THE MANAGEMENT OF THE BUDGET FOR RESULTS AND THE QUALITY OF EXPENDITURE IN LOCAL GOVERNMENTS

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ABSTRACT

This research had a non-experimental, longitudinal and correlational predictive design. We worked with the 83 local governments of the La Libertad Region in Peru, and used content analysis as a research technique. The diagnosis of budget management by results shows an execution level of 84% at the level of The Region under study compared to the execution reached by the 83 districts whose execution reaches only 66%. The quality of expenditure was measured, identifying the indicators that guide the improvement of the population's living standards, mainly in health and education, and observing significant improvements, although there is still a significant gap. It is confirmed that there is a direct and significant relationship between results-based budget management and the quality of spending; this is verified firstly with the level of global significance of the statistical model [Prob (F Statistic) = 0.0000], and also with the correlation coefficient of 0.69, mainly with the indicators of the Urban and Rural Sanitation programs, the Access and Adequate Use of Telecommunications Services Program, and finally, the RBS (Regular Basic Education) Learning Achievement Program.

KEYWORDS: Budget for Results; Budgetary Programs; Management; Quality of Life; Public Expenditure.

INTRODUCTION

Currently, there is an explicit agreement between the various actors in society that the Public Administration is a provider of great dissatisfaction, due to its actions defined by slow, expensive, corrupt, low or weak quality services or processes. That, in addition to being poorly designed, since they do not focus, much less cover the most pressing needs of the population, but also, as if this were not enough, there is a waste of human and financial resources that outrage everyone.

According to Schröder, (2013), in addition to this, the so-called good government is debated, which firstly seeks to understand what constitute the sources of the defects that exist and that degenerate into an inefficient, corrupt, wasteful public administration of resources. This administration uses the godfatherhood above the suitability for the full fulfillment of the public function. Therefore, what good government will seek is a representation of government and public administration that is competent to efficiently and effectively provide the nature of itself, that is, to achieve the ultimate goal, the satisfaction of the needs of the population.

By defining good governance, we can come to understand the requirements of New Public Management (from now on, NGP). According to Schröder, P (2013), in summary, the NGP has the following characteristics; a direction that is oriented to competition, achieving this through the separation of competences between those who finance and provide the service. Likewise, a focus on effectiveness, that is, the sum of efficiency and effectiveness in the fulfillment of tasks; a dissociation of the strategic direction from the operational direction; equal treatment between private and public service providers as part of a framework for the provision of services and global budgets; and lastly, an innovative approach by a management that is not only decentralized but is capable of adequately delegating.

In the framework of this new approach, Franciskovic (2013) refers that the mechanisms to specify the public budget and those processes oriented to its monitoring and evaluation become key elements to guarantee the efficiency and transparency of the public function. Furthermore, Franciskovic (2013), in turn, emphasizes that the key aspects that should guide the budgeting are, among others, the inclusion of spaces for participation, the bright and precise definition of concepts, procedures, instruments, and responsibilities. On the other hand, referring to accountability as the preventive effect of illegal and corrupt activities, which means to hold officials accountable for their actions; that is, what it is about, is to achieve honest management of public funds, but also, and most importantly, it is to be responsible for the fulfillment of goals and adaptation of policies to the needs of the population.

Thus, in 2007, Peru decided, within the framework of the NGP, to implement results-based

management, a model of administration of public resources focused on the fulfillment of the government plan's strategic actions to a specific period and with guaranteed resources. It is about implementing a results-based budgeting approach, the so-called Results-Based Budgeting, which according to the Ministry of Economy and Finance (from now on MEF), consists of the application of principles and techniques for the design (Budgetary Programs), execution, monitoring and evaluation of the budget relating goods and services (products) and changes generated in citizen welfare (results). Finally, what it is about is to redirect the direction and mission of each of the public bodies towards a management model that prioritizes results over procedures and where transparency in management predominates, only in this way will quality be achieved in the spending and the ultimate goal of social welfare, which we all want.

Within the framework of the new management of the public administration of and for quality, in Peru since 2007, the MEF decided to implement the Results Budget (PPR) progressively. For this reason, it is necessary to know whether this new way of managing public finances serves to promote the country's economic and social development and in what specific way it can contribute to overcoming the critical problems that overwhelm us.

Currently, a genuinely effective public management is one that achieves tangible achievements for their society; it is about surpassing simple inputs or products, which can produce ephemeral effects on the well-being of citizens; to have lasting impacts on the quality of life of the population. Carrasco (2015).

Concerning local governments, the budget granted to them is not focused on the benefits that spending or investment generate for the citizen. In recent years, local governments throughout the country and those of the La Libertad Region have increased their resources to meet their operating and investment expenses. However, different analyzes conclude that many social problems are not addressed in Peru.

The incremental characteristic of the traditional budget is observed from the analysis of information on local government spending in La Libertad. The Ministry of Economy and Finance, despite the design of results-based management, is only interested in knowing how much was spent, but it is not making an adequate evaluation of the result obtained in the population, there are no well-designed indicators to assess the impact on social spending. In recent years there has been a setback in this new approach in the country.

Local governments in Peru must commit to investing in improvement programs for essential services and health and nutrition; thus, it will be possible to improve the quality of life of the population. Significant social gaps must be prioritized in municipal budgets; the form of evaluation should not be restricted to reporting the totality of the expenditures executed, but what it is about is

focusing on how much the quality of life of the population, especially the most vulnerable, can be changed. Meeting budget targets, spending at best everything budgeted, is synonymous with efficiency, but does not address the quality of those goals. It is not analyzed whether how public spending is executed benefits the improvement of the quality of life levels of a community.

According to Prieto (2012), public spending must be carried out with measure and prudence, generating real added value to public services; In other words, management must focus on improving the quality of life of the population, especially the poorest. Management must focus on a new perspective focused on results, where results-based budgeting is its vital tool, and in our country, it has been implemented with four instruments: budget programs, monitoring, independent evaluations, and management incentives.

The contribution of this research lies in studying how local governments use public resources. For this purpose, it is proposed to analyze the operation of the Results-Based Budget and evaluate the quality of public spending carried out by the municipalities. This budget model's objective is to improve the quality of public investment and the quality of spending. At the central government level, it will serve to understand the correct allocation of public resources to local governments, while it will serve local governments to make decisions related to improving the quality of life of citizens. If its implementation and application are optimal, it will have a very positive impact on the inhabitants of the country's most deprived areas.

There is a clear need to deepen the application of the budget by results, to improve the effectiveness of financial and budgetary spending and to improve the quality of life of the population. For this reason, the following research problem is formulated: How is the management of the results-based budget related to local governments' quality of spending in the La Libertad Region? The objective is to analyze the relationship between the management of the Budget by Results and the quality of spending of local governments in the La Libertad Region. Likewise, diagnose the management of the budget by Results in the local governments of the La Libertad region, measure the quality of spending, identifying the indicators of the budget evaluation that guide the improvement of the living standards of the population in the local governments of the La Libertad region, determine the relationship between the management of the budget by Results and the quality of spending.

DEVELOPMENT

Brief conceptual reflection

Armijo & Espada (2014) state that in recent years the role of a State has been debated in which there is both the need to carry out activities for social well-being and the efficiency in their

achievement.

The most recent research related to measuring the effects of public spending goes through determining that with it, the stabilization, allocation, and distribution of resources is sought first, in addition to the role of the institutions and the rules that govern them; besides, there is talk of the possibility of privatization of some activities of the Public Administration. The majority conclusion is that public spending would have to be much less and more efficient than it is today.

However, how to make the Public Administration more efficient and effective. According to Afonso, Schuknecht, and Tanzi (2005), cited by Armijo & Espada (2014), who carry out an approach to measure the performance of the public sector, define performance indicators. The so-called process or opportunity, which measures the results obtained in the administrative, education, health and public infrastructure areas; and on the other hand, we have the indicators that measure the results of the complex interaction between the functioning of the market and the resources that the government adopts against it.

For the understanding of opportunity indicators regarding organizational performance, the indices that help us understand it are the sum of the corruption and bureaucratic formalities index, the trustor quality index of the Administration of Justice, and the size of the informal economy.

Regarding education, the measurement of both the quantity and the quality of it is followed through a series of parameters such as the Pisa test or other Organisation for Economic Co-operation and Development (OECD) indices. While, in health, performance goes through infant mortality and life expectancy rates, it is about measuring equal access and the quality of the services provided. In public infrastructure, the quality of transport and communication networks is measured, along with the coverage levels achieved.

In the second group of indicators, the measurement of the income distribution, economic stability, Gross Domestic Product (GDP) growth, inflation, and unemployment, identified in the economic literature, stand out.

In order to analyze the quality of public spending, a broad view is required, which does not only stop at a mere analysis of its level of composition, which is why Armijo, & Espada (2014) propose to analyze the quality of spending from a triple function. The first is the macro field; that is, there is macroeconomic stability; the objectives of economic policy are achieved. The second function is the achievement of allocative efficiency, that is, whether it is spent to achieve the effectiveness of prioritized public programs, and the third function is operational efficiency. This function means the capacity with which the assigned resources are used since the results are achieved when used promptly.

Within the framework of the NGP or Management for Results, Raymundo (2011) highlights that

the budget role is expected to be a more active role since public spending must necessarily be linked to the development objectives that are prioritized in government plans. The mechanisms that help this purpose go through a correct definition of strategic objectives that materialize in long-term and long-term expected results and impacts. Public production and results are the consequence of coherent budgetary program structures, and lastly, an essential mechanism is performance information, that is, accurately monitoring and evaluating policies and programs.

According to Tanaka (2011), performance information is critical in this new approach since connecting planning and action, efficiency, and quality of spending are achieved, which is seen in lasting results. However, this performance information has to be generated and supported by systems that do not leave room for error, in all its phases, from formulation, approval, execution, and evaluation or audit.

To implement the Results Budgeting, the traditional methodology must be changed to a methodology where the goods, services, or products that the entities provide to the community have greater participation within the areas that generate or produce them. For Ausejo, (2010) the Budget for Results must contemplate a series of principles and techniques to design, execute, monitor and evaluate, the set of interventions that have two clear guidelines; first, the goods and services provided to the target population, which are the products; and second, the changes that would be generated in the well-being that are the results, and that must be carried out with efficiency, effectiveness, and equity.

Robinson & Last (2009) point out that, in the Results Budget, decision-makers must methodically take into account the results supported with consistent spending. Therefore, it is essential to have information on both objectives and results. It is, therefore, a matter of evaluating programs with performance indicators in a simple way.

In order to achieve all of those mentioned above, it is essential to have the strategic part of managing the budget cycle, carry out a process of reviewing spending and thereby check spending priorities, but also check whether current programs are adequate. More they are adequate, efficient, and practical because, from this analysis, the programs can either be reduced or eliminated, in the worst case, or expanded if the information provided by the indicators shows this.

According to Carrasco (2015), in the Results Budget, the information on results at all stages of the budget cycle is extremely important, and more so in the preparation process, since with this the improvement in the prioritization of spending is guaranteed. With the information on the fulfillment of performance indicators, the executing entities are encouraged that the results they achieve will make them receive more resources.

Robinson & Last (2009) point out that there are a series of requirements to achieve a

successful implementation of the Budget for Results, which include developing simple performance indicators. They are a solid base of information on results, a programmatic structure for the budget, a modification of financial and accounting information systems, reduce traditional budget controls, in addition to the rigidity of spending, and finally redirect the action strategy of the Ministry of Economy and Finance towards the success of this new budget system.

According to the German Ministry of Economy and Finance & Cooperation implemented by the GIZ (2016), "... the Budget for Results is a public management strategy that links the allocation of resources to products and measurable results in favor of the population...(p.7)". Requiring the presence of a clear statement of the results to be achieved, the commitment to achieve them, who and what will be responsible, the procedures for generating information on results, products and institutional management tools, and finally the accountability. Through Law No. 29142, the 2008 Budget Law, the implementation of the Budget by Results begins with the approval of the first five Budgetary Programs, a number that has been progressively increasing, with the year 2015 having eighty-five (85) Programs Budgeting.

In Peru, the Results Budget is implemented through four instruments: First, the budget programs, which are the goods and services that the Public Administration is going to deliver to achieve a result in favor of the population. Second, the monitoring is the process of collecting and analyzing information on program performance, measuring compliance with objectives. Third, independent evaluations, which is to analyze the design, implementation, and improvement of a public intervention grounded in the program and the impact that is being achieved on the well-being of citizens. Finally, management incentives, which tries to grant a series of financial resources as long as results are obtained for improvements in municipal management.

Materials and Methods

The research design was non-experimental, longitudinal, and correlational predictive. To carry out this research, the total of municipalities or local governments of the La Libertad region as of 2015, which according to the National Institute of Statistics and Informatics (INEI) and Economic Transparency of the Ministry of Economy and Finance, were considered as population. They total 83. As it is a small population compared to the more than 1,800 municipalities at the national level, and considering the relevance of the study for the La Libertad Region, we worked with the total population. A census was made, that is, the management of the budget by results and the quality of spending in the 83 municipalities or local governments of the La Libertad Region were analyzed.

The analysis unit was made up of the municipalities or local governments of the La Libertad Region, in which the four instruments of the results-based budget were analyzed and how they are

being implemented in Peru. From its analysis and comprehensive understanding, conclusions were drawn, and its relationship was verified for and by the quality of spending for the direct benefit of the population. These four instruments, the object of analysis, are The Budgetary Programs, where they analyzed the reports of budgetary programs of the Ministry of Economy and Finance of Peru (MEF) and Reports of Progress and Consolidation of the budget by results in Peru - MEF. For the second Monitoring instrument, the reports on the monitoring of budget execution by budget programs, by the source of resources, by geographical domain, Reports of the National Institute of Statistics and Informatics (INEI), and the report of the Result-MEF indicators were analyzed. For the third instrument of the independent evaluations, the report on budget design and execution evaluations - MEF was analyzed, and for the fourth instrument of the impact evaluations (EI), and the management incentives, the report of impact evaluations were analyzed and carried out by the MEF and the Report of Result-MEF indicators.

The author of the present investigation carried out an analysis based on the econometric model of differences in differences, based on the reports of each PpR instrument already mentioned above. Finally, reports or comments from interviews to experts were also analyzed, taking into account the competencies of professionals in the subject, to extend the methodology in question.

Based on the objectives of the study and the proposed methodology, it was essential to base ourselves on the data bank. First of all is the Ministry of Economics and Finance of Peru (MEF) application that monitors the results-based budget, mainly from the performance indicators of the budget programs. On the other hand, we have the information provided by the portal of Economic Transparency - Friendly consultation of the Ministry of Economy and Finance of Peru (MEF). In this portal a compelling database is managed that performs monitoring of budget execution, corresponding to the Executing Units (UEs) of the National Government, Regional Governments and municipalities or Local Governments; fully identifying the source and category of financing for the different types of expenses and in addition to how the expense is structured. Given the nature of our study, it was necessary to additionally consult other statistical sources of the same cut, coming from different entities basically from INEI, such as surveys carried out by this body, such as ENAPRES[1], ENAHO[2], ENDES[3], ENEDU[4], among others.

In the development of the present investigation, both descriptive statistics were used, showing frequency distribution tables, percentages, and graphs. Likewise, the hypothesis formulated was

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[1] National Survey of Budgetary Programs
[2] National Household Survey on Living Conditions and Poverty
[3] Demographic and Family Health Survey
[4] National Survey of Educational Institutions

verified using inferential statistics to determine the relationship between the independent variable and the dependent variable.

Multiple regression analysis was used, a multivariable analysis technique in which a functional relationship will be established for the quality of spending and a series of independent or explanatory variables, which were defined based on the decomposition of the budget by results. Thus, the regression coefficients that determined the effect that the variations of the independent variables have on the behavior of the dependent variable were estimated. The multiple correlation coefficient gives the measure of the goodness of fit of the estimated function, and the determination coefficient, which is the square of the previous one, expresses the proportion of the variance of the dependent variable explained by the regression model. (Montero, 2011).

Finally, the impact evaluation was used, where it was sought to determine if the quality of spending changed due to some public policy intervention, in this case, due to the effects of the results-based budget. Generally, to determine said potential causality, it is necessary to know the intervention's counterfactual state. For this, this research used the econometric strategy based on the estimator Differences in Differences (DD). To achieve this, it was necessary to establish two periods marked before and after the implementation of results-based budget management, and two types of groups, which were called treaties and control; determining the characteristics or criteria that make this group position valid. With the establishment of all this and following the econometric and statistical rigor, the next step was to establish the model specification, detailing the best strategy for obtaining robust results. (Del Pozo, Guzmán y Pucarmayta, 2013).

Results

Regarding budget execution, the efficiency of execution of all budget programs implemented in the reference years was analyzed, as they were being implemented (it must be remembered that the PpR has been implemented gradually), it can be seen that, At the level of La Libertad, the region under study, the total accumulated expenditure from 2008 to 2015 is S /. 10,077 million, with a PIM[5] of S /. 12,008 million, which is equivalent to an almost 84% level of execution or efficiency, while comparatively at the level of the 83 local governments, the accumulated expenditure from 2012 to 2015 is S /. 2,134 million, while the PIM is S /. 3,217 million, equivalent to a 66% level of execution or efficiency. (See tables N ° 1 and N ° 2).

Regarding the budgetary execution of the programs chosen for the econometric analysis and

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[5] PIM or modified institutional budget: updated budget of the public entity as a result of budgetary modifications, both at the institutional level and at the programmatic, functional level, made during the fiscal year, starting from the PIA or initial opening budget.

multiple linear regression, and that were selected for their greater incidence in the study region and at the level of the Local Governments of the same. The program for reducing cost, time, and road insecurity in the land transport system achieves the percentage of execution or efficiency of spending with 72.1%, while the national programs for urban and rural sanitation reach 58.1% and 62.5% average efficiency respectively. The program for access and fair use of public telecommunications and information services registers, on average, only 58.1% of execution.

On the other hand, the articulated nutritional program registers a higher level of execution in 2014 with 83%. However, its total execution level is 69.2%, lower than the 75% barrier[6], which denotes a high risk of poor execution annual, observable with more considerable notoriety in 2013 (47%) and 2015 (59%). The EBR student learning achievements program, only in 2014, overcomes the barrier, reaching 79%, its average execution is 66.3%. The global execution average of the programs analyzed in this study is 66%, which puts these programs at high risk of poor execution, from 2012 to 2015. (See Table No. 3)

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[6] The Ministry of Economy and Finance (MEF) has established in the monitoring reports to the Budgetary Programs the value of 75% as a referential level of annual execution of the Budgetary Programs, indicating that the programs that do not reach said value would be at high risk of poor annual execution.

Table N ° 1. Execution of the Budgetary Programs (PP) in La Libertad Period 2008 –2015 (In millions of S /.)

Region	2008 PP[7]: 05			2009 PP: 09			2010 PP: 15			2011 PP: 24			PIM Accumulated	Accumulated expense	%
	N° PP[8]	PIM[9]	Expense	N° PP	PIM	Expense	N° PP	PIM	Expense	N° PP	PIM	Expense			
La Libertad	5	250	214	9	219	182	12	480	388	20	697	549	1 646	1 333	81%
Región	2012 PP: 60			2013 PP: 67			2014 PP: 73			2015 PP: 85			PIM Accumulated	Accumulated expense	%
	N° PP	PIM	Expense	N° PP	PIM	Expense	N° PP	PIM	Expense	N° PP	PIM	Expense			
La Libertad	38	1 728	1 403	46	2 476	2 039	54	2 827	2 393	64	3 331	2 909	10 362	8 744	84%
TOTAL													12 008	10 077	83.9%

Source: Economic Transparency – MEF

Table N ° 2. Execution of the Budgetary Programs (PP) in the Local Governments of La Libertad Period 2012 –2015 (In millions of S /.)

La Libertad	2012 PP: 38			2013 PP: 46			2014 PP: 54			2015 PP: 64			PIM Accumulated	Accumulated expense	%
	N° PP	PIM	Expense	N° PP	PIM	Expense	N° PP	PIM	Expense	N° PP	PIM	Expense			
Gobiernos Locales	26	572	342	31	896	565	29	946	678	30	803	549	**3 217**	**2 134**	**66%**

Source: Economic Transparency - MEF

[7] PP is all the budget programs that were held throughout the years implemented, at the national level (for Table N ° 1) and PP are all the budget programs that were held throughout the years implemented, at the regional level (for Table No. 2)

[8] N° PP is the number of budget programs that were implemented in a given year in the study region.

[9] PIM or modified institutional budget: updated budget of the public entity as a result of budgetary modifications, both at the institutional and at the programmatic, functional level, made during the fiscal year, starting from the PIA or initial opening budget.

Table N ° 3. Execution According to the Budgetary Program under study, at the Level of the Local Governments of La Libertad Years 2012 - 2015
(The figures are expressed in thousands of soles)

Budget Program	2012			2013			2014			2015			PIM Accumulated	Gasto Accumulated	%
	PIM	Expense	%	PIM	Expense	%	PIM	Expense	%	PIM	Expense	%			
Nutritional Articulated Program	64	48	75%	19	9	47%	15	12	83%	14	8	59%	112	77	69.2%
Access and Adequate Use of Public Telecommunications and Information Services	5	3	60%	0.6	0.3	49%	0.03	0.03	100%	0.4	0.2	45%	6	4	58.1%
Reduction of Cost, Time and Road Insecurity in the Land Transportation System	131	90	69%	151	99	65%	136	111	82%	95	69	73%	512	369	72.1%
National Urban Sanitation Program	73	49	67%	92	53	57%	76	35	47%	77	48	62%	318	185	58.1%
National Rural Sanitation Program	68	36	53%	155	92	60%	193	129	67%	149	96	64%	565	353	62.5%
EBR[10] Student Learning Achievements	123	65	53%	190	109	58%	176	138	79%	146	108	74%	635	421	66.3%
TOTAL	**464**	**291**	**63%**	**608**	**362**	**60%**	**596**	**427**	**72%**	**480**	**329**	**69%**	**2 148**	**1 409**	**66%**

Source: Economic Transparency - MEF

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[10] Regular Basic Education

Impact evaluation: differences in differences model (DID)

The first objective is to determine if the level of financial executives in the health function changed due to some public policy intervention, in this case, due to the effects of results-based budgeting and the establishment of so-called budget categories or budget programs.

Generally, to determine said potential causality, it is necessary to know the counterfactual status of the intervention. To do this, this research has favored what was developed by Del Pozo, Guzmán y Pucarmayta (2013) who, in his study, used the econometric strategy based on the Differences in Differences (DiD) estimator to estimate the impact of mining tax revenue on the variables of interest.

Following what was previously reviewed and with what the Ministry of Economy and Finance referred to, the results-based budget began in 2007 under the leadership of the DGPP (General Directorate of the Public Budget). It sought to strengthen the link between the resources allocated, and they obtained in favor of the population. In 2010, the Public Expenditure Quality Directorate was created, one of the five-line directorates of the General Directorate of Public Budget (DGPP), to promote, through instruments and methodologies, the Reform of the Budget by Results (PpR); having as main functions the conduction of the monitoring and evaluation system of the performance of public spending.

The methodological considerations to define the optimal period for evaluating the budget's progress by result imply a long process to obtain and generate information. This process consists of three moments. The first is to determine the most appropriate information source to quantify the value of each of the indicators generated; then, develop the calculation algorithm (programming syntax) that allows obtaining the estimated value of the indicator for a specified period. In the third moment, an evaluation of the progress of the indicators is carried out, in which the calculation of the indicator is developed, as well as that of other statistical data such as its standard deviation, coefficient of variation, and confidence intervals. On the other hand, at the Local Government level, resources were only assigned for S /. 158 million in 2008, while in 2009 and 2010, they received no recourse.

Therefore, considering all this, two marked periods of evolution have been established, the first one until 2009 (ex-ante period), and the second one since 2011, a period of constant measurements of the budget by results indicators. For the implementation of the DiD estimator, the identification strategy involves defining two different types of districts, the treated districts, and the control districts. For this study, several criteria were taken into account that gave us the best choice of the treatment group and the control group. The first criterion is the human development index (HDI) at the district level, in the La Libertad region, whose classification refers to a high HDI, for values of 0.80 and 1; an average HDI, for values from 0.50 to 0.799;

and a Low HDI of 0 to 0.499. With this criterion, we have 12 districts of the 83 that make up the La Libertad region, which have an HDI higher than 0.50, grouping them in the control districts group.

The other criterion that was taken into account is the classification carried out by the Directorate of Quality of Public Expenditure, and which it uses in the instrument of the budget for results of the Incentive Program for the improvement of Municipal Management, where it groups the districts into four classifications: Type A Municipalities, (Main districts in a particular region), Type B Municipalities; Municipalities that are not Main Cities and that have more than 500 VVUU (housing units), and finally the Municipalities that are not Main Cities and that have less than 500 VVUU (housing units); thereby confirming the districts treated with the above criteria; leaving 12 control districts and 71 treated districts defined.

Table N° 4. Districts according to HDI that are Control Group (GC)

DISTRICT	IDH	GROUP
Magdalena De Cao	0.5022	GC
Huanchaco	0.5050	GC
La Esperanza	0.5119	GC
Moche	0.5153	GC
Laredo	0.5197	GC
San Pedro De Lloc	0.5212	GC
Santiago De Cao	0.5256	GC
Pacasmayo	0.5302	GC
Casa Grande	0.5388	GC
Chocope	0.5438	GC
Trujillo	0.6694	GC
Victor Larco Herrera	0.7248	GC

Source: PNUD[11]- Perú

Based on the methodology and criteria specified above, following the econometric and statistical rigor, below, we present the econometric model specification, detailing the best strategy for obtaining robust results. Using a linear probability specification, the regression to estimate the impact of the distribution with the new results-based budget methodology, in the expenditure by the budget program, would be defined as follows:

$$GxP_{it} = \beta_{0\,it} + \beta_{tratamiento\,i} + \beta_{periodo\,t} + \beta_{DiD\,(tratamiento*periodo)it} + d_i + a_t + \mu_{it} \quad (1)$$

Where: GxP_{it} is the dependent variable spending by the budget program, $\beta_{0\,it}$ is the constant; $\beta_{tratamiento\,i}$ it is a dummy variable that takes the value 1 if the district belongs to the treatment group, defined according to the criteria described above ; $\beta_{periodo\,t}$ is a dummy variable that takes the value 1 for the years 2011, 2012, 2013, 2014 and 2015 ("after the policy"), and 0 for the years 2005, 2006, 2007, 2008, 2009 ("before the policy"),

$\beta_{\text{DiD (tratamiento*periodo)it}}$ is the estimator of the diff and diff, which results from operating $tratamiento * periodo$; d_i they are fixed effects[12] at the District level; a_t they are fixed effects of years; y μ_{it} is the error term. The Articulated Nutritional Program will be worked with this model. The empirical model proposed incorporates some relevant interactions to achieve the objective of this study in this sense, in particular, the parameter $\beta_{\text{DiD it}}$ captures the interaction for the districts with the highest income allocated according to the new methodology of the budget for results, before and after the cut-off period, previously defined, this seeks to estimate the direct impact of the results-based budget on spending by the budget program.

According to Del Pozo, Guzmán y Pucarmayta (2013) the critical assumption of the DiD estimator implies that the unobservable factors that determine exposure to treatment are constant over time. In the equations presented, the time dummies account for changes over time in the program's spending measures, in the districts exposed to such a budget, the fixed effects, and account for characteristics that are assumed to be invariant over time. On the other hand, for Montero (2011), it must be taken into account that in the estimations by DiD there is a potential problem of serial correlation, especially concerning the dependent variable () which would be positively correlated and where the variable treatment or exposure to some public policy changes minimal within the treatment or exposure unit over time, so it is necessary to correct the standard errors, by cluster and heteroscedasticity at the district level, said correction by the cluster of errors standard allows to account for the potential spatial correlation of districts exposed to shocks and conditions of similar variables.[13]

In Table N ° 5 presents the results of the impact of the new results-based budget policy on the expenditure executed in the articulated nutritional program, based on estimates by differences in differences. These results come from the estimates of the initial equation proposed. This was done first with a linear-linear specification, and then with the specification where the dependent variable is logarithm and the linear independent ones. In them, we find, first, the estimation by ordinary least squares and then include fixed effects at the district and year levels; in both cases, errors are corrected for heteroscedasticity and cluster at the district level. The DiD coefficient obtained for the first specification is a positive value, which denotes a

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[12] According to Montero (2011), that is to say; it supposes that the error(ε_{it} can be decomposed into two: a fixed part, constant for each district (r_i) and another random part that meets the OLS requirements (μ_{it}), that is ($\varepsilon_{it}=r_i + \mu_{it}$); which is equivalent to obtaining a general trend by regression, giving each individual a different point of origin (ordinates); so the same for a_t at the year level. The Fixed Effects model allows consistent estimates of the marginal effects of the regressors considered in the presented equation when they would have some degree of endogeneity.

[13] In each OLS regression carried out in the Stata econometric program, the "robust cluster (districts)" function will be added to achieve this end.

positive relationship with spending per program, that is, said coefficient explains the increase in spending per program (nutritional articulation) of the districts of the La Libertad Region, product the new results-based budget policy. This is reasonable considering the priority assigned to budget programs, one of the four instruments of the RPP in Peru. In the second specification, the coefficients are collecting the percentage[14] variation in spending by the program that was experienced as a result of the implementation of the policy, that is, in the case of OLS, the articulated nutritional program had a percentage increase of 895.8% (this result is obtained by performing the mathematical application of raising the mathematical constant "e" to the DiD coefficient of the MCO model and subtracting the unit, for which result multiply it by 100, obtaining a variation resulting from the implementation of the PpR), undoubtedly a notably higher increase to the ex-ante scenario of the implementation of the budget for results as a state policy.

Table N ° 5. Results of the model for the articulated nutritional program

Model	LIN-LIN		LOG-LIN	
	MCO	**EF**	**MCO**	**EF**
Treatment	-132977.1 (137002.1)	29591.27 (72196.62)	-1.704311 (1.206483)	-0.3759286 (1.17317)
Period	-77711.12 (105819.7)	-224131.2 (128933.4)*	-1.591794 (0.8424084)*	-0.7967583 (0.7612062)
DiD	278479.5 (116295.7)**	278479.5 (123034)**	2.298412 (1.074127)**	1.851401 (1.173151)
Constant	148817.7 (136318)	87241.86 (72749.29)	11.93932 (1.016592)***	10.97675 (0.7045595) ***
N	830	830	287	287

Notes: OLS = Ordinary least squares; EF = fixed effects; robust standard errors to heteroscedasticity.

Significance at 1% (***); significance at 5% (**) and significance at 10% (*)

Source: Own estimates in STATA

Analysis of budget management by results and quality of spending with multiple regression model

As is known, the multiple regression model is used to predict the behavior of a specific variable, that is, the dependent variable or criterion, based on other variables, the so-called independent or explanatory ones or also regressors or predictors. For the present investigation, a multiple regression analysis is developed at the level of all the regions of Peru, since the information available on the result indicators of the budget programs at the regional

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[14] To obtain said percentage variation, this mathematical operation must be performed: Variation % = $(e^{\beta_{DiD}} - 1)*100$

level is available. Configuring itself in a comparative and discussion scenario about the relation of the budget for results in crucial indicators, which seen in this field of action is equally extended to the provincial and district parts of the regions, and in this case, in addition to the comparison with descriptive statistics at the La Libertad Region level.

Y = Budget Executed in Budget Programs (PExP) is the dependent variable.

The model would be defined in:

$$PExP = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + \beta_{12} X_{12} + \beta_{13} X_{13} + \beta_{14} X_{14} + \beta_{15} X_{15} + \beta_{16} X_{16} + \mu_{it} \quad (2)$$

Where:

β_0 = constant; y $\boldsymbol{\beta_1 = \beta_2 = \cdots \beta_n}$ are all the coefficients.

X_1 = Efficiency % (Accrued/Pim)

$X_2 =$ Prevalence of Chronic Malnutrition in Children Under 5 Years (%)

$X_3 =$ Average Transfer Time with Means of Motorized Transportation to The District Municipality (Minute)

$X_4 =$ Sewer Coverage or Other Forms of Disposal of Urban-Excreta (%)

$X_5 =$ Water Coverage by Public-Urban Network (%)

$X_6 =$ Sewer Coverage or Other Forms of Disposal of Rural Excreta (%)

$X_7 =$ Water Coverage by Public-Rural Network (%)

$X_8 =$ Proportion of Population with Internet Access (%)

$X_9 =$ Proportion of Population with Mobile Phone Coverage (%)

$X_{10} =$ % Of Students of 2nd Primary at Satisfactory Level Reading Comprehension

$X_{11} =$ % Of 2nd Grade Students at Mathematical Satisfactory Level

$X_{12} =$ Human development Index (Hdl)

$X_{13} =$ Life expectancy at birth (years)

$X_{14} =$ Population with Complete Secondary Education (%)

$X_{15} =$ Years of Education (Population 25 and Over) (Years)

$X_{16} =$ Per Capita Family Income (Salary Level X Month)

$\mu_{it} =$ Error term

Formulation of the statistical hypothesis:

Ho: $\boldsymbol{\beta_1 = \beta_2 = \cdots \beta_p = 0}$

H1: $\boldsymbol{\exists \beta_j \neq 0}$ (At least one of the coefficients is non-zero)

According to the results of tables N° 6, 7, and 8, the Null Hypothesis is rejected, and the alternative hypothesis is accepted; therefore, the multiple regression equation is confirmed in:

$$\begin{aligned} \text{PExP} = {}& 1980029009 + 318968173X_1 + 506564319X_2 \\ & + 406553\,X_3 + 522760323X_4 - 881227\,X_5 - 413811771X_6 \\ & + 123398620X_7 - 463147424\,X_8 + 27108709X_9 + 801369869\,X_{10} \\ & - 872532343X_{11} + 4475613797X_{12} - 40561384X_{13} - 2989162X_{14} \\ & - 62305581X_{15} - 1316348\,X_{16} + \mu_{it}\ \ (3) \end{aligned}$$

The global significance level, considering a confidence level of 5%, and contrasting it from the value of the Prob (F Statistic), which for the specified model, corresponds to 0.0000. We see that it is less than the 0.05 level of significance, which would mean that the globally considered model is significant, which implies that it has the potential to explain the behavior of the dependent variable, in this case, the budget executed in budget programs.

There is a significant relationship between the variables under study, which is contrasted with the correlation coefficient of 0.69. The goodness of fit of the specified model is contrasted from the R-Squared statistic that corresponds to 0.4824, which means that it is almost 50% explanatory, in other words, the relationship between the 16 independent variables of the specified model, account for an average percentage of the behavior of the dependent variable, in this case, the budget executed in budget programs.

Direct and significant relationships can be observed with the independent variables of Sewage Coverage Or Other Forms Of Disposal Of Excreta-Urban (%); Sewer Coverage Or Other Forms Of Disposal Of Excreta-Rural (%); Proportion Of Population With Internet Access (%); % Of Students in 2nd Primary at Satisfactory Level Reading Comprehension; % Of Students In 2nd Primary At Mathematical Satisfactory Level; Life Expectancy at Birth (Years); which denotes a priori quality of spending by the new results-based budget methodology, in the Urban and Rural Sanitation programs; Program for Access and Adequate Use of Telecommunications Services, and in the EBR Learning Achievement Program.

Table N° 6. Variance analysis

	Degrees of freedom	Sum of squares	Squares average	F	Critical value of F
Regression	16	1.89346E+18	1.18341E+17	4.83458554	0.00000
Waste	83	2.03168E+18	2.44781E+16		
Total	99	3.92514E+18			

Source: Own estimates in STATA

Table N° 7. Regression Statistics

Multiple correlation coefficient	0.6945
Determination coefficient R ^ 2	0.4824
R ^ 2 adjusted	0.3826
Typical error	156454690
Observations	100

Source: Own estimates in STATA

Table N ° 8. Results of the multiple regression model

Notes: OLS = ordinary least squares; robust standard errors to heteroscedasticity. Significance at 1% (***);

Variables	Multiple linear regression model (LIN-LIN with MCO)
Efficiency% (Accrued / PIM)	318968173 (317203969)
Prevalence of Chronic Malnutrition in Children Under 5 Years (%)	506564319 (400092783)
Average Transfer Time With Means Of Motorized Transportation To The District Municipality (Minute)	406553 (409726)
Sewer Coverage Or Other Forms Of Disposal Of Excreta-Urban (%)	**522760323 (190877223)***
Water Coverage by Public-Urban Network (%)	-881227 (2400765)
Sewer Coverage Or Other Forms Of Disposal Of Excreta-Rural (%)	**-413811771 (233011927)***
Water Coverage By Public-Rural Network (%)	123398620 (110988873)
Proportion Of Population With Internet Access (%)	**-463147424 (249850204)***
Proportion Of Population With Mobile Phone Coverage (%)	27108709 (130492493)
% Of 2nd Grade Students At Satisfactory Level Reading Comp	**801369869 (469113174)***
% Of 2nd Grade Students At Mathematical Satisfactory Level	**-872532343 (520866428)***
Human Development Index (HDI)	4475613797 (3220952277)
Life expectancy at birth (years)	**-40561384 (12288596)***
Population With Complete Secondary Education (%)	-2989162 (3943289)
Years of Education (Population 25 and Over) (Years)	-62305581 (62573638)
Per Capita Family Income (Salary Level X Month)	-1316348 (869869)
Constant	**1980029009 (770008275)***

significance at 5% (**); significance at 10% (*)

Source: Own estimates in STATA

CONCLUSION

The diagnosis of results-based budget management shows a level of execution or efficiency at the La Libertad Region level, is not related to what Raymundo (2011) referred to, who highlights that the budget role is expected to be one more active role since public spending must necessarily be linked to the development objectives that are prioritized in government plans. Although it is observed that there are mechanisms that help this purpose, the level of

execution below the established range denotes a level that leads to the non-concretization of long-term and long-term expected results and impacts.

For Ausejo (2010), the Budget for Results must contemplate a series of principles and techniques to design, execute, monitor, and evaluate the set of interventions that have two clear guidelines. First, the goods and services provided to the target population, which are the products; and second, the changes that would be generated in the well-being that are the results, and that must be carried out with efficiency, effectiveness, and equity, something that we see is not happening, according to the results presented, for the local governments of La Libertad.

According to Prieto (2012), the current budget evaluation indicators do not consider the social benefits that must be provided to the population and are unknown to those who prepare a said evaluation. The indicators measure only the amount of the expense, but not their quality. Decision-making regarding public spending is not very efficient since spending is generally focused on capital expenditures and not on expenditures that improve the living conditions of the population.

In terms of coverage, significant progress has been made in the implementation of the main instruments of the reform, but its incidence in guiding the budget process towards a results-based approach is limited. Budget programs, and the monitoring of their performance, show deficiencies in their implementation and do not have adequate mechanisms to systematically use performance information in the budget process.

The quality of the expenditure was measured, identifying the progress made in other instruments of the results-based budget, as well as with respect to the evaluation of the impact of the results-based budget on the expenditure executed in the articulated nutritional program, based on estimates by differences in differences. The DiD coefficient obtained is a positive value, which denotes a positive or direct relationship with spending per program, that is, said coefficient explains the increase in spending per program of the districts of the La Libertad Region, as a result of the new budget policy by results; which is reasonable considering the priority assigned to the budget programs, one of the four instruments of the RPP in Peru.

There is a direct and significant relationship between managing the results-based budget, and the quality of spending, which is verified firstly with the global significance of the statistical model [Prob (F Statistic) = 0.0000] is also contrasted with the correlation coefficient of 0.69. Direct and significant relationships are observed with the variables of Sewerage Coverage or Other Forms of Disposal of Excreta-Urban (%); Sewer Coverage Or Other Forms Of Disposal Of Excreta-Rural (%); Pobl Ratio With Internet Access (%); % Of Students In 2nd Primary At Satisfactory Level Comp. Reader; % Of Students In 2nd Primary At Mathematical

Satisfactory Level; Life Expectancy at Birth (Years); which denotes that the management of the budget by results is significantly related to the quality of spending in the Urban and Rural Sanitation programs; Program for Access and Adequate Use of Telecommunications Services, and in the EBR Learning Achievements Program, basically.

These results are echoed by those found by Mejía (2014) who obtained that the Results Budget as a tool if it influences the improvement of Management Management of a local government that said researcher analyzed because it starts from an integrated vision of planning and articulation that seeks articulated actions based on the resolution of critical problems that affect the population, the same that have been verified in this study.

Our results also agree with what was found by Prieto (2012), who refers that the application of the Budget by results in the municipalities of Peru improves the quality of public spending since they are destined to favor the population's living standards. The way to improve the quality of life of the population is through the allocation of budgetary resources in strategic programs such as Improve chronic child malnutrition, Improve the quality of primary education, or Improve the provision of essential services to the population, aspects that have been demonstrated with solvency in the present investigation.

REFERENCES

Please refer to articles in Spanish Bibliography.

BIBLIOGRAPHCIAL ABSTRACT

Please refer to articles Spanish Biographical abstract.