluctuations in Peru's economic performance



Note: Regardless that Peru has exhibited an annual rate of GDP growth of 1.5 for the period 1960-2015 and a positive tendency ($R^2: 0.38$), its performance has been very different decade by decade. For example, in the 60s the annual rate of GDP growth (g_{60s}) was 2.4, twice as much in the 70s. Moreover, Peru's worse performance was observed during the 80s, when it faced a banking crisis, hyperinflation crisis, and defaulted/restructured its external debt. During the second half of the 00s, Peru recovered its late 70s level. More recently, this country has been achieving rates of growth between 5% and 6% annually.

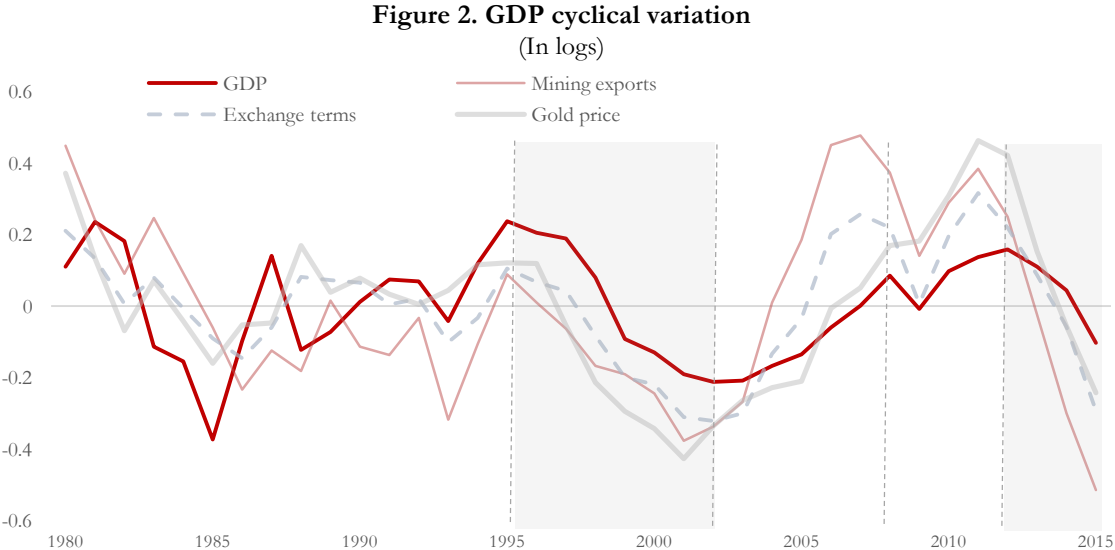
Source: World Development Indicators

Regardless of positive economic performance in recent years, Peru is an economy subject to supply shocks: Peru is located in the Pacific Belt of Fire, an area prone to strong earthquakes, tsunamis, and the negative effects of the El Niño Southern Oscillation (ENSO) phenomenon.

¹ Peru has had the lowest annual average inflation rate in Latin America in the last decade at 2.9%, below Chile (3.2%) and Colombia (4.9%). World Development Indicators, World Bank.

Figure 1 also plots the recent ENSO negative impacts on the economy, that according to some estimates, during two of its most severe episodes, caused economic damages of 11.6% loss of GDP in 1982-1983 and of 6.2% in 1998 (CT-MM, 2013).

More importantly, Peru is extremely susceptible to external demand shocks. Peru’s top exports include gold content, which accounts for 14% of total exports, followed by gold (13%), refined petroleum (7%), refined copper (4%), and ores of zinc, lead and iron (3% each)². This export basket structure makes Peru’s economy volatile and generates a dependency on revenue from natural resource exploitation through income and export taxes. As Figure 2 shows, the GDP cycle³ is highly correlated with international gold price and mining exports⁴, especially in periods when international metal prices go down (shadowed area).



Note: To show Peru’s mining dependency, the HP filter was applied to the nominal series of GDP, exchange terms, mining exports, and gold price, given that the commodity cycle is a price related phenomenon. During the 80s and the first half of the 90s, the data shows erratic cycle patterns, but still it is possible to observe a positive correlation between GDP’s cyclical component and the commodities’ related variables. By the second half of the 90s, the cyclical pattern started to be smoother, which allows to observed GDP’s correlation in a clearer way. Shadowed areas highlight the recessionary parts of the cycle and dashed lines show booms and depression parts of the cycle.

Source: BCRP

Several financial authorities across the world deal with these fluctuations using countercyclical policies. In other words, a countercyclical fiscal policy implies saving financial resources during “good years” increasing the potential government expenditure during the “bad” ones. According to the

² Atlas of Economic Complexity. Harvard University.
³ Applying the Hodrick and Prescott filter (Hodrick and Prescott, 1997).
⁴ And, in consequence, with the exchange terms, given the export basket structure.

empirical evidence, a differentiation arises when OECD countries and developing countries apply these kind of policies: “*OECD countries are, by large, either countercyclical or acyclical. In sharp contrast, developing countries are predominantly procyclical*” (Kaminsky *et al.*, 2004). A remarkable fact is that governments in developing countries that depend on natural resource exploitation have enormous political pressure to increase expenditures during periods of a commodities prices boom. This situation raises the procyclicality in their fiscal policies, making their income less predictable and increasing volatility. Regardless its decreasing procyclical tendency (comparing the shadowed areas in Figure 2), Peru is still considered a country that behaves in a procyclical way, such as Venezuela and India (Frankel, Vegh and Vuletin, 2012).

b. Impact of the cycle at local level

Peru is a highly heterogeneous country with three levels of government. The first level is the national government, represented by the administration of the entire country; the second is the regional government, composed by its 25 departmental administrations; finally, the local government composed by (in 2015) 1844 district administrations⁵. Notwithstanding this complex geopolitical division, Peru is not entirely decentralized, much less in economic terms: By 2015, intergovernmental fiscal transfers represented the 60% of the total LG’s budget. In other words, the LGs’ administrations are highly dependent on NG’s transfers to provide adequate services for the local population.

Figure 3. Local Governments' budget composition
(Mill of PEN)

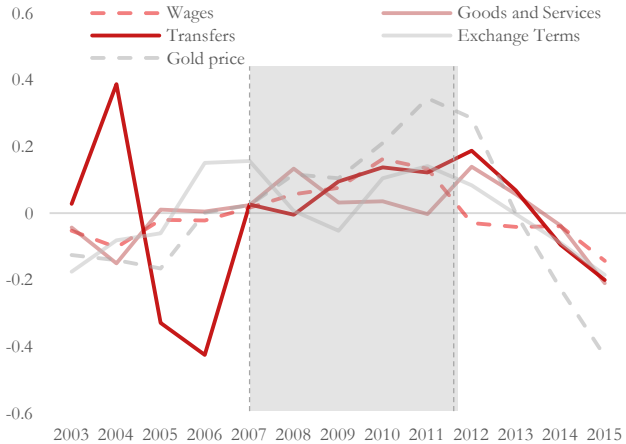


Definitions: i) Ordinary Resources: income from general tax collection and other concepts such as bank services; ii) Municipal taxes, income from exclusively LGs’ tax collection (income tax, tax to vehicles, etc.); iii) Resources Collected Directly, income generated by institutional operations (rents, goods selling, etc.); iv) Transfers, any income transferred from national government.
Source: MEF

⁵ See Municipalities profile at Annex section A.1.

As a consequence of this high dependency on NG's transfers, LGs' income is highly volatile and subject to the commodities cycle as well. Figure 4 shows that LGs' total expenditure, expenditure on wages and goods and services (as central government transfers) are strongly correlated with international gold prices and exchange terms cyclical variations.⁶ Nevertheless, there is one additional fact: LGs' transfers are more sensitive in the recessionary part (from 2012) of the commodities cycle than in the expansionary one (shadowed area). Also, LGs' budget is much more volatile than national and regional funds. Figure 5 plots the national, regional and local budgets percent variation. While the NG's budget reached a high of 16.2% and a low of -2%, LGs' budget achieved a maximum of 26.8% (mining boom) and a minimum of -10% in the period of analysis.

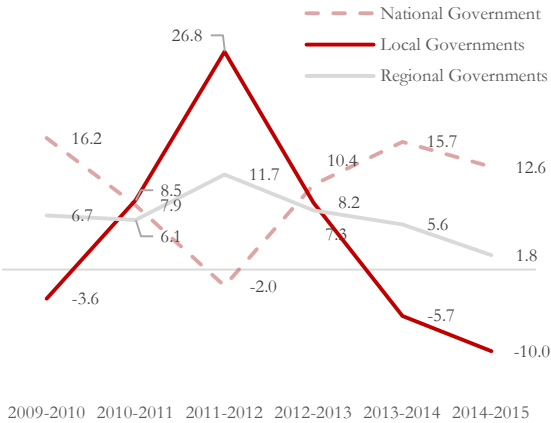
Figure 4. Local governments' expenditure cyclical variation (In logs)



Source: BCRP

Note: This graph follows the same logic behind Figure 2. Transfers, Wages, and Goods and Services make reference to the total budget transferred from NG to LGs, LGs' wage expenditure, and LGs' goods and services expenditure, respectively. Regardless Peru's total budget is less procyclical in recent years, it seems that LGs' transfers are not. Since 2007, transfers (and other LGs' expenditures) are more correlated with the commodities cycle, especially in the recessionary part of the cycle.

Figure 5. National budget, by levels of government (% variation)



Source: MEF

Note: This graph plots the total budget received at the end of each fiscal year. There are two important features to remark: First there is an apparently negative correlation between NG's budget and RGs' and LGs' budget rate of growth. Second, and most important, there is significantly less volatility of LGs' budget in comparison with NG's and RGs' budget. Exhibiting a maximum and a minimum of 26.8% and -10%, respectively.

According to the literature, this high level of dependency in and of itself should be neither entirely good nor bad. A high concentration of resources at the national level increases the effectiveness of policy coordination, policy implementation, and resource allocation. Moreover, this concentration of resources allows the national government to take into consideration distributional equality and macroeconomic stability criteria. Nevertheless, more resource concentration on the local level allows the local authorities to be more effective and, in most cases, more efficient in public sector

⁶ Hodrick and Prescott, 1997

interventions, given its close proximity to the population (Bird and Smart, 2001). Notwithstanding, in Peru, LGs with high levels of transfers, especially within mining regions, receive resources beyond their capacity to expend them. This situation is due to having a highly unequal resource distribution scheme (Herrera, 2008).

Difficulties are more present on the micro level. There is a persistent concern in how NG's transfers affect the tax collection performance on the local level. On the one hand, if transfers are considered a complement to the LGs' resources collection, it is possible to have a positive effect in which LGs achieve a balanced dynamic between transfers and their resources. On the other hand, if transfers are considered a supplement, it is possible to face a negative result called "fiscal laziness". This situation happens when local government authorities receive a significant amount of resources without related effort, authorities tend to relax efforts in their tax collection programs' which are required to finance their activities and only reinforces this dependency cycle (Castro, 2008).

c. The importance of fiscal sustainability in local governments

“When crises hit us (reduction in transfers), it is a catastrophe for the municipality. We do not have enough money to pay our employees, to pay our debts... We have to go to the streets... It is the only way to get more money (from NG) and meet our responsibilities.”

Local budgetary authority, Piura - Peru

As a consequence of the high dependency on the commodities cycle, and given the volatility of LGs' sources of income⁷, the current transfer scheme may not only affect the local governments' fiscal situation, but also have significant negative impacts on a macroeconomic level (CT-MM, 2013). For these reasons, any policy towards stabilizing and making the LGs' expenditure more predictable will only help them to improve the provision of public services, and to meet their financial responsibilities within a stable internal management framework. In other words, those policies will facilitate the LG to build up their fiscal sustainability, but *what is fiscal sustainability?*

A practical definition states that *“fiscal sustainability is the long-run capability of a government to consistently meet its financial responsibilities. It reflects the adequacy of available revenues to ensure the continued provision of the service and capital levels that the public demands?”* (Chapman, 2008). Nevertheless, it is necessary

⁷ See Annex Section A.1.

to also consider that a fiscal sustainability policy should also strengthen the macro-fiscal environment, improve the predictability of income sources, ensure the financing of public expenditure, and generate public savings to ameliorate any unexpected external negative effects to the country's economy (CT-MM, 2013).

There are several reasons why maintaining a fiscal sustainable position is necessary. Those reasons can be divided into two levels:

At the micro level: Guarantees the provision of local services such as local administrative procedures (real estate, operating permits, public records), cleaning of streets and public spaces, domestic security, and the fulfilment of municipal⁸ administrative responsibilities (payments, infrastructure operation, and maintenance, etc.)

At the macro level. A fiscal sustainable position avoids procyclicality, contributes to predictable and efficient resource allocation, and guarantees the provision of social services (such as conditional cash transfers, universal health services, and social security systems put in place to reduce the probability of families in a vulnerable position falling into poverty) in “bad times”. Finally, a fiscal sustainable position assures the central government a discretionary expenditure (healthcare and education) not being subject to fluctuations in the business cycle.

One of the most important mechanisms used by the Peruvian government to promote fiscal sustainability is through enforcing fiscal rules concerning LGs set by MEF. The fiscal rules, based on technical and economic principles, are used as legal tools to promote fiscal prudence on the local level. For instance, fiscal rules have been put in place to handle total debt and debt services management, a positive primary result (income bigger than expenditure), consumption spending, and more recently, savings in current account⁹. However, there are no real positive incentive to comply with the rules. It appears that compliance is largely perceived as irrelevant, the penalties in place are often ineffective, and local authorities are often unwilling to comply (CT-MM, 2013).

⁸ In this document, the term “*municipality*” is equivalent to “*local government*.”

⁹ See Annex, Section A.6.

II. ARGUMENTS FOR COUNTERCYCLICAL LOCAL POLICIES

a. Empirical Strategy

As stated in previous paragraphs, an adequate fiscal sustainability position of LGs contributes to budgetary stability and avoids the procyclicality at the micro and macro level (Chalk and Hemming, 2000). Consequently, any fiscal policy design that includes a long-term financial stability criterion is required and should be implemented across all levels of government.

In Peru, despite the implementation of fiscal rules since 2003, the LGs' fiscal sustainability position is highly heterogeneous. By the end of 2015, 91% of LGs met the fiscal rule associated to debt management, 57% of them met the non-financial expenditure rule, and 58% of LGs met the rule related with a non-negative primary result (Melgarejo, Montoro, and Sosa, 2016). The problem arises from different measures of fiscal sustainability and the extent to which each LG complies with the rules. Therefore, a relevant question is: *are there ways to increase compliance with fiscal rules? Is it possible to find complementary ways to improve the LGs' fiscal position?*

i. Local governments' fiscal position: Diagnostics

Analyzing the reasons why fiscal rules have such a low compliance rate would be interesting, but leave little room for policy recommendations. Which is the primary reason why it is necessary to take a step back to determine the drivers of local economic development. Therefore, an institutional and network analysis was conducted to provide insights as to the underlying conditions required to promote fiscal sustainability at the local level¹⁰. Based on the previous analysis and following Andrews, Pritchett, and Woolcock (2015), four alternative solutions were identified: i) Increase the tax base (more taxes per capita), ii) increase investment in human resources and infrastructure to improve tax collection, iii) modify and improve the design of incentive mechanisms (through the PI), and iv) implement countercyclical mechanisms at the local level (stabilization or savings funds).

To rule out available policy options, the Growth Diagnostics methodology proposed by Hausmann, Rodrik, and Velasco (2005) is used. The core of this methodology is to find the binding constraint; meaning to determine which of the proposed policy options would generate the largest impact on the LGs' fiscal sustainability position in the short term. To find the binding constraint, each policy option is analyzed in terms of: clear and straightforward information (direct evidence), testing

¹⁰ See Annex, Section A.4.

the results without the constraint (by passing constraint), determining the position of a specific LG given a good fiscal sustainability position (changes cause changes), analyze whether there are specific LGs or types of LG that hold an adequate fiscal sustainability position being in an environment where similar LGs have a non-adequate fiscal sustainability position (Camels and hippos), and identify LGs that have successfully addressed the fiscal sustainability problem (sophisticated benchmarking)¹¹. Each policy option and the course of analysis proposed are in the following table:

Table 1. Policy Options

Options	Direct evidence	By passing constraints	Changes cause changes	Camels and hippos	(Sophisticated) Benchmarking
A. Increase tax base at local level (more taxes per capita)	Have been a reduction in the tax base (at local level) during the worse fiscal performing years?		Districts with more tax base have a better fiscal performance?		
B. Increasing investment in resources to improve the tax collection: HHRR and infrastructure	There was a significant reduction in HHRR and/or infrastructure expenditure during the worse fiscal performing years?		Districts with more investment on HHRR/infrastructure are performing better in fiscal terms?		
C. Modify the incentives mechanisms (Incentives Plan - PI)	Do districts participating in the PI have better fiscal outcomes?		Do districts participating in PI have statistically significant better results in fiscal outcomes than non-participants?		
D. Implement counter-cyclical mechanisms (stabilization/saving funds)		Are LGs implementing other mechanisms to save?			Other LGs in high natural resources depended countries are implementing these mechanisms?

Note: Given the data constraints, it is not possible to test each characteristic suggested by the GD methodology.
 Source: Author’s elaboration based on Growth Diagnostics methodology.

ii. Selected policy options

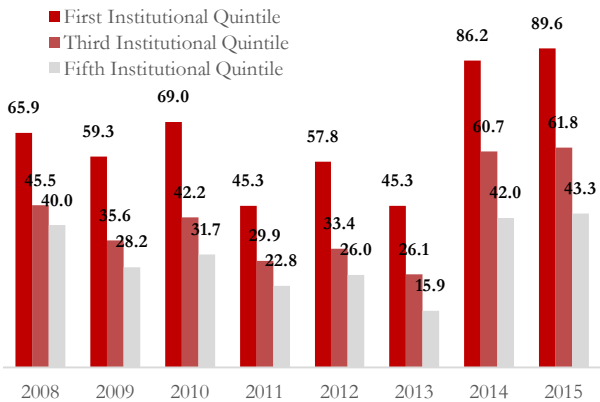
A short diagnostics of the LGs’ fiscal sustainability position will clarify that there is room for improvement. Figure 6 plots the number of LGs with positive current balance (*current income > current liabilities*) by different institutional strength quintiles,¹² from 2008 to 2015 (document’s period of analysis). At first sight, every quintile has more LGs that accomplish this simple measure of fiscal sustainability. Nevertheless, there are important differences when the institutional capabilities are considered: LGs with higher institutional capabilities (fifth quintile) tend to have a weaker fiscal

¹¹ For more details, see Hausmann, Klinger, and Wagner (2008).

¹² The institutional strength index is a proposed measure that summarizes the institutional capabilities of a particular LG, where the fifth quintile contains the “strongest” LGs concerning of institutional capacities. In the methodology section, I will describe the specifics about the index.

position. Also, the number of LGs that have a positive current balance decrease in years when the commodities cycle is in a recession stage (2011 and 2012). Finally, Figure 7 shows the LGs’ fiscal position intensity, measured by the income/liabilities ratio. There is a significant percentage of LGs at each level of institutional strength that have positive current balances; however, not all of them are in an adequate position. On average, 25% of the LGs (460) have an income that is almost double their current liabilities.¹³ In other words, besides that almost 30% of the LGs have negative a current balance, 25% of them are in an extremely vulnerable position, considering that many have to pay debts (service and capital) and may face an unexpected contingency.

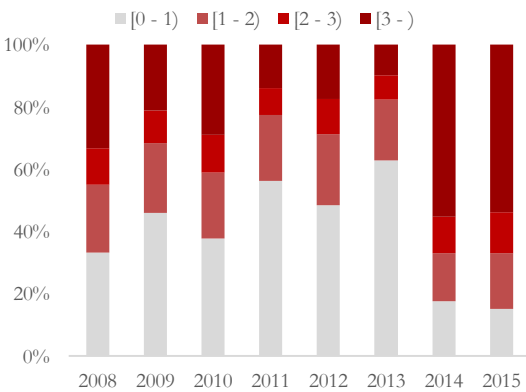
Figure 6. Municipalities with positive current balance by institutional strength quintiles (Percentage)



Source: MEF

Note: The current balance refers to the difference between the current income and the current liabilities. This graph only shows those LGs with positive current balances as an approximation to a good fiscal sustainability position. This graphs aims to show which kind of LGs tend to accomplish a stable fiscal position. At first sight, LGs with higher institutional strength, tend to spend more than what they earn, at least in the short run.

Figure 7. Income/liabilities ratio, by level of intensity



Source: MEF

Note: Figure 7 plots the income/liabilities ratio as a measure of accomplishment intensity. Until 2013, almost 50% of LGs had a negative balance and 20% of them had a slightly positive current balance, meaning that they were in a vulnerable fiscal position. For 2014 and 2015, this has changed, but almost 42% of LGs are still in a vulnerable position.

This short diagnostic shows that the current LGs’ fiscal position is less vulnerable than previous years. Nonetheless, the lack of policy actions towards reducing procyclicality generates a high degree of uncertainty. This unstable situation comes from the fact that there is no precise method available to predict the commodities fluctuation. As a consequence, there is no guarantee that Peru could come back to a more vulnerable fiscal position. The following paragraph will propose a set of policy options to reduce these vulnerabilities, strengthening the fiscal sustainability at the local level through practical and realistic insights.

¹³ Categories [1-2) and [2-3) of the income/liabilities ratio in Figure 7.

Increase the tax base. The rationale behind this policy option is as follows: given that the high dependency on NG's transfers is generating distortions in the fiscal sustainability position of the LGs, it is necessary to increase the amount of resources produced by them. In other words, keeping constant the other underlying factors, any LG should increase their efforts in tax collection to be more fiscally independent. A preliminary exploratory analysis evidences a positive correlation between the average income per capita (a proxy for tax pay capacity) and the amount of an LGs' budget composed of local tax collection (not transfers). The level of dispersion in this relationship reveals that there is significant room for tax collection to increase, especially for LGs with a high level of income per capita. However, a deeper analysis is conducted in the viability section.

Investment in HHRR and infrastructure. This policy option goes a step back further beyond the previous one¹⁴: For the purpose of enhancing the capabilities of a particular LG to increase its tax collection effectiveness, it is necessary that this LG has a sufficient amount of initial endowments. Following Solow (1956), these initial endowments are composed of physical capital and labor, which in this case is represented by expenditure in human resources (HHRR) and spending on general infrastructure. Hence, given a certain amount of resources, each LG will have the tools and capability to collect taxes in a sustainable way within their respective localities. Another insight behind this policy option is the political business cycle (Nordhaus, 1975). In Peru, the local authorities are elected for terms of four years; during this time, instead of investing in long-term assets, they prefer to invest in projects that are immediately visible to the population, their future voters. Hence, there are perverse incentives to “get things done” in this short period, under the (realistic) assumption that there are rent seekers politicians running for office, disregarding investments for long term LG sustainability.

Incentives scheme. This third policy option follows the same logic of a Conditional Cash Transfer (CCT). The incentives scheme helps to improve the efficiency of the resource allocation process, making the recipients more likely to increase their efforts in order to obtain monetary stimulus. In Peru, there is already a program that is currently implemented on such an incentive scheme: The Incentive Plan (PI). PI is part of a broader strategy called performance-based budgeting, implemented in Peru since 2007 to improve the effectiveness and efficiency of public expenditure¹⁵.

¹⁴ This policy option follows the logic behind Solow's growth model and the poverty traps. A situation where a particular economy needs an “injection” of capital to return to the Balance Growth Path. See Solow (1956).

¹⁵ For more details, see the section A.3. in the Annex.

Among the goals that PI sets for all of the LGs in Peru, only one of them is directly related to fiscal sustainability: Increasing the collection of property tax. However, despite the fact that the program started in 2009, PI has not published a formal evaluation or provided technical evidence as to whether setting tax collection goals with related monetary incentives has had a positive effect on the tax collection efforts of those LGs able to participate.¹⁶

Countercyclical mechanisms. The last policy option relies on precautionary savings and the permanent income hypotheses (Ando and Modigliani, 1963). Given the high volatility of LGs' income due to dependency on the commodities cycle, it is necessary to find mechanisms that enable LGs to smooth their consumption. This kind of policy aims to increase the income predictability and implement a countercyclical policy, saving resources in the expansionary part of the commodity cycle and expending those resources in the recessionary part. This policy option also relies on two complementary assumptions: LGs have no adequate mechanisms in place to save and/or they do not have incentives to do so. The first assumption considers that the LG's budget structure does not allow it to save resources from an unexpected or volatile source of income; in consequence, LGs expend their resources at the same rate at which they receive them. The second assumption also relies on the political business cycle. If a certain LG's authority increases the level of savings, this LG will decrease its expenditure capacity in the short term. Hence, the LG's elected authority will have a smaller budget to expend in visible projects, which will reduce the probability of being reelected in the next political period. In addition, if the savings policy is enforced by the national government, this will be perceived as a budget cut, likely leading to political instability.

iii. Assessing fiscal sustainability: Methodology

One of the main concerns working with fiscal sustainability issues is that terms do not have a concrete meaning. As was stated by Chalk and Hemming (2000), this unclear connotation comes from the fact that a theoretical aspect of fiscal sustainability has been growing away from its practical applications, mainly given the various ways to measure fiscal sustainability, and the difficulty to find information to measure it¹⁷. As a consequence, in practice, we are forced to rely on more

¹⁶ Not every LG is able to participate in all the PI's goals. According to PI's classification, only LGs Type A and Type B are able to contest for the monetary incentive. More on the classification and PI's assessment in the viability section.

¹⁷ For an example of the theoretical model, see Annex section A.2.

straightforward and communicable measures based on the available information, as the following ones¹⁸:

$$FS_1 = \frac{\sum_{i=2008}^{2015} \left(\frac{income}{liabilities} \right)_i}{7} \quad FS_2 = \frac{\sum_{2008}^{2015} Debt}{\sum_{2008}^{2015} Inc} \quad FS_3 = \frac{\sum_{t=2008}^{2015} (income_t - income_{t-1})}{\sum_{t=2008}^{2015} (liabilities_t - liabilities_{t-1})}$$

FS₁: This measure takes the average of the yearly current income/current liabilities ratio for the period of analysis. The larger the ratio is, the better the fiscal sustainability position the LG has¹⁹.

FS₂: This measure takes the intertemporal summation of the total amount of debt (service and capital) and divides the result over the summation of the current income.

FS₃: This last indicator has a dynamic connotation that considers a sort of “sustainable path.” In other words, if the LG’s current income grows faster than its current liabilities, the LG exhibits a sustainable path.

“Given the heterogeneity across the local governments, any policy option should be focused. In other words, each policy should be designed for a particular group of municipalities.”

Former Minister of Economics of Peru

Additionally, to conduct a deeper analysis which considers the high heterogeneity across the LGs²⁰, three complementary measures are proposed to extract conclusions for a particular group of municipalities:

Institutional strength index: This index is a proxy of the institutional capabilities of the LGs. Measured for 2015 with information from RENAMU, the institutional strength index gathers 17 variables distributed in three main dimensions: municipal planning, tax administration, and entrepreneurial licensing.

Social capabilities index: This index considers the level of development for a particular LG through its level of urbanity. Using information from the last Peruvian census (2007), this index ranks every district by the percentage of its population living in urban areas.

¹⁸ For other examples, see Del Valle and Galindo (2010)

¹⁹ Given the lack of information about interest rates at the local level, the simple average was taken for the analysis.

²⁰ See the municipality profile section in the Annex.

Economic index: It measures the level of LGs' economic power, using the amount of public budget per capita in 2015 as a proxy.

In general terms, in order to assess each policy option, a mixed methods strategy has been conducted. Table 2 details the methods used for each policy option:

Table 2. Methodologies

Options	Methodology
A. Increase tax base at local level (more taxes per capita)	<ul style="list-style-type: none"> • Descriptive/comparative statistical analysis • Correlations analysis • Qualitative analysis
B. Increasing investment in resources to improve the tax collection: HHRR and infrastructure	<ul style="list-style-type: none"> • Descriptive/comparative statistical analysis • Correlations analysis
C. Modify the incentives mechanisms (Incentives Plan - PI)	<ul style="list-style-type: none"> • Descriptive/comparative statistical analysis • Impact evaluation analysis (Propensity Score Matching)
D. Implement counter-cyclical mechanisms (stabilization/saving funds)	<ul style="list-style-type: none"> • Descriptive/comparative analysis • Qualitative analysis

Source: Author's elaboration

Finally, Table 3 summarizes each source of data used in the analysis for each policy option:

Table 3. Data sources by policy option

Options	Data sources
A. Increase tax base at local level (more taxes per capita)	<ul style="list-style-type: none"> • Poverty map at district level – National Institute of Statistics and Informatics (INEI) • Financial Administration Integrated System (SIAF) – Ministry of Economics and Finance (MEF) • General Account of the Republic - Ministry of Economics and Finance (MEF)
B. Increasing investment in resources to improve the tax collection: HHRR and infrastructure	<ul style="list-style-type: none"> • Financial Administration Integrated System (SIAF) – Ministry of Economics and Finance (MEF) • General Account of the Republic - Ministry of Economics and Finance (MEF)
C. Modify the incentives mechanisms (Incentives Plan - PI)	<ul style="list-style-type: none"> • Poverty map at district level – National Institute of Statistics and Informatics (INEI) • Financial Administration Integrated System (SIAF) – Ministry of Economics and Finance (MEF) • General Account of the Republic - Ministry of Economics and Finance (MEF) • Census and population projections – National Institute of Statistics and Informatics (INEI) • Incentive Plan Data Base – Ministry of Economics and Finance (MEF)
D. Implement counter-cyclical mechanisms (stabilization/saving funds)	<ul style="list-style-type: none"> • Local Governments Law • Fiscal Council reports – Ministry of Economics and Finance (MEF)

Source: Author's elaboration

b. Viability of the policy options

In practical terms, an assessment of fiscal sustainability positions is hard to conduct for any institution. As was stated in the methodological section, several variables proposed by the literature are hard to find, not significant at the local level, or impossible to measure. In consequence, a practical framework has been used to make the best approximation with the available data (Del Valle and Galindo, 2010). Regardless of the difficulties to reconcile the theoretical and practical aspects of the

fiscal sustainability analysis, within this section I will conduct a deeper analysis of each policy option using the methodologies proposed in the previous section.

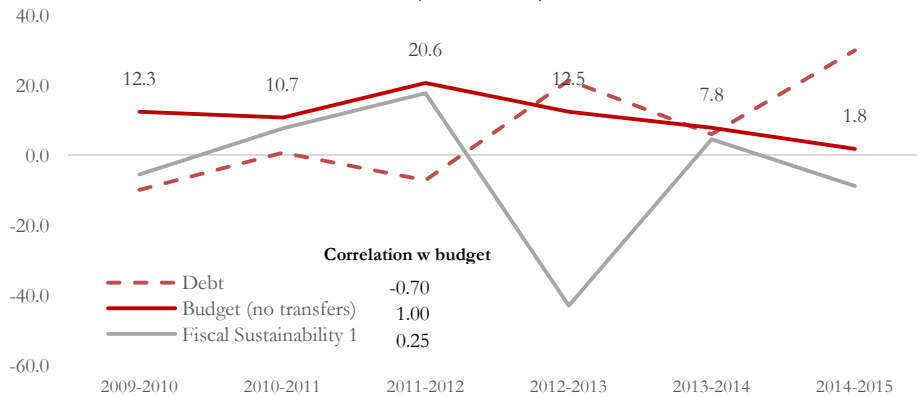
i. Expanding the tax base

“Among the all possible dimensions to take into account in the local government financial analysis, the institutional one is the most important. Any government unit should have enough capabilities to manages their resources”
Senior financial specialist at Center for Global Development,
Washington DC

The purpose of this section is to provide evidence as to whether the LG’s fiscal sustainability position is related to the tax collection effort at the local level. According to Castro (2008), it is necessary for LGs to increase their income sources, for the purpose of depending less upon transfers from the NG. However, this task may be difficult for those municipalities with high levels of poverty or those with a significant proportion of people living in rural areas (low levels of formality). For this reason, the analysis will consider the different levels of economic power and institutional strength using the proposed index in the methodological section.

As a starting point, it is necessary to evaluate the direct evidence available. In general terms, there is evidence to suggest a positive relationship between the tax base and the fiscal sustainability position. Figure 8 plots the percentage of variation in the amount of local budgets derived from tax collection (a proxy for tax base), the level of debt, and FS_1 . Notwithstanding the high variability of each indicator and their relationship with the commodities cycle (positive performance in the expansionary stage and negative in the contractionary one), there is a significant negative correlation between the level of debt and tax base (-0.7) and a weak positive correlation between FS_1 and tax base (0.25). This relationship becomes clearer in years when NG’s transfers are exceptionally low (shaded area): When the tax income growth nears zero, debt grows in a significant way harming the LGs’ fiscal position.

Figure 8. Tax base and fiscal sustainability
(% variation)



Note: Debt makes reference to the total debt (short and long run) of LGs. Budget (no transfers), as was previously explained, is the total budget that comes from any tax collection effort made by the LG and represents a proxy for the total income generated by LGs. Fiscal Sustainability 1 is the FS1 indicator, explained in the methodological section. Both Debt and FS1 are indicators that reflect the fiscal sustainability position. Regardless the expected correlation with Budget for both variables, it seems that debt levels are more influenced by the income generated at the local level than the current liabilities, which is a component of FS1.

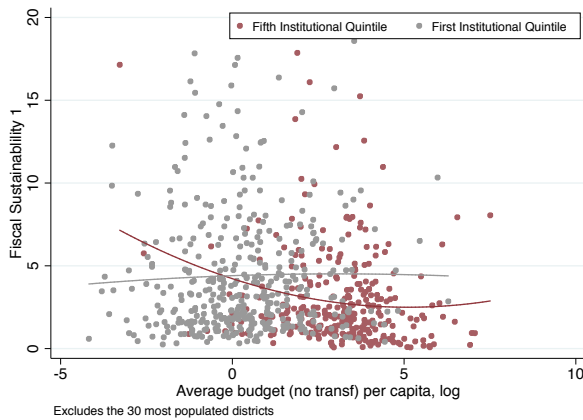
Source: MEF

A closer look at an individual level shows that the relationship previously found depends on the degree of the tax base and the institutional strength. Figure 9 plots the average FS₁ and the average budget from tax collection for the period under analysis for the first and fifth quintile of institutional strength. For the first institutional quintile (the weakest one), there is a slightly positive correlation between the indicators, stronger for low levels of the tax base. On the other hand, the fifth institutional quintile exhibits higher tax collection capacity, but its fiscal sustainability position²¹ decreases as the tax base increases.

Moreover, for a medium-run point of view, Figure 10 shows the relationship between tax base and FS₃. Regardless there is no change between these two variables in the first institutional quintile, a slightly positive association between FS₃ and budget from tax collection, suggests that LGs with a better performance in tax collection tend to have a better fiscal position in the medium-run.

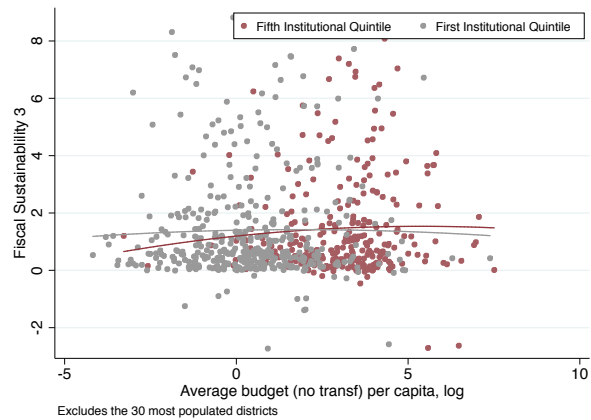
²¹ This relation holds in the very short run, according to the FS1 indicator construction. See methodological section for details.

Figure 9. Fiscal Sustainability (1) and tax base, by institutional strength quintiles



Source: MEF and INEI

Figure 10. Fiscal Sustainability (3) and tax base, by institutional strength quintiles

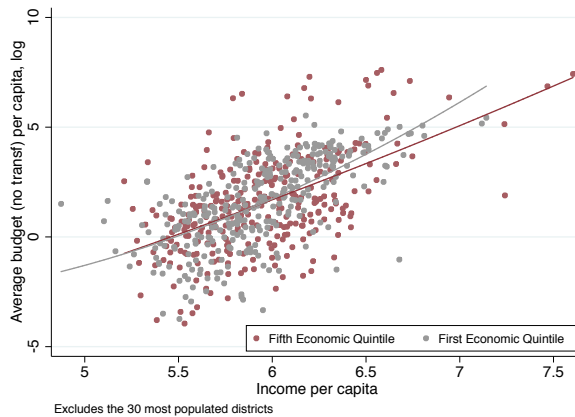


Source: MEF and INEI

An important fact to point out is that there is no significant difference in the levels of fiscal sustainability between the first and fifth quintile of institutional strength. However, concerning potential tax collection, the difference arises. Figure 11 and Figure 12 show a strong positive relationship between the average budget from local tax collection (as in the previous graphs) and the household income per capita at the district level, as a proxy for potential tax payments. Regarding economic power, there is no significant difference between the LGs that belong to the first or fifth quintile. Nevertheless, Figure 12 shows that LGs with a higher level of institutional capacity are more effective concerning tax collection, because for LGs with the same degree of income per capita (shadowed area) those that are institutionally stronger collect significantly more taxes. Moreover, comparing the red and gray regression curves, for one percentage unit of increment in the income per capita, the increase in the tax base is at least three percentage points greater in LGs that belong to the fifth institutional quintile in comparison to those in the first institutional quintile.

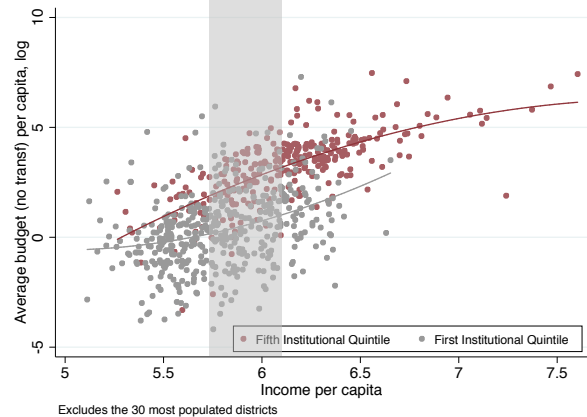
These findings suggest that a policy towards increasing the tax collection effort at the local level, will lead to improvements in the LGs' fiscal sustainability position in the medium-run. Notwithstanding, this policy should take into consideration the institutional and administrative (more than the economic) capacities across the LGs to increase its effectiveness.

Figure 11. Tax base and income per capita, by economic strength quintiles



Source: MEF and INEI

Figure 12. Tax base and income per capita, by institutional strength quintiles



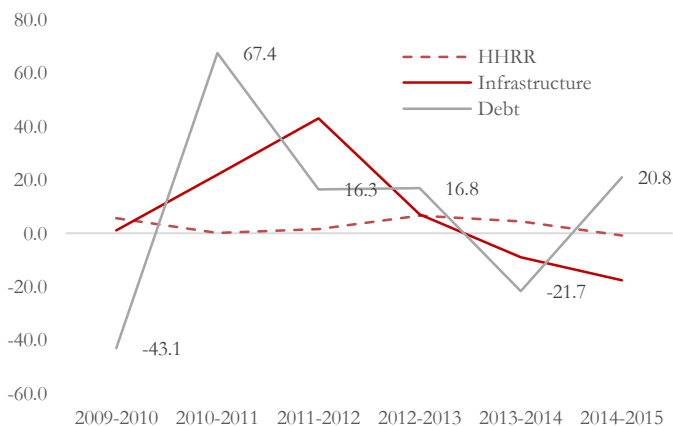
Source: MEF and INEI

ii. Initial Endowments: Investment in human resources and infrastructure

Aragón and Casas (2009) suggest that any decentralization process (enhancing the autonomy of the LGs) should be implemented with the necessary amount of resources so that the LGs can fulfil their responsibilities. The economic rationale behind their argument is that technical skills, such as skills in management and planning, are part of the technology by which local governments provide public goods and meet local demands. Moreover, they found evidence in the case of Peru (using RENAMU data) that the lack of investment-related capabilities, such as project management, accounting and finance, planning and coordination with other public entities, can negatively impact the ability of local governments to increase public investment, even when financial resources are available. Nevertheless, this section offers a corresponding point of view using budgetary data from MEF trying to assess the hypothesis that more resources available in areas of HHRR and infrastructure, provide a greater probability of LGs increasing its tax collection capabilities, which lead to a better fiscal sustainability position. A general analysis, however, shows that there is no clear relationship between expenditure in HHRR and infrastructure and the LGs' fiscal sustainability situation in the period under review. Figure 13 plots the variability of the total spending in HHRR and infrastructure, the debt level, and the FS_1 indicator, only for the fifth quintile of social capabilities, assuming that poorer LGs are more sensitive to changes in the investment levels.

The figure shows a slightly positive association between infrastructure expenditure and debt level ($\text{corr}=0.39$) and a stronger negative correlation between HHRR spending and debt ($\text{corr}=-0.64$). These results could suggest that there is an increment in the levels of debt to finance infrastructure investments. However, given the contradictory results, there is no conclusive evidence at this point if the investment in endowments improves the fiscal sustainability.

Figure 13. First social capabilities quintile HHRR and infrastructure expenditure
(% variation)



Note: This graph follows the same intuition behind Figure 8. Debt refers to short and long-term LGs' debt and it is used as a proxy for fiscal sustainability position. HHRR accounts for any expenditure related to HHRR (pensions, salaries, compensations, etc.) and Infrastructure accounts for any expenditure related to infrastructure, not only for administrative infrastructure.

Source: MEF

Figure 14. Fiscal Sustainability (2) and HHRR expenditure, by social capabilities quintiles



Source: MEF

Only focusing on HHRR, Figure 14 depicts the relationship between FS_2 (the intertemporal fiscal sustainability view in terms of debt) and the average expenditure in HHRR in the period under analysis. Besides the high concentration of LGs in lower levels of FS_2 at the fifth social quintile, LGs spend more in HHRR than those in the first quintile. There is no clear evidence that investment in HHRR could lead to higher levels of fiscal sustainability²².

The evidence found at this point seems to contradict or not provide enough support to the Aragón and Casas (2009) hypothesis. Nonetheless, it is important to consider the information sources limitations. For example, the expenditure in HHRR includes every concept related to the LG's expenses for employees, such as pensions, health insurance, promotions, etc. and not necessarily the

²² Following the same logic than the previous graph, a similar analysis was conducted to find the relationship between the levels of investment in infrastructure and FS_2 . However, no conclusive evidence was found neither.

exact proportion of the HHRR expenditure that goes to hire personnel in the tax collection offices or specialists in the area design tax collection strategy. In the same way, the infrastructure spending includes all the LG's infrastructure concepts, not only those related to the infrastructure required to increase tax collection effectively, such as better tax collection units or equipment acquisition.

Regarding administrative feasibility and political supportability, the likelihood of this policy option implementation is fairly low, according to conducted interviews²³. On the one hand, experts at MEF pointed out that incremental transfers in HHRR and infrastructure could lead to inefficiencies in the public budget expenditure. Those transfers should be focused and only allocated for specific items. Nevertheless, the legal implementation will require a special order from high level government authorities and is only applicable for some LGs, which means this not a feasible solution. On the other hand, concerning political supportability, the same specialists mentioned that providing such a benefit to only a specific group of LGs could lead to internal political instability, given that LGs with similar socio-economic characteristic could complain, arguing that they are lacking in resources as well. Moreover, from the local authorities' point of view, in such a scenario where there are no transfers from the NG, changing the LG's expenditure structure (investing more in HHRR and infrastructure towards increasing tax collection and less in other items) will h a political cost. Local political authorities, as was stated by Nordhaus (1975), will prefer to invest in projects with high political returns.

iii. Incentives Mechanisms

“The Incentives Plan was an excellent idea. People at the municipality try to do their best not only because they want the monetary stimulus, but because they want to achieve an objective as a team... People are really worried about it, they like the competition.”

Local budgetary authority, Lima - Peru

In this section, to provide robust evidence as to the effectiveness of one of the incentive mechanisms implemented by the government of Peru (Incentives Plan), an impact evaluation will be performed regarding its goal related to the LGs' fiscal sustainability position: Increase the property tax collection. The property tax (or *predial tax*) is the most important source of income at the local level (it represents 81.2% of the budget coming from local tax collection)²⁴; hence, it is extremely crucial to

²³ This part is based on interviews conducted with local governments' authorities and specialist at MEF.

²⁴ MEF public budget database.

strengthen the LGs' capabilities to improve the effectiveness of property tax collection efforts. For the purpose of better understanding all of the conducted procedures, this section will be divided into four sub-sections: a short description of the Incentives Plan, the theoretical background behind the LGs' incentives rational, a short methodological explanation, and the evaluation results.

The Incentives Plan

The Incentives Plan (PI)²⁵, a program conducted by the Public Budget General Department (DGPP) at MEF, is part of a larger strategy called performance-based-budgeting (PpR), which has been implemented by MEF since 2009. In short, the PI follows the logic of a CCT program assigning a set of *goals* that should be met by LGs to gain additional monetary funding. For example, if the goal is to “*increase property tax collection by 10% with respect to the previous fiscal year*” and the LG collects 11% more property tax than the previous year, the goal is achieved, and the LG receives an additional monetary compensation for the next fiscal year, with the amount determined by DGPP.

Given the high heterogeneity across the LGs, DGPP has classified all the Peru's LGs (1851 municipalities by 2015) into 4 groups: Municipalities “Type A” (40), Municipalities “Type B” (210), Municipalities that do not belong to main cities with more than 500 households in urban areas (558), and Municipalities that do not belong to main cities with less than 500 households in urban areas (1043). According to this classification, DGPP in coordination with other entities at the national level have designed a set of goals yearly since 2010. These goals are conditions which must be met by the LGs, such as “*increase the local tax collection levels.*”²⁶ Given the lack of an experimental design, the goal given to “*increase the property tax in ‘x%’ in comparison with the last year*” is able to be evaluated, due to its consistency over these years and because of its quantitative design²⁷.

The logic behind the Incentives Plan

During the exploratory part of the analysis, several interviews with local authorities, specialists at MEF, officials at PCM, and experts at CF were conducted. There is one common pattern found across these stakeholders: all of them agree that PI has had significant positive effects, not only in the

²⁵ See Annex section A.3. for a particular description of the program.

²⁶ See MEF (2012) and Annex section A.3 . for each category profile.

²⁷ For a complete and historical description of the PI's goal, visit:
<http://apps5.mineco.gob.pe/planincentivo/Navegador/Default.aspx>

tax collection effort of those municipalities able to participate, but also in political terms. The specialists and practitioners coincided that PI is an effective instrument to increase the efficiency of policy implementation, producing significant and positive political returns at the local level. Moreover, these empirical facts have academic and theoretical backing.

For instance, Bird and Smart (2001) hold that conditional transfers make LGs more susceptible to central influence and control. Also, this kind of transfer has a significant political advantage in introducing elements of local involvement, commitment, accountability, and responsibility for those participating. Furthermore, conditional transfers to LGs help to equalize differences in needs or preferences for spending. In other words, they improve the coordination mechanisms aligning macro and micro policy.

In a similar way, Boadway and Shah (2006) found that these kind of grants can be used as instruments facilitating the decentralization process, minimizing adverse consequences for national objectives. Also, the conditional grants improve the balance between national and local budgets; that is, conditional transfers help to close the vertical fiscal gap. Similarly, Han and Kung (2015) state that financial incentives influence LGs' policy choices and their economic performance. The NG may use this kind of tool to make LGs better respond to local needs and align their interests with those of the NG.

Finally, concerning the importance of local taxes, Morales Gonzales (2009) found that international experience has shown that property tax is *potentially the best financial instrument at the local level*, having greater relevance in urban areas. In the case of Peru, it was found that property tax is underexploited (low levels of collection). Hence, there is a significant margin for improvement to promote local economic development. Furthermore, increasing the property tax collection rate is crucial, especially in urban areas as an ongoing part of the decentralization process, in order to ameliorate urban informality, and its adverse effects in the cities.

A matching by propensity score exercise

As was mentioned before, PI was created in 2010 without consideration of running an impact evaluation. In other words, the program does not have an experimental design that allows one to easily find the treatment and counterfactual groups, and compare the effect of participating in the program through a particular goal and to assess its effectiveness. In the same way, information at the LG level

(or district level) is highly scarce and depends on the INEI census, which was last conducted in 2007. However, there were two important facts that allow conducting a quasi-experimental evaluation:

First, DGPP classified the more than 1800 LGs into 4 groups. However, since the beginning of the program only the LGs Type A and Type B (250 LGs) were allowed to participate in the property tax collection goal, leaving out of participation almost 1600 LGs. Also, DGPP did not change the goal specifications (or treatment in this case) until 2015, neither did they change the LGs able to participate.

Second, taking advantage of the high heterogeneity across LGs concerning population and socio-economic indicators²⁸, a propensity score technique was followed to match LGs in the treatment group (Type A and Type B) with their pairs in the control group (LGs not able to participate). However, this technique should only be conducted in a year before the beginning of the program. Fortunately, INEI launched a set of socio-economic indicators in 2009 at the local level after receiving the support of the World Health Organization (WHO), to monitor child malnourishment in Peru.²⁹ This database contains information for all the LGs at that period of time, for 25 variables, divided into 8 dimensions: malnutrition, population, education, health, identity, housing, poverty, and geography.

Following Freedman and Berk (2008), using data for 1837 LGs from 2009 and imputing the same classification designed by DGPP in 2010, I ran different logistic regression model specifications to find those LGs in the control group³⁰, that maximizes the probability of being “similar” to those in the treatment group. After the exercise, 696 (37.9%) LGs (observations) remain, where 165 of them belonged to the treatment group, and 531 belonged to the control one. Finally, I used the residuals of the final logistic specification to weigh the observations of the difference-in-difference regression model, for the purpose of increasing the statistical power.³¹

The above mentioned difference-in-difference regression model specification to evaluate the impact of PI's property tax goal is:³²

²⁸ See the municipalities profile at Annex section A.1.

²⁹ See https://www.inei.gob.pe/media/MenuRecursivo/publicaciones_digitales/Est/Lib0881/libro.pdf

³⁰ It is clear stated that it is not an experiment. However, I will use the term “treatment group” for the group of LGs able to participate in the PI, and “control group” for those LGs not able to participate in the program.

³¹ For specific econometric details, see the initial section of Freedman and Berk (2008).

³² According to the interviews, it is important to take into consideration that regardless the length of the program (8 years), until this moment there is no formal (published) evidence of its effectiveness. Previous attempts to conduct an evaluation were focused on evaluate the whole intervention effectiveness. However, this document aims to test its effectiveness as fiscal sustainability tool.

$$PropertyTax_{it} = \alpha + \beta Treatment_{it} + \gamma Pop_{it} + \mathbf{b}'_{it}\boldsymbol{\delta} + \mathbf{d}'_{it}\boldsymbol{\varphi} + \varepsilon_{it}$$

where:

$PropertyTax_{it}$: is the amount of property tax collected in thousands PEN for LG i at time t .

$Treatment_{it}$: is a dummy variable that takes the value of 1 for those in the treatment group and 0 for those in the control group.

Pop_{it} : is the number of people living under the LG's administration.

\mathbf{b}'_{it} : is a vector of three budgetary variables composed by canon (the amount of transfers received from the revenues of natural resources exploitation, mainly from mining), municipal taxes (local budget that comes from local tax collection), and executed budget (a measure of efficiency, is the amount of budget effectively executed), all in thousand PEN.

\mathbf{d}'_{it} : is a vector of dummy variables that controls for time effects and the level of institutional strength (a dummy for each institutional strength index quintile)

Results

Table 4 summarizes all the regression results. First, participating in the incentive program has a statistically significant positive effect. Even more so, this effect is persistent over time with marginal increments. The first row shows that in 2010, after one year of being implemented, LGs that participated in the PI's property tax collection goal collected 30.6 thousand PEN more than those LGs not eligible to participate. In the following years, these LGs raised 40.5, 47.8, and 58.3 thousand PEN more than their pairs in the control group, in 2012, 2013, and 2014, respectively. This evidence reflects not only as to the effectiveness of the program, but to a learning process on the part of LGs whereby they increase their ability to collect more taxes, regardless of the population size under their administration (second row). It is important to mention that the program had no statistically significant effect in 2011. This year specifically is when gold prices reached its highest level within the past decade, and its related revenues increased significantly. As evidence of that, in 2011 the *canon* variable is statistically significant negative, supporting the hypothesis of *fiscal laziness*, but at high levels of NG's transfers.

Table 4. Incentives Plan impact on property tax

VARIABLES	(1)	(2)	(3)	(4)	(5)
	2009/2010 Property tax (Thousands)	2009/2011 Property tax (Thousands)	2009/2012 Property tax (Thousands)	2009/2013 Property tax (Thousands)	2009/2014 Property tax (Thousands)
Treatment	30.62*** (10.94)	12.21 (10.90)	40.52** (16.02)	47.77*** (16.59)	58.27*** (18.66)
Population	0.001*** (0.0003)	0.001*** (0.0003)	0.002*** (0.0004)	0.003*** (0.0004)	0.001*** (0.0003)
Canon	-0.000253 (0.0003)	-0.000598** (0.0003)	0.000151 (0.0003)	0.000213 (0.0004)	-0.000182 (0.0004)
Municipal taxes	0.464*** (0.0050)	0.481*** (0.0050)	0.352*** (0.0053)	0.387*** (0.0052)	0.371*** (0.0050)
Executed budget	0.000317 (0.0006)	0.00143** (0.0006)	5.17e-05 (0.0007)	0.000291 (0.0006)	0.00108* (0.0006)
2010	-20.05** (9.149)				
2011		5.416 (9.033)			
2012			0.903 (13.48)		
2013				3.246 (14.02)	
2014					-12.28 (15.70)
2 nd Institutional Quintile	11.15 (20.36)	3.100 (20.29)	9.887 (29.80)	12.13 (30.82)	12.27 (35.21)
3 rd Institutional Quintile	20.07 (14.56)	17.16 (14.48)	35.90* (21.26)	28.80 (21.99)	16.54 (24.69)
4 th Institutional Quintile	8.968 (12.66)	12.26 (12.57)	19.50 (18.47)	10.06 (19.13)	16.99 (21.77)
5 nd Institutional Quintile	46.67*** (13.46)	52.62*** (13.39)	108.0*** (19.60)	82.89*** (20.20)	112.2*** (22.83)
Constant	-4.193 (11.72)	-13.81 (11.67)	-19.72 (17.12)	-24.57 (17.76)	-6.480 (19.87)
Observations (weighted)	2,338	2,345	2,345	2,345	2,402
R-squared	0.827	0.844	0.729	0.770	0.749

Standard errors in parentheses

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

Note: Difference in difference estimator using propensity score matching. Comparison between pre-treatment year (2009) and follow up interventions years. The total number of unweighted observations, as was mentioned at the sub-section "A matching by propensity score exercise, is 696. However, this number is altered when the residuals of the logistic regression, achieving a total of 2345 in average. This exercise increases the predictive and inference power of the model, as was stated by Freedman and Berk (2008).

Source: Author's elaboration based on data from MEF and INEI

Furthermore, Table 4 also shows positive statistically significant effects of *municipal taxes*. It seems that LGs that participate in the program develop complementary tax collection abilities which allow them to be more efficient in the collection of other local taxes. Finally, it is critical to mention that, for the purposes of policy design, LGs that belong to the fifth quintile of institutional strength

(the stronger ones), have collected 80.5 thousand PEN more than those in other institutional strength quintiles on average. This fact is evidence that *the more institutional capacity a LG has, the abler to collect taxes is.*

iv. Counter-cyclical mechanisms: Savings and stabilization funds

“The savings in current account fiscal rule for local governments is not entirely accurate. It should be focused on volatile income components.”

Specialist at the Consejo Fiscal

The rationale behind this policy option is that every LG should maintain a predictable income path. In other words, according to the permanent income hypothesis, every LG should smooth its consumption to avoid its volatile components and promote both a macro and micro environment of fiscal sustainability. This policy aims to follow the example of Chile and Norway in their fiscal management. First, Chile has long experience in creating fiscal institutions and rules to manage their resources from (mainly) copper exploitation for the purpose of maintaining fiscal stability, increasing economic growth, and improving equity. Second, Norway first began oil production in 1971, and became a significant oil exporter during the 80s and 90s. Under prudent oil income management, Norway implemented countercyclical fiscal policies and guaranteed the resources provision for future generations (Schmidt-Hebbel, 2012).

The Consejo Fiscal, one of the most prestigious institutions related to fiscal policy and part of MEF, has conducted several technical studies regarding the importance of generating saving mechanisms or stabilization funds to ameliorate negative external impacts. One of its proposals was to create a Fiscal Stabilization Fund to finance contingencies, unexpected supply shocks (natural disasters), or to save resources for implementing discretionary policies (pensions, health programs, etc.) Moreover, this stabilization fund should be consistent with the fiscal rules, financial regulations set by MEF in order to guarantee the fiscal sustainability at national and at local levels, and flexible enough to avoid a procyclical behavior (CT-MM, 2013).

Based on these recommendations, in December of 2016, MEF redesigned the fiscal rules³³, including a current account saving rule. According to Consejo Fiscal, this rule generates incentives for GLs to increase their tax collection effort. However, this rule could not be strong enough, due to only

³³ See Annex section A.6.

being focused on increasing savings with structural income components. That is, this fiscal rule does not include transfer of revenues from natural resource exploitation (canon), which is the most volatile of LGs' income components (Consejo Fiscal, 2016).

As a final point, a fiscal rule based on saving mechanisms should be focused not only on the LGs' volatile income components, but on those LGs which represent the source of macroeconomic volatility at the national level. These LGs should be located, at least, above the third quintile of the canon distribution. To test this hypothesis, it was necessary to analyze whether a group of them overcame the restriction by generating their saving mechanism. The purpose of this is to collect evidence to support the idea that volatile LGs need a saving mechanism to smooth their consumption. However, according to the MEF specialist interviewed, this information is confidential and only available for top financial authorities.

III. BOTTOM UP: IMPROVING LOCAL GOVERNMENT'S FISCAL POSITION

a. What we have so far?

Technical considerations

Following Hausmann *et al* (2005), in the previous section, I conducted several pieces of analysis to find, among the proposed policy options, the binding constraint. In technical terms, it seems that the incentive mechanisms are a powerful and effective tool used to achieve fiscal sustainability at the local level. However, there is relevant evidence regarding the local tax collection efforts, because there is still room to increase the LGs' tax base, especially in those with relatively high levels of income per capita. Moreover, regardless of the lack of quantitative evidence in this document, investments in initial endowments to strengthen the LGs' tax collection capabilities and savings mechanism are policy options with high technical support, as was reported by several authors.

In this regard, there is no quantitative evidence for some policy options due to the fact that until now the Peruvian government has not implemented such policies in its administration.³⁴ As was stated by Lucas (1976): *“Given that the structure of an econometric model consists of optimal decision rules of economic agents, and that optimal decision rules vary systematically with changes in the structure of series relevant to the decision*

³⁴ The new savings in the current account fiscal rule was launched by MEF in December 2016 and will be implemented during the whole 2017.

maker, it follows that any change in policy will systematically alter the structure of econometric models.” That is, it is not possible to consider the relationships previously found structurally. Every result of these policy options is subject to policy makers’ intervention.

Administrative viability

According to the conducted interviews, incentive mechanisms and stabilization/saving funds have relatively high levels of administrative implementation. First, MEF has more than seven years of experience conducting PI and working with local governments. Second, as was implemented in the new fiscal rules, MEF also has the capability to design stabilization and saving funds. These policy options do not need high levels of coordination, given that they are developed and implemented at the national level.

At a lower level of administrative feasibility, investment in endowments to strengthen the LGs’ tax collection capabilities has some limitations, especially for poor LGs. For instance, from a macro policy perspective, increasing the amount of transfers for specific items will require an accurate estimation of the total cost for the investment. Also, these additional transfers should be provided in an emergency context,³⁵ and will require The President’s signature according to Peruvian legislation. From a micro policy perspective, in a non-transfer scenario, the LGs should reorganize their expenditure structure in the short term. This reorganization, according to local authorities, will make them spend less on other important items such as salaries, maintenance, services (electricity and water), among others.

Finally, increasing the tax base has several administrative complications, even for those LGs with relatively higher resources³⁶. First, in most of the LGs, the tax collection authority is within the municipality. As the Tax Administration Unit at national level³⁷ is an independent institution that provides resources to MEF’s operations, it is required that local tax collection units be independent to increase their effectiveness and remain separated from the political environment within the LG³⁸. Second, there is a level of high distortion in property values, especially in most urbanized cities. For

³⁵ This will represent an extraordinary situation, apart of the regular transfers to LGs.

³⁶ According to the testimony of local authorities at Lima and Piura, LGs with good fiscal position and with experience in tax collection.

³⁷ National Superintendence of Customs and Tax Administration - SUNAT

³⁸ One successful option is following the Tax Administration Service (SAT) model. This idea will be developed in the next section.

instance, the LG of Piura *loses between 1 and 2 million PEN yearly because of a deficient property valuation*³⁹. That is, some properties in areas of high economic activity are assessed less property tax than those in peripheral areas. Finally, some LGs lack informatics tools and specialized personnel to increase tax collection. Some LGs use free Geographic Information System (GIS) tools to locate specific estates and impute an approximate value to the local properties. Also, personnel working in property valuation have to execute multiple tasks: *properties identification, properties valuation, administrative procedures, and even field work to contrast the processed information*⁴⁰.

Political environment

Several authorities and specialists at different levels of government pointed out the PI's positive reception. This phenomenon is not only driven by monetary reward, but as a performance-based scheme. Both national and local authorities believe that important programs such PI should be part of the national policy implementation, not only for those related to fiscal sustainability. In the same way increasing the tax base, regardless of implementation difficulties, is considered a good policy option because each LG must strive to increase its resources.

There are mixed opinions surrounding the saving mechanisms. On the one hand, national authorities think that it is necessary to avoid natural resources revenue procyclicality at the local level by imposing saving funds, but it could generate conflicts between the NG and LGs. This policy of saving funds could be perceived as budget cuts especially when commodity prices are relatively high. On the other hand, local authorities consider that the saving mechanisms are useful, but in periods when needs "*are not so high*"⁴¹. This means that LGs' authorities, at least in the short term, are not willing to sacrifice their current expenditure to increase their future consumption.

The investment in HHRR and infrastructure policy option has some degree of opposition. From a macro perspective, a direct transfer for financial investments in HHRR and infrastructure to increase tax collection effectiveness could lead to misinterpretations. Specialists suggest those at PCM could interpret these transfers as a dependency reinforcement mechanism. Furthermore, this extra amount of resources could be used for other purposes. Finally, from a micro perspective, LGs'

³⁹ Interview with Piura Tax Administration Service (SATP).

⁴⁰ Interview to local government's expert at DGPP – MEF. Also see Morales Gonzales (2009) for more information.

⁴¹ Decentralization specialist at MEF.

authorities are not willing to restructure their expenditure scheme, arguing that they have to care for more primary responsibilities.

Table 5 summarizes the viability of each policy option concerning technical correctness, administrative feasibility, and political supportability:

Table 5. Summary of policy options and their viability

Options	Technically correct	Administratively feasible	Politically supportable
A. Increase tax base at local level (more taxes per capita)	High	Moderate Difficult	Low Support
B. Increasing investment in resources to improve the tax collection: HHRR and infrastructure	Low	Moderate	Low Opposition
C. Modify the incentives mechanisms (Incentives Plan - PI)	High	Moderate Feasible	High Support
D. Implement counter-cyclical mechanisms (stabilization/saving funds)	Moderate	Moderate Feasible	Moderate

Source: Author’s elaboration based on the conducted interviews and technical and institutional analysis.

b. One problem, several solutions

“Any proposal should be easy to understand and easy to communicate. As we increase the number of local governments’ classification or rankings, we increase the level of complexity in the policy design. We have to search for the ‘optimal number’ of instruments for each policy option.”

Specialist at the Ministry of Economics and Finance

Based on the previous analysis, the implementation of incentive mechanisms is the policy option with the highest degree of technicality and application among the four alternatives proposed. However, as was pointed out by several authors and by specialists during the interviews, policies such as saving funds or increasing the tax base are equally important, and complementary to improving the fiscal sustainability position of each LG. Based on this statement, in the following pages, I propose an intervention model that considers all of the explored policy options based on the incentives mechanisms. Furthermore, the proposal for intervention examines some changes in DGPP’s municipality classification and in the PI itself.

i. Fiscal sustainability policy package

This policy package is proposed as a joint intervention, where the policy options previously analyzed are complementary components under the incentive scheme umbrella. Following PI's original idea, this proposal provides monetary resources to those LGs that meet a set of fiscal sustainability-related goals. The program, let's call it Fiscal Sustainability Program (FSP), will have three pillars: increasing budgetary resources, strengthening institutional capacity, and reducing volatility, all of them summarized in the following figure:

Increasing resources

This component is focused on increasing the LGs' tax collection effectiveness. To accomplish this objective, the FSP's branch will have three goals:

- *Increase the tax collection effort.* Similar than PI, this goal will be based on increasing property tax collection. In other words, “*if municipality 'x' increases its property tax collection in 'y%', it will meet the goal and receive extra funds. Otherwise, no funds will be received.*” According to the evidence, this scheme works in a statistically significant way and should be preserved as part of the new intervention.

- *Data standardization.* This complementary goal aims to update and standardize all the available information regarding property by the LGs. Based on a previous diagnostic, ideally conducted by MEF in coordination with local authorities, that determines the total number of registered properties and the percentage of those with the adequate property value, the goal will be: “*if municipality 'x' increases its number of adequate valued properties in 'y%', it will meet the goal and receive extra funds. Otherwise, no funds will be received.*” A different version of this goal could be “*if municipality 'x' conducts a property value diagnostic based on MEF methodology, it will meet the goal and receive the extra funds.*” This goal could be implemented over the period of one year and then restart with the original version.

- *Technological adaptation.* To complement the tax collection efforts, it is necessary to identify the different levels of property value technology used by a particular group of LGs. This goal aims to standardize the technology used and will facilitate knowledge transmission among LGs. This goal could be proposed as “*if municipality 'x' adopts the property value technology 'y' in year 'z', it will be granted with the extra funds. Otherwise, no transfer will be executed.*” To get a scale-up scheme, it is necessary to group the similar technologies available among the selected

LGs⁴² a scale created in order to reward the effort of each LG when it will adopt a superior level of technology.

Institutional strengthening

According to the evidence in this study, there is a strong positive relationship between the tax collection capacity and the institutional strength in LGs. Hence, this FSP second component will be focused on improving the institutional strength across the LGs, to increase their tax collection capability in the medium-run. This branch has two components:

- *Technical assistance.* Provided by MEF to a particular group of municipalities, this element should be focused on providing training to improve the managerial skills of local budgetary authorities. Also, it should provide technical assistance to help local units to design legal tools according to LGs' reality.
- *Resource provision.* Only in certain cases, is it necessary to provide an initial set of endowments to guarantee the minimum working capacity. This resource transfer should be conducted only after diagnostics developed by MEF to those LGs with tax collection potential, but in need of an initial technical infrastructure investment.

Reducing volatility

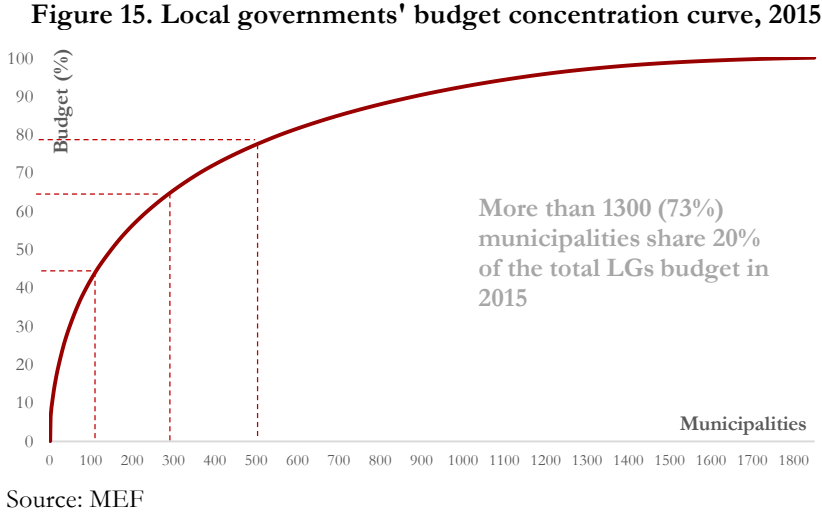
The third component, based on the new savings in current account fiscal rule, follows the logic of a macro fiscal countercyclical policy. For those municipalities with a high degree of volatility in NG's transfer, a goal such as "*When commodities' revenues increase 'x%', those LG to whom this increment represents at least 'y%' of their total budget, will receive a monetary reward if they save at least 'z%' of the mentioned increment*" should be implemented. This complex FSP's goal should be focused only for those LGs with an income structure that is highly sensitive to commodities fluctuations.

ii. Custom solution: A new local governments classification

In the previous paragraphs, I mentioned that proposed policies were for "certain" or "specific" groups of LGs. This specificity comes from the fact that there is a high heterogeneity across

⁴² In this section I emphasized the term "selected local governments" in many lines. What a "selected local government" means will be explained in the next section.

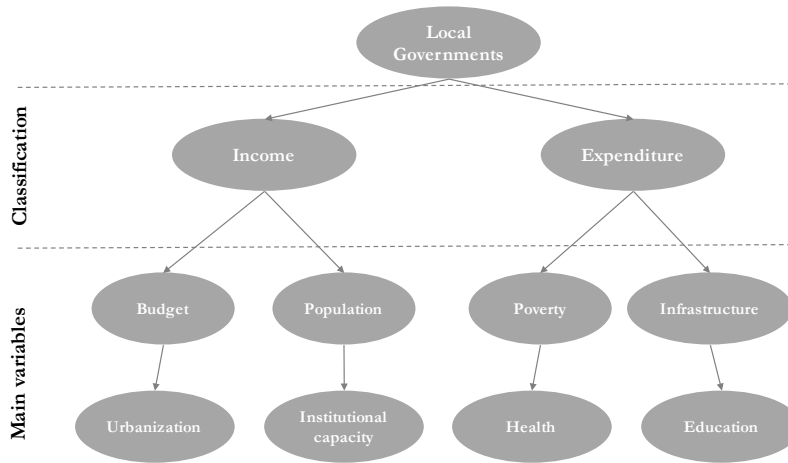
LGs⁴³ regarding: budget distribution, institutional power, or social development. Figure 15 plots the LGs' budget concentration curve. By 2015, 100 (5.4%) LGs have almost 45% of the total LGs' budget. This simple graph is evidence of a significant disparity just in budgetary terms⁴⁴.



To handle similar problems, in 2010, DGPP designed the PI's municipalities classification. This exercise divided LGs into four groups⁴⁵, taking into consideration population, rurality level, and other socio-economic variables⁴⁶. However, this classification was conceived to respond to the PI's different strategic objectives at that moment, but in practical terms, it is not possible to have only one characterization for such a large number of purposes⁴⁷. For these reasons, and considering the primary stakeholders related to fiscal sustainability at the local level in MEF⁴⁸, a new classification should be designed⁴⁹. Figure 16 summarizes the main idea behind the two classification proposals.

⁴³ See Annex Section A.1.
⁴⁴ If we repeat the exercise for other variables related to health, infrastructure, or education we will find similar results.
⁴⁵ See Section II of the document.
⁴⁶ According to experts' interviews at MEF.
⁴⁷ See Figure A.1.6. explanation at Annex Section A.1.
⁴⁸ More details in the next section.
⁴⁹ According to the interviews, there were several attempts to improve the LGs' classification. However, those attempts were focused on a single measure that captures all LGs' disparities. This proposal considers more than one classification: the more technical tools, the more characterizations are needed.

Figure 16. Incentive Plan's new classification



Source: Author's elaboration

Based on the institutional analysis (see Annex Section A.2.), the income classification should consider all the variables that indicate the LG's degree of tax collection potential. In other words, this characterization should rank LGs according to their institutional and economic capacity to collect taxes. This measure should consider variables such as budget, population, urbanization, and institutional capacity.

In the same way, the expenditure classification should take into consideration those variables that could lead to an increase in public spending efficiency. That is, targeting those LGs with a high level of need and determining specifically where the government budget should be allocated. Variables such as poverty, infrastructure levels, health, and education levels should be considered for the analysis.

Given that the fiscal sustainability position is closely related to how LGs generate resources, the FSP should be focused on this newly proposed MEF's income classification. Moreover, this selected classification should be used to identify those LGs most suited according to the proposed FSP dimensions. For example, the FSP's increasing set of goals and resources should be focused only in the first quintile of the income classification. Similarly, the FSP's set of goals related to institutional strengthening could be focused on the second quintile of the income classification.

The FSP's goal of reducing volatility should be given special treatment. It is necessary that this goal be focused only on those LGs with a high proportion of revenue from natural resources transfers.

These LGs are the primary source of volatility at the macro level. An important fact is that these LGs are only able to expend those resources on infrastructure projects. This restriction constrains their ability to spend resources in a discretionary fashion (e.g. new technology implementation, training of personnel, etc.) The FSP will be an incentive only if the amount of resources granted for meeting the savings goal, will be able to spend on discretionary items. This will help to stabilize the expenditure in the expansionary phase of the commodities cycle and to increase the efficiency of infrastructure spending.

In the same way, the expenditure classification is highly relevant for resource allocation purposes. Many of the LGs in Peru either have no means by which to collect resources, or their population lives in precarious living conditions. The expenditure classification could be used to design goals with the purpose of allocating financial resources for those LGs in the initial or a transitional development stage. In general terms, expenditure goals that form part of an incentive scheme should look like *“if LG ‘x’, designs a strategy to reduce child malnutrition in coordination with its RG, it will meet the goal and receive extra funds. Otherwise, no funds will be received”*.

Finally, it is relevant to consider that there is no magic formula to establish the “optimal number” of classifications. It is however, clearly stated that establishing only one classification is not the solution either. The arbitrary solution of proposing two classifications is based upon the need to clearly and easily communicate this new scheme to all LGs, and at the same time it should respond to the MEF organic and functional structure.

iii. Main stakeholders for a joint intervention

A fiscal sustainability intervention, given its level of complexity, should be a holistic and coordinated response. Under this assumption, a stakeholder analysis was conducted to determine the degree of leverage for each actor involved.⁵⁰ From the interviews and the institutional analysis, fiscal sustainability reform at the local level should include the following roles:

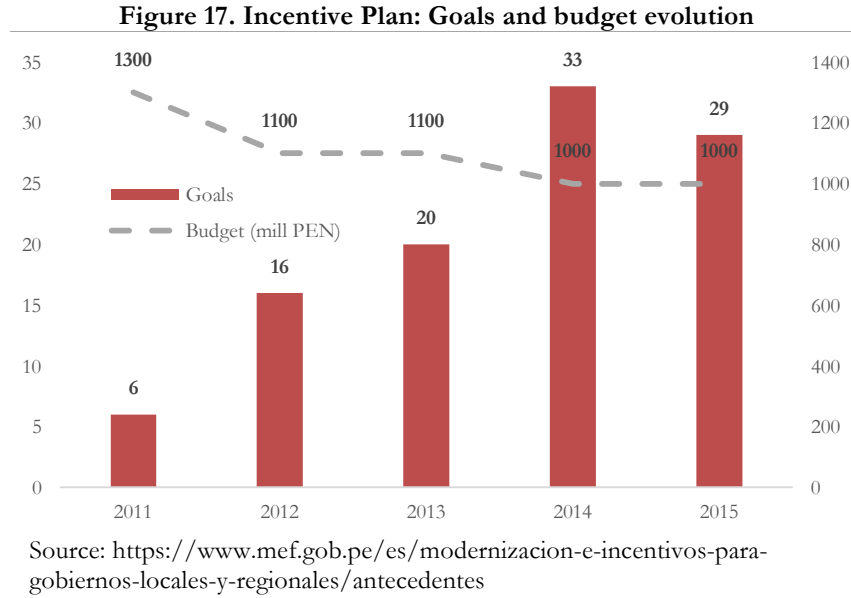
- *DGPP (Public budget head)*. In charge of guaranteeing the effectiveness of expenditures and the correct resource allocation. The most suitable to be in charge of the expenditure classification group of LGs.

⁵⁰ For a detailed description, see Annex Section A.4.

- *DGPM y DF (Macroeconomic issues head)*. Its leading role, among others, is to care for government revenue policy and fiscal decentralization. The most suitable to lead the FSP and the income LGs' classification.
- *LGs' planning and budget head*. This authority is DGPP's coordination focal point. Concerning PI's, this local authority is the most suitable to coordinate any issue related to the design of goals and technical assistance needs.
- *LGs' tax collection office head*. In an eventual FSP implementation, this local authority should be in charge of coordinating the evaluation process, providing information for the initial diagnostics, coordinating the technical assistance, and providing feedback to FSP when it will be necessary.
- *REMURPE, AMPE, and RG*. These institutions, given their responsibilities, should be aware of LGs' needs and contribute to FSP with any useful feedback to improve its targeting and effectiveness power.
- *PCM – Decentralization Secretary*. Finally, PCM plays a fundamental role: a mediator in any controversial case. The PCM's role is of particular importance in implementing the individual saving funds, given that certain LGs' have a propensity to generate conflicts.

iv. Incentive Program's restructure

Based on the previous analysis, another alternative could be to not create a new program such as FSP, but to modify the existing one: The Incentive Program. Figure 19 plots the number of goals and the amount of budget granted each year since the beginning of the program in 2010. This simple graph shows that the PI has been losing its persuasive power: The greater the number of goals, the less amount of resources available for the LGs to meet the goals. LGs have received less and less money for their efforts in accomplishing the PI's goals.



Also, as mentioned previously, DGPP has created just one classification for several PI’s objectives, which is not aligned to the evidence found in this document. Finally, based on the previous section, PI’s have some objectives that are not entirely suitable for the DGPP’s role. These goals are based on generating income, which is not part of DGPP’s policies, because they are focused on improving the effectiveness of expenditures.

The proposed solution is to separate PI’s income and expenditure components, in the same way as done within the new LGs’ proposed classification. The income related objective could be part of a new program under DGPMYDF, focused on only improving the tax collection capabilities at the local level, and the expenditure related goals could remain with DGPP under a new expenditure related classification scheme.

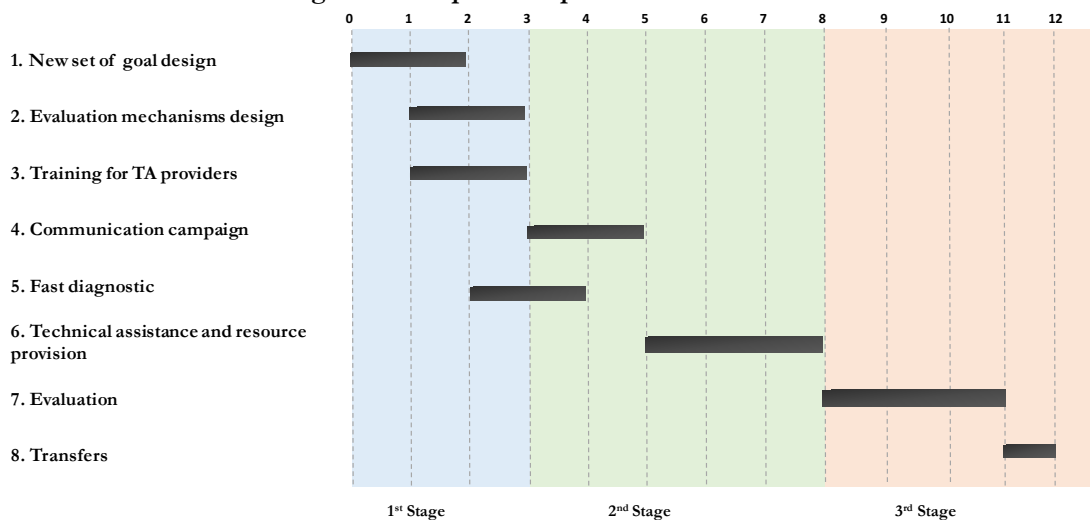
v. Implementation schedule

In order to reinforce the practical aspect of this document, Figure 18 shows a preliminary implementation scheme. The proposed implementation is divided in three main stages:

- *First Stage.* This part of the implementation includes all the actions for an optimal design: a new set of goals, criteria to evaluate each goal, training of the technical personal in how to deliver technical assistance, and a rapid LGs’ diagnostic, should be conducted.

- *Second Stage.* This part of the process should include the program implementation and the beginning of the “run” for LGs to meet their respective goals. Actions such as the start of a clear communications campaign to inform LGs of the details of the program and the technical assistance and resource provisions for selected LGs should be taken in this stage.
- *Third Stage.* Finally, to close the first iteration, a period of at least five months should be taken into consideration in order to evaluate whether LGs meet (or not) their respective goals and allocate the grants accordingly.

Figure 18. Proposed implementation scheme



Source: Author’s elaboration.

In addition, MEF should pay particular attention to the individual saving funds goal. In Section II it was stated that a savings policy could be perceived as budget cut policy, which could bring negative consequences. One option to avoid this problem is to generate an incentive to increase savings at the local level. However, another possibility would be strengthening the savings in current account fiscal rule, focusing on the most volatile LGs and tying this rule to the incentive mechanism, both of which are proposed in this document. It is important that MEF takes advantage of the recession part of the commodities cycle and implement these policies as soon as possible. This is the adequate time to implement such policy, because it will not be perceived as a significant budget cut by the LGs, given the low amount of resources that would be available.

c. Recommendations for further analysis

Achieving fiscal sustainability is a huge challenge, not only because of its methodological difficulties, but because of its practical implementation constraints. Notwithstanding, this document represents an effort to both identify how to reduce the high dependency of LGs on commodity market fluctuations and to ameliorate the commodities cycle's adverse effects on the macro and micro level. Hence, it is necessary to follow an in-depth and specific research agenda, with practical and country-specific recommendations. In this regard, there are three main areas for future studies:

- *MEF's budgetary information need to be worked in detail.* After finding any robust evidence among HHRR, infrastructure, and fiscal sustainability, it is necessary to analyze only the budget proportion that serves to improve the fiscal position at the local level.
- *Propose a specific local governments' classification.* As was stated, LGs' require more than one classification, based on a particular policy tool. Moreover, in this study I proposed two classifications and the primary variables that each of them should take into consideration. However, it is necessary to determine a formal methodology that implements these comprehensive insights and provides an entire list of LGs with their respective classification.
- *Coordination mechanisms.* Towards the LGs financial strengthening, it is fundamental to explore what the effect will be of creating new coordination mechanisms among all the levels of government. A more qualitative analysis should be conducted in order to determine if additional or different institutions are necessary.

Finally, it is essential to think of fiscal sustainability within a larger and a more holistic context: The local governments' decentralization process. For this reason, a fundamental topic to explore is determining means available to improve the LGs' institutional capacities. Unless we work toward the goal of local institutional independence, we cannot guarantee a path to sustainable local development.

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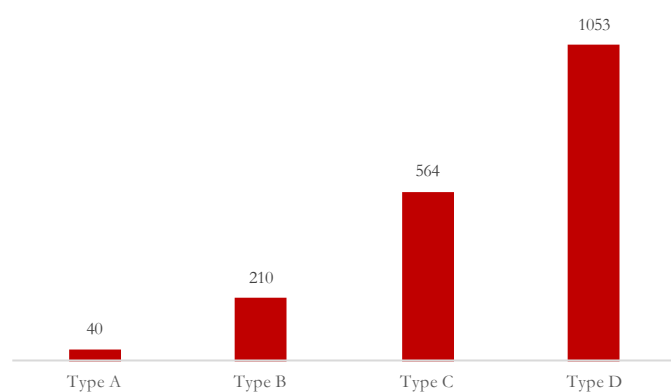
V. APPENDIX

A.1. Peru's local governments' profile

1. Composition and Distribution

By 2016, Peru has 1867 local governments, ruled by the National Municipalities Law⁵¹, which establishes their legal roles and administrative functions. According to the current PI municipal classification, there are four categories of LGs. The first category is Type A, composed by 40 LGs, which are main urban districts, principally located in the capital area, Lima Metropolitana. Every LG in this category concentrates, on average, 250mil citizens. These are the LGs that administrate the highest budget amounts.

Figure A.1.1. Number of municipalities, by MEF classification – 2016



Source: Incentives Program, Ministry of Economics and Finance

The next group, Type B, includes 210 LGs. Most of them are urban nucleus, capital cities of the 25 regions and 195 provinces in Peru. On average, every district congregates 56mil citizens. On the other hand, there are 564 LGs Type C which is the minor urban nucleus, constituted by 500 households or more, with a mean population of 11mil citizens

per LG. Finally, the most numerous category, Type D, has 1053 LGs (56% of the LGs) which concentrate approximately 4 thousand inhabitants per LG dispersed in vast areas, usually rural areas⁵².

Main patterns

The local governments' composition in Peru is characterized by two main patterns. First, a steady growth of the number of LGs in the last years. By 2011, Peru had 1832 LGs. In 2012, there were created 4 LGs, and the same number in 2014. Also, by 2015, there were established 11 LGs, and 16 LGs in 2016. Thus, as we discussed in the previous sections, this growth in the number of LGs can be considered as a problem in the sense that it increases the heterogeneity among local governments, which in turn obstruct the design of a national policy for fiscal sustainability. Secondly,

⁵¹ Law N° 27972, established in 2003.

⁵² INEI.

the geographic and cultural diversity that mainly describes the composition of LGs in Peru challenges the design of a national policy as well.

2. Governing Structures and Political Overview

The LGs are conformed by a municipal council and a municipal hall. The council is integrated for the mayor and a number of aldermen, according to the National Election Jury and the Election Law. This assembly has exercise normative and supervisory functions. On the other hand, the municipal hall is ruled by the mayor, which is the supreme authority, and it performs executive functions.

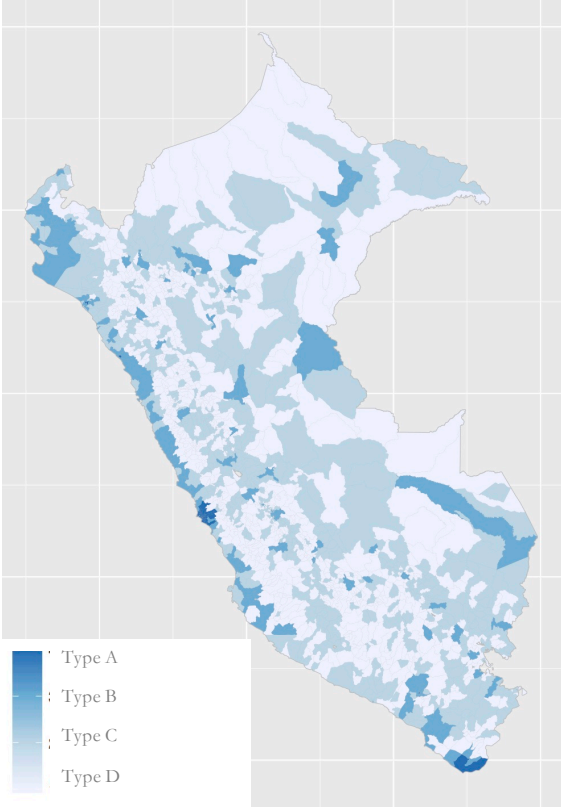
Administrative composition

A basic administrative structure of a local government includes an executive head office, an intern audit office, the public procurement, and a planning and budget office. The implementation of these offices are in line with the LG economic budget, and y the economic limits for current expenditure, established by the central government.

Operative conditions

According to a MEF’s assessment, there is a deep lack of HHRR capacities among LGs. On average, only 25% of personal working in LG is professional. High qualified personal mainly works in the planning and budget areas. Additionally, this study stands out that most LGs do not have access to basic technology to work efficiently. Many LGs do not have computers and automatized registers in their offices.

Figure A.1.2. districts map, by PI Classification - 2015

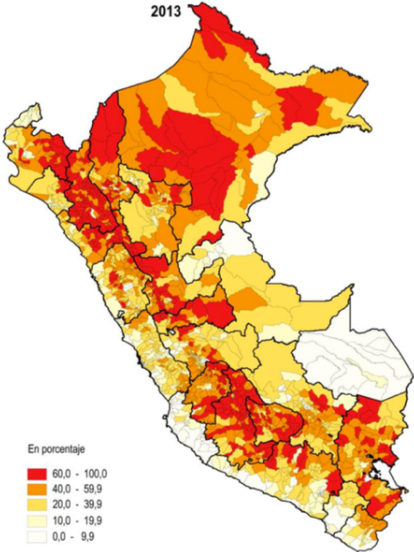


Source: INEI

3. Living conditions in LGs

Local governments face a variety of public problems, and they manage different initial conditions. As we can see in the next map, poverty levels in coast districts are mainly in the range from 10% to 20% of their populations. Meanwhile, the most severe conditions are faced by many districts located in the highland and jungle regions, where most of the districts register a poverty level over 60% of their population. Likewise, in the poorest regions of Apurímac, Huancavelica and Huánuco, more than 75% of their districts face that high poverty level.

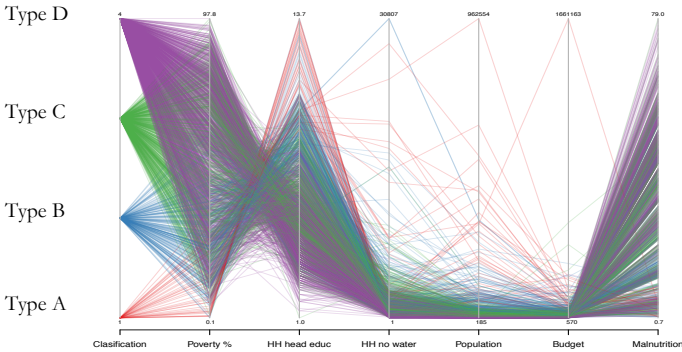
Figure A.1.3. Poverty map at district level, 2013



Source: INEI

The next graph shows us a high disparity among LGs in other main welfare indicators. For example, we can see that there is not correspondence among the PI categories of LGs and the education levels. This means that we can find main urban districts (Type A or Type B) with poor education levels, as in other small rural area.

Figure A.1.4. Socio-economic indicators, by districts - 2013



Source: INEI

in most districts of the four PI categories. Thus, this evidence, in terms of policy design, implies that the current PI's classification of LGs does not reflect well-defined groups of LGs.

I find the same situation for malnutrition results. While the most quantity of LGs with high malnutrition levels are among Type D (mainly rural districts), we can see many Type A and Type B districts facing this problem as well. On the other hand, the indicator of households with no access to water is low

A.2. Fiscal sustainability basic model

As many macroeconomic models begin, the fiscal sustainability theory starts with a representative agent model, where the government satisfies a budget constraint:

$$B_{t+1} = R_t B_t + D_t$$

where B_t is the beginning period stock of public debt, $R_t = 1 + r_t$ is the discount factor, and D_t is the primary fiscal deficit. Solving the previous equation forward:

$$B_t = - \sum_{j=0}^{\infty} R(t, t+j)^{-1} D_{t+j} + \lim_{T \rightarrow \infty} R(t, t+T)^{-1} B_{t+T+1}$$

where $R(\cdot)$ represents again the discount factor but in a certain period. From the last equation, fiscal or financial sustainability requires that the *present value of the future primary surpluses must exceed the present value of future primary deficits by sufficient amount to cover the difference between the initial debt and the present value of the terminal debt stock*. However, to avoid a Ponzi game scheme, it is necessary that the government complies the transversality condition $\lim_{T \rightarrow \infty} R(t, t+T)^{-1} B_{t+T+1} \leq 0$. In consequence, a sustainable fiscal policy has to respect the present value budget constraint:

$$B_t = - \sum_{j=0}^{\infty} R(t, t+j)^{-1} D_{t+j}$$

In simple words, an optimal fiscal sustainability position requires that government's liabilities must go according to the future surpluses and deficits at present value. However, measure this kind of complex indicators requires data on interest rates (faced by each LG), a specific amount of debt, future income and expenditures, etc.

A.3. Crises dates in Peru

Table A.2.1. Crises dates, 1980 - 2010

Default, Restructuring, Banking Crises, Growth Collapses and IMF Programs: Peru 1821-2010							
External default/restructuring	Duration (in years)	Domestic default/restructuring	Banking crisis (first year)	Hyper-inflation dates	Share of years in external default	Share of years in inflation crisis	5 worst output collapses year(decline)
1826-1848	23	1931-1938	1872	1988-1990	40.2	13.2	1930(11.5)
1876-1889	14	1985-1987	1983				1931(8.1)
1931-1951	21		1999				1983(9.3)
1969-1969	2						1988(9.4)
1976	1						1989(13.4)
1978	1						
1980	1						
1984-1997	14						
Number of episodes:							
8		2	3	1			
Memorandum item on IMF programs, 1952-2009							
Dates of programs						Total number of years	
1954, 1958-1968, 1970, 1977-1979, 1982, 1984, 1993, 1996, 1999, 2001-2002, 2004						24	

Source: <http://www.carmenreinhardt.com/data/browse-by-topic/topics/7/>

A.3. Description of the Incentives Plan - PI

1. ¿What is the PI?

The PI is a performance-based budgeting (PpR) instrument, aimed at promoting conditions that favor the economic growth and sustainable development of the local economies in Peru. Likewise, this program encourages the local governments to continuously improve their management. The PI involves direct transfers to the local governments. The transfers are conditioned on the accomplishment of goals in a determined period and which are checked twice a year. These goals are formulated by various public entities of the central government, and they are aimed at promoting results whose achievement requires an articulated and coordinated work between the central entities and the local governments. The PI resources are for a specific utilization, and they cannot be used for purposes. There is a normative restriction which establishes that the PI transfers should be exclusively destined to the achievement and sustainability of the PI goals.

2. Program Objectives:

By 2015, the PI has 6 objectives and 29 goals.

- Increase local tax collection levels and strengthen the stability and efficiency on their perception.
- Improve the public investment projects implementation, considering the guidelines for the improvement of the expenditure quality.

- Reduce chronic children malnutrition
- Simplify procedures, generating favorable conditions for business and promoting local competitiveness
- Improve the local governments' public services supply (According to the Law N^a 27972, Organic Law of Local Governments)
- Prevent disaster risks

3. Stakeholders:

- Ministry of Economics and Finance - Public Budget General Department (DGPP-MEF)
- Local Governments (1844 by 2015)
- Public entities responsible for any PI goal.

4. Main processes:

a. Local Governments enrollment

The PI has been designed to include the total number of Peruvian local governments. Consequently, they do not have to apply or submit any form or prerequisite to be considered in the program. The local governments are automatically incorporated to the program when they present evidence of having achieved one goal or more.

a. Evaluation of goals accomplishment

The evaluation process aims to determine if the local governments fulfilled in a complete, suitable and timely manner their applicable goals⁵³. This process starts one day after the deadline for the goals accomplishment (July 31 or December 31), and it concludes with the publication of a Directorial Resolution which lists the PI goals compliance results of the local governments. The PI goals evaluation includes to determine a quantitative rating of compliance of each local government.

The PI resources are for a specific utilization, and they cannot be used for other purposes. There is a normative restriction which establishes that the PI transfers should be exclusively destined to the achievement and sustainability of the PI goals.

⁵³ The PI has a local governments classification and provides a goals set for each category of local governments. Thus, every local government has a specific set of applicable goals for which it is evaluated.

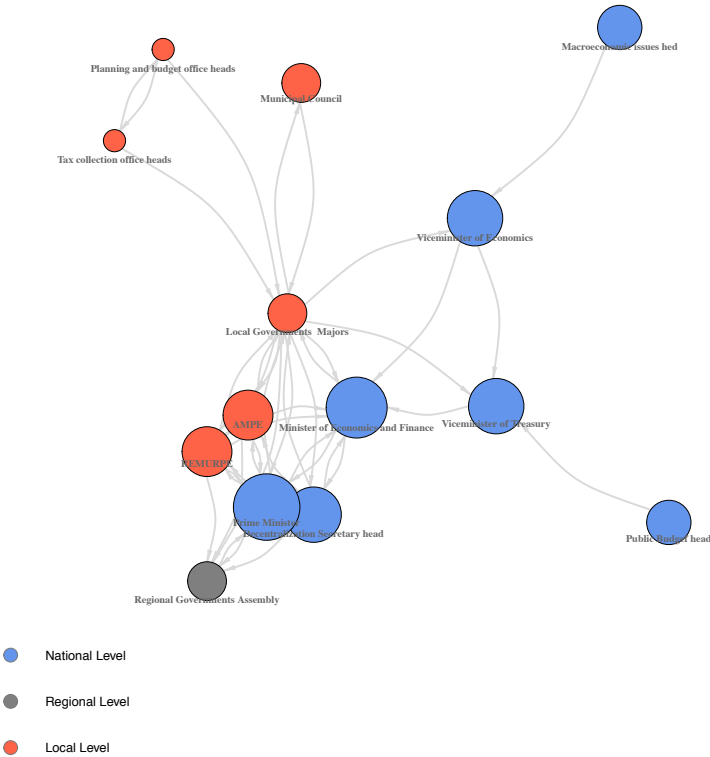
A.4. Stakeholder Analysis

I identify a total of 17 stakeholders related with the fiscal sustainability of Peru’s LGs. Those stakeholders are grouped in 4 general categories: local level, regional level, national level, and users⁵⁴.

At the local level, the main stakeholder is represented by the *mayors*. The mayor is the legal representative of the municipality, and she is its highest administrative authority. She has the responsibility to lead the LG’s executive component.⁵⁵ Supporting the mayor’s financial decision are the *tax collection head* and the *budget office head*.

According to the analysis, the *Prime Minister* is the Presidency of the Council of Ministers (PCM) maximum authority, and he is the most powerful stakeholder *at the national level*. He is in charge of proposing the government’s long run objectives. He coordinates national policies across sectors and ministries, in particular, those policies related to economic and social development. Furthermore, he formulates national policies in the process of decentralization and modernization of public administration.⁵⁶ Behind the Prime Minister is the *Decentralization Secretary head*. This authority is responsible for directing and driving the decentralization process, coordinating and articulating the General

Figure A.4.1. Fiscal sustainability stakeholders map



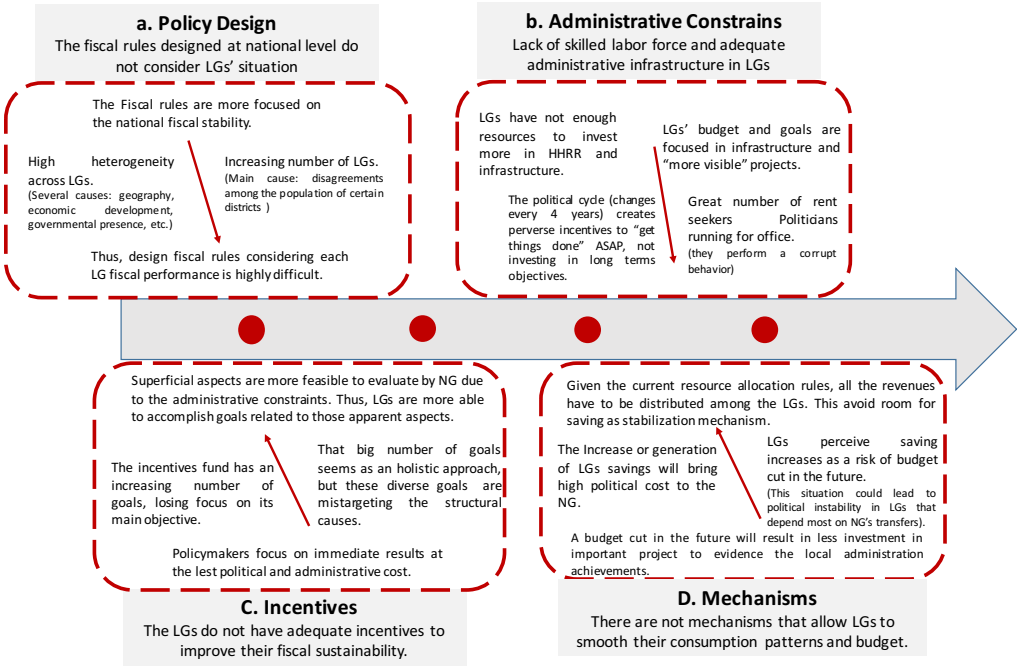
Note: The diagram’s design was based on the held interviews with authorities from: local governments, PCM, and MEF. The size of each circle corresponds to its level of relative power.

⁵⁴ In this document I going to focus only in the most important ones, leaving the whole analysis for the final version.
⁵⁵ Organic Municipalities Law - Peru
⁵⁶ Executive Power Organic Law.

Government Policy with regional and local governments. Moreover, he is in charge of technical assistance (capacity building) for regional and local governments.⁵⁷

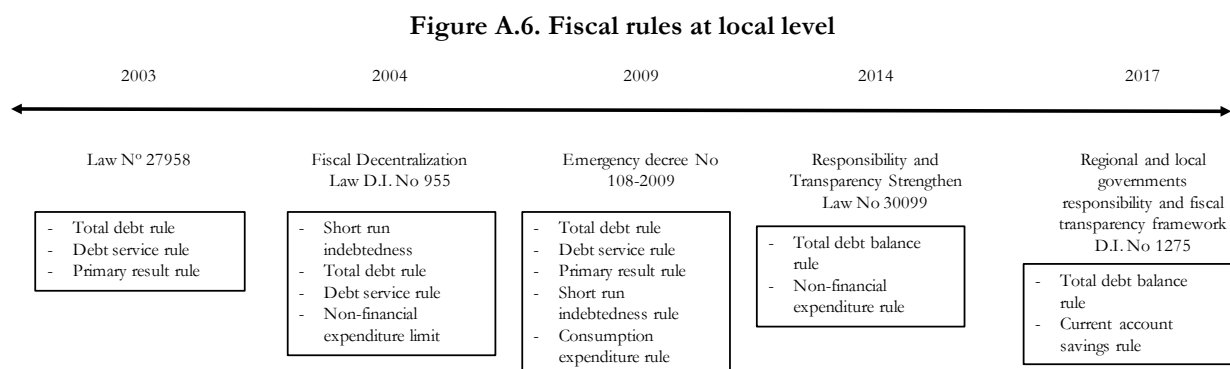
Another important stakeholder at national level is the *Minister of Economics and Finance*, the top authority in the Ministry of Economics and Finance (MEF). His main responsibility is to lead economic and financial national policy. Among his strategic objectives are fiscal and financial policy, public entity efficiency management, and strengthening the fiscal decentralization process. His two main sources of support are the *Vice-minister of Economics* and the *Vice-minister of Treasury*. The Vice-minister of Economics is the maximum authority in terms of macroeconomic policy, international economics, competition, productivity and contracting, government revenue policy, and fiscal decentralization. In the same way, the Vice-minister of Treasury is the authority in terms of public budgeting, treasury and debt, accounting, risk management and management of public resources.

A.5. Fishbone diagram



⁵⁷ Supreme Decree on Presidency of Council of Ministers functions and rules

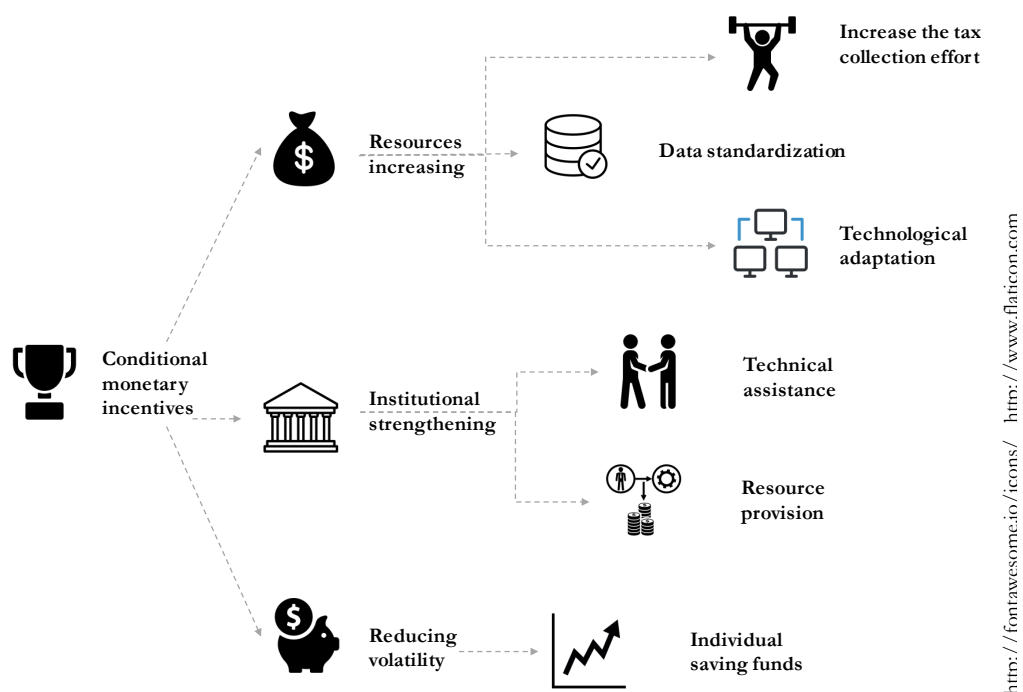
A.6. Local governments' fiscal rules evolution



Source: (Ganiko *et al.*, 2017)

A.7. Policy package graphical representation

Figure A.7.1. Promoting fiscal sustainability under the incentives scheme



Source: Author's elaboration

http://fontawesome.io/icons/ http://www.flaticon.com