

Taxation and public spending in Peru 2000-2018

Tributación y gasto público en el Perú 2000-2018

Manuel E. Pingo Zapata¹, Carlos A. Choquehuanca Saldarriaga², Sara H. Gonzales Agama³ y Alberto Valenzuela Muñoz³

¹Universidad Nacional del Callao, Perú.

²Universidad Nacional Mayor de San Marcos, Perú.

³Universidad Nacional Autónoma de Tayacaja Daniel Hernández Morillo, Perú.

ABSTRACT

In general, when the river flow increases, a scour phenomenon will occur, in which the substructure of the bridge, be it abutment and / or piers, will be affected, resulting in a partial or total collapse of the structure. All of the above is the key to achieving our research objectives, which is to carry out an evaluation and protection design against the hydraulic scour process of the Unocolla bridge in the city of Juliaca, Puno. The population will be the Unocolla bridge and the sample will be a substructure of the bridge. The method used is applied and its design is pure experimental, using quantitative methods, in which the research problem is described as realistic results. To determine the scour effects, topographic, hydrological and sedimentological information was collected to later carry out hydraulic modeling in the Hec-Ras program. Scour depths were determined in reference to pillars, determining in pillar 1 scour depth 1.2 m, in pillar 2 scour depth 2.46 m, in pillar 3 scour depth 1.2 m, in pillar 4 scour depth 1.2 m, for which the castling process is proposed as an alternative solution.

Keywords: *taxation, direct taxation, indirect taxation, contributions, public spending.*

RESUMEN

El objetivo de la investigación ha sido determinar la relación que ha existido entre la tributación y el gasto público en el Perú en el periodo 2000-2018.

Con ese propósito, recolectamos los datos sobre los indicadores de las variables del portal de las instituciones públicas, particularmente de la Superintendencia Nacional de Administración Tributaria y Aduanas (Sunat) y del Ministerio de Economía y Finanzas (MEF).

A partir de dichos datos, elaboramos una base de datos utilizando el SPSS Versión 25, que nos permitió describir la evolución de las variables (la estadística descriptiva) y realizar las pruebas de hipótesis correspondientes (la estadística inferencial).

La principal conclusión a que hemos arribado, con la investigación, ha sido que existe una relación significativa entre la tributación y el gasto público en el Perú en el periodo 2000-2018.

Palabras clave: *tributación, tributación directa, tributación indirecta, contribuciones, gasto público.*

Manuel E. Pingo Zapata. ORCID: <https://orcid.org/0000-0002-1265-7320> email: mepingoz@unac.edu.pe

Carlos A. Choquehuanca Saldarriaga. ORCID: <https://orcid.org/0000-0002-2734-5362> email: cchoquehuancas@unmsm.edu.pe

Sara H. Gonzales Agama. ORCID: <https://orcid.org/0000-0002-2734-5362> email: saragonzalesagama@unat.edu.pe

Alberto Valenzuela Muñoz. ORCID: <https://orcid.org/0000-0002-5653-6950> email: albertovm5050@gmail.com

I. INTRODUCTION

It is not new that states finance their current and capital expenditures through taxes imposed on citizens and companies residing in the country. And this has happened outside the economic policies that have been implemented from the classical, Keynesian or monetarist schools. The difference has been that, until the great depression of the last century, the State was conceived (under the auspices of the classical and neoclassical school) as a police state whose main tasks consisted of internal security and national sovereignty, everything else had to solve the market. The great depression showed that the market was not capable of achieving equilibrium in the economy, as J. B. Say's law of markets supposed. So, under Keynes's proposal, the idea was that the State, in addition to its gendarme function, should be a stabilizing state that would guarantee that the evolution of the economy would be less fluctuating. With this idea, it is estimated that world trade had a cumulative annual growth of 8% from the postwar period until 1970. But then, to the original problem of recession of the Great Depression, came the years of monetary instability and foreign indebtedness, whose explanation fell into the hands of the monetarist school whose mentor was Milton Friedman and whose solution proposals were synthesized in the consensus of Washington. Since the 1990s, Peru has experienced a time of economic and financial stability. The fact is that, with one or another school, the intervention of the State has meant a greater participation in the conformation of the internal production of the countries, to which Peru has not been exempt.

We want to analyze what has happened between 2000 and 2018 with the relationship between taxation (direct, indirect and through contributions) and public spending (current and capital) in Peru.

There is much research on the relationship between the proposed variables, both internationally and nationally.

At the international level, Podestá (2020), in his publication, set out to "make a detailed analysis of public expenditures according to the purpose of the policies — a functional classification of spending— in the countries of Latin America and the Caribbean, to contribute to base the regional discussion on the role of the State in the framework of the 2030 Agenda" (p. 8), reaching, among others, the conclusion that "the priority of the countries is to strengthen health systems and face social challenges and economic consequences of this pandemic, which leads to greater pressure on public spending." Although, "in the medium term and to follow the path proposed in the 2030 Agenda for the purpose of achieving the SDGs, the priority of governments should focus not only on protecting social spending, but also on revitalizing public investment" (p. 49).

Ramírez and López-Herrera (2019), in their article, investigated Mexican economic policy in the period 1980-2016, concluding that the government's spending policy was "both procyclical and countercyclical at different times of the study period, as suggested by previous literature. However, it was possible to see that the periods in which a procyclical policy prevails are shorter and shorter" (p. 426).

Aparco and Flores (2019), in their article, set out to "verify compliance with 'Wagner's Law' against the Keynesian hypothesis of public spending in Peru" (p. 53), concluding that the Keynesian hypothesis of spending is fulfilled "in the short term for the Peruvian economy; this is transcendent, since the custom of using public spending as a fiscal policy instrument is recommended and validated", but, in the long term, it would be convenient to "determine the factors or components of spending that generate greater impacts on growth, an issue that remains on the agenda for future research" (p. 69).

Brito-Gaona (2017), in his thesis, set out to determine "if an increase in taxes, public spending and, in general, a very interventionist state stimulates or discourages private investment a) first, in Latin America, b) second, in Europe and c) [in] Ecuador" (p. 10), reaching, among others, the conclusion that "If Latin America wants to increase its levels of private investment, our results suggest that one measure could be to reduce its taxes on the corporate income" (p. 135).

Uribe (2015), in his article, considers that the empirical evidence shows the difficulty of reducing public spending, since both at the individual country level, as well as on average, the statistics show that public spending reinforces its relative importance in the economy. composition of GDP.

Castañeda (2013), in his thesis, set out to analyze tax policy "what requires them to take into account, for example, how politically mobile each group or sector of society is, together with their expected level of income and the weighting that public spending has on their welfare" (p. 2), concluding that tax reforms depend on the political power of the government and the compensation received by taxpayers, in terms of social spending.

At the national level, Morel et al. (2020), in their working document, carried out a bibliographical review of taxation in Peru between the years 1980-2018, finding that during that period "the Peruvian State has taken gigantic steps to strengthen its tax institutions, its human resources and their administrative capacities", which has not prevented the existence of some "distortions of a political nature in the functioning of the tax system, mainly exceptions to the general regime that benefit specific sectors, with the subsequent costs that these distortions represent in terms of loss of collection tax" (p. 62).

Aro (2018), in his thesis, set out to "Analyze the incidence of public spending on economic growth and social indicators of the regions of Peru within the framework of the results-based budget, during the period 2012 - 2016" (p. 16), concluding that public spending has had a positive impact on economic growth in the regions of Peru.

Oliver (2016), in his thesis, set out to "Establish the relationship between tax collection for the period 2000-2013 and the improvement of the quality of life of the community of the La Libertad Region" (p. 8), reaching the conclusion that "tax collection from the period 2000 to 2013 has improved the quality of life of the community of the La Libertad Region" (p. 72).

Monge et al. (2009), in their working document, set out to "assess the effectiveness of social programs, by asking how progressive or regressive these are" (p. 9), reaching the

conclusion that "It is a fact that the management of PS studied is far from an ideal situation, even in the case of the SIS, whose evaluation yields better results compared to the nutritional programs: VL, DE and CP" (p. 85).

Aguas (2009) states that "taxes are levied on manifestations of wealth, which occur basically in three moments: - When it is obtained - When it is held - When it is spent" (p. 57).

Peralta (2015) maintains that the tax is "an instrument intended to defray public expenses" and "can constitute an important mechanism (...) to promote an adequate redistribution of wealth [and] to guide and induce certain behaviors considered highly desired for the welfare of the community, (...) for example the incentive of ecologically correct practices" (p. 97).

Macroconsult (2015), in its report, defines taxation as the "fruit of the implicit social contract where the State imposes a burden on economic agents to finance their functions". Naturally, this imposition "affects the decision-making of private agents and can influence the distribution of income." So that "A good tax system should minimize the distortions it generates and, at least, should not worsen the distribution of income" (p. 4).

Ríos (2020) considers that a "tax is set based on the existence of wealth that can be taxed; must, in turn, contain the elements so that only taxable wealth is deducted from each taxpayer, in accordance with their true ability to pay" so that "if the tax affects the wealth of the taxpayer, necessary to live with dignity, it is clear who was born to die; a political or budgetary condition can never precede a reason of justice and equity" (p. 94).

The Central Reserve Bank of Peru (2011) defines the tribute or tax as "an assessment whose compliance does not originate a direct consideration in favor of the taxpayer by the State" (p. 94).

The National Superintendence of Tax Administration and Customs (2020) defines the tribute as "a payment of money that the State demands in the exercise of its power of empire on the basis of the taxpaying capacity by virtue of a law, and to cover the expenses demanded by the fulfillment of its purposes" (p. 34).

Regarding public spending, Pacheco (2022) defines it as "the total spending made by the public sector, within the acquisition of goods and services and in the provision of transfers and subsidies" and adds that "In the market economy, the fundamental destination of public spending satisfies collective needs, while those for public consumption are produced solely with the intention of correcting market deficiencies".

The Ministry of Economy and Finance (2006) defines public spending as the "Set of expenditures that are made in the field of the Public Sector" (p. 26).

Hernández (2009) states that "public spending represents the cost of public sector activities that include the production and supply of goods and services and income transfers" (p. 80).

The formulated problem was the following: What relationship has existed between taxation and public spending in Peru in the period 2000-2018? Three specific questions

emerged from this general problem: 1. What relationship has existed between direct taxation and public spending in Peru in the period 2000-2018? 2. What relationship has existed between indirect taxation and public spending in Peru in the period 2000-2018? 3. What relationship has existed between contributions and public spending in Peru in the period 2000-2018?

In line with the formulated research problem, the objective of the research has been to determine the relationship that has existed between taxation and public spending in Peru in the period 2000-2018. And, in line with the specific questions, we established the following specific objectives: 1. Determine the relationship that has existed between direct taxation and public spending in Peru in the period 2000-2018. 2. Determine the relationship that has existed between indirect taxation and public spending in Peru in the period 2000-2018. 3. Determine the relationship that has existed between contributions and public spending in Peru in the period 2000-2018.

As a preliminary response to the formulated problem, we proposed the hypothesis that there has been a significant relationship between taxation and public spending in Peru in the period 2000-2018. And, as a preliminary answer to the specific questions, we proposed the following specific hypotheses: 1. There has been a significant relationship between direct taxation and public spending in Peru in the period 2000-2018. 2. There has been a significant relationship between indirect taxation and public spending in Peru in the period 2000-2018. 3. There has been a significant relationship between contributions and public spending in Peru in the period 2000-2018.

The research has a practical justification because we try to empirically prove the existence of a statistically significant relationship between taxation and public spending in Peru in the period 2000-2018.

II. METHOD

For research purposes, we have considered the following dimensions for taxation: direct taxation, indirect taxation and contributions. Direct taxation or direct tax "Taxes income or capital based on the principle of ability to pay, proportionally or progressively. It refers to both the tax on natural persons and on legal entities". Indirect taxation or indirect tax "Taxes production, traffic, spending and consumption. It is proportional, and its type does not depend on the personal characteristics of the taxpayer. The most common are those that tax sales, added value, the consumption of items considered luxury, transfers of movable or immovable property, etc." (Central Reserve Bank of Peru, 2011, p. 94). Contributions are taxes "whose obligation has as a generating fact benefits derived from the performance of public works or state activities" (p. 42).

For research purposes, we have considered the following dimensions for public spending: current spending and capital spending. Current expenses are "non-recoverable payments and include payroll expenses (active and unemployed personnel), interest payments on public debt, purchase of

goods and services, and other expenses of the same nature". Likewise, "current financial expense: refers to interest maturities recorded during the period" and "current non-financial expense: the rest of current expenses" (Central Reserve Bank of Peru, 2011, p. 88). And capital expenditures correspond to expenditures "on goods whose useful life is greater than one year". More specifically, it includes "expenses incurred in the acquisition, installation and conditioning of durable goods and transferred to other entities for the purpose of allocating them to capital goods. (...) Includes the net granting of loans" (Central Reserve Bank of Peru, 2011, p. 88).

To obtain the data, we have used the documentary technique and, as an instrument, the documentary file, which was applied to the indicators of the dimensions in the period 2000-2018. The data is published on the portal of the Ministry of Economy and Finance and the National Superintendence

of Customs and Taxation.

Once the data has been collected, we have created a database using the SPSS Version 25 software, to then carry out the descriptive and inferential statistical analysis.

To test the hypotheses, we have used the Pearson correlation test, taking into account that the data is quantitative. In all cases, for the estimates we assume a significance level of 5%.

The acceptance criteria for the tests were as follows:

If the asymptotic (two-sided) significance < level of significance, then the alternative hypothesis is accepted and the null hypothesis is rejected.

If the asymptotic (two-sided) significance > significance level, then the alternative hypothesis is rejected and the null hypothesis is accepted.

III. RESULTS

Descriptive results

Table 1 presents direct taxation and its components, during the period 2000-2018, expressed in millions of soles.

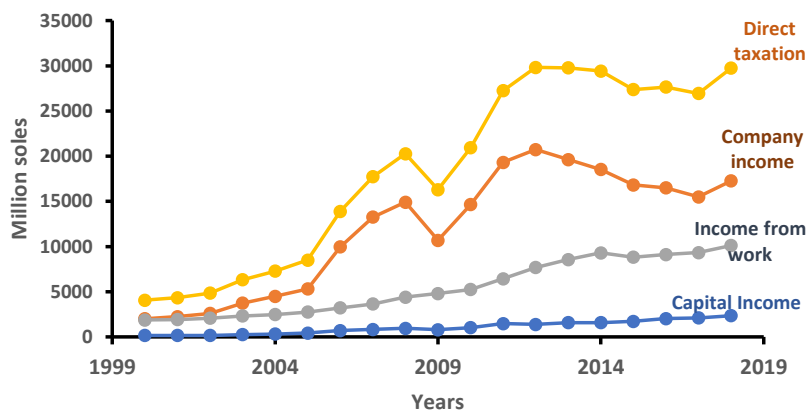
Table 1
Direct taxation 2000-2018 in millions of soles

Years	Capital Income	Company income	Income from work	Direct taxation
2000	174.23	2,022.62	1,875.19	4,072.04
2001	167.13	2,252.87	1,930.08	4,350.08
2002	166.00	2,603.81	2,081.13	4,850.93
2003	264.23	3,746.94	2,320.81	6,331.98
2004	323.80	4,495.73	2,473.79	7,293.32
2005	431.39	5,315.64	2,764.90	8,511.92
2006	707.20	9,963.34	3,218.56	13,889.09
2007	828.37	13,257.56	3,648.65	17,734.58
2008	953.30	14,920.70	4,402.85	20,276.85
2009	805.97	10,691.04	4,801.81	16,298.82
2010	1,029.05	14,651.59	5,255.85	20,936.49
2011	1,487.12	19,320.84	6,443.54	27,251.51
2012	1,388.65	20,744.21	7,691.47	29,824.33
2013	1,585.04	19,633.33	8,564.29	29,782.66
2014	1,587.39	18,535.86	9,306.77	29,430.01
2015	1,729.85	16,817.50	8,827.04	27,374.39
2016	2,039.47	16,495.77	9,119.34	27,654.58
2017	2,112.87	15,499.24	9,337.47	26,949.58
2018	2,351.61	17,267.86	10,122.28	29,741.75

Source: National Superintendence of Customs and Taxation

This table shows at least two things. First, that in most years, direct taxation and its components have been growing. Second, the components of direct taxation do not have the same importance, but the most important has been the tax obtained from companies, followed by that obtained from work and capital, as illustrated in Figure 1.

Figura 1 Direct taxation 2000-2018 in millions of soles



If we estimate the trend line of indirect taxation and its components, we will obtain the results shown in table 4.

Table 4
Indirect taxation trend line and its components

Concept	Trend line	Coefficient of determination
IGV	$y = -3E+06 + 1706.2x$	$r^2 = 0.9783$
ISC	$y = -108308 + 55.641x$	$r^2 = 0.6084$
Indirect taxation	$y = -4E+06 + 1761.8x$	$r^2 = 0.9783$

These results show that there is a direct relationship between indirect taxation and time and between its different components and time, with high levels of adjustment of the data to the regressions, expressed in the value of the coefficient of determination (ranging from 0.6084 to 0.9783), which is interpreted in the sense that all the data series (both the General Sales Tax, IGV, and the Selective Consumption Tax, ISC and indirect taxation), have had a clear growing trend during the period. 2000-2018. Table 5 presents the contributions and their components, which are the contributions to Essalud and the contributions to the national pension system (SNP), during the period 2000-2018, in millions of S/.

Table 5
Contributions 2000-2018 in millions of soles

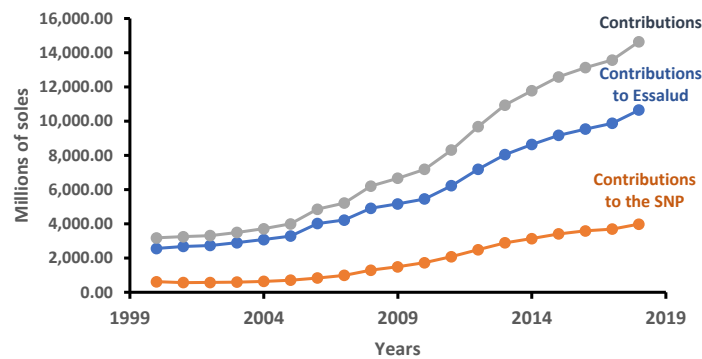
Years	Contributions to Essalud	Contributions to the SNP	Contributions
2000	2,561.52	622.59	3,184.11
2001	2,683.81	571.30	3,255.11
2002	2,738.16	580.65	3,318.81
2003	2,904.82	597.46	3,502.27
2004	3,081.54	640.66	3,722.21
2005	3,289.35	711.00	4,000.35
2006	4,023.63	837.91	4,861.54
2007	4,223.46	995.26	5,218.72
2008	4,914.89	1,296.42	6,211.32
2009	5,170.70	1,496.75	6,667.45
2010	5,459.03	1,730.06	7,189.09
2011	6,234.41	2,084.25	8,318.67
2012	7,200.50	2,493.57	9,694.08
2013	8,051.41	2,894.93	10,946.33
2014	8,640.19	3,140.75	11,780.94
2015	9,177.83	3,417.19	12,595.01
2016	9,545.14	3,591.74	13,136.88
2017	9,882.12	3,696.43	13,578.55
2018	10,659.14	3,986.92	14,646.07

Source: National Superintendence of Customs and Taxation

This table shows at least two things. In the first place, both the total contributions and their components have been growing during the analysis period. Second, that the contributions to Essalud have been much greater than the contributions to the SNP, as illustrated in Figure 3.



Figure 3 Contributions 2000-2018 in millions of soles



If we estimate the trend line of the contributions and their components (contributions to Essalud and contributions to the National Pension System), we will obtain the results shown in table 6.

Table 6

Contribution trend line and its components

Concept	Trend line	Coefficient of determination
Contributions to Essalud	$y = -969399 + 485.42x$	$r^2 = 0.9623$
Contributions to SNP	$y = -428454 + 214.19x$	$r^2 = 0.9349$
Contributions	$y = -1E+06 + 699.62x$	$r^2 = 0.9551$

These results show that there is a direct relationship between contributions and time and between the components of contributions (contributions to Essalud and contributions to the National Pension System) and time, with very high levels of adjustment of the data to the regressions, expressed in the value of the coefficient of determination (ranging from 0.9349 to 0.9623), which is interpreted in the sense that all the data series (both contributions to Essalud and contributions to the National Pension System, as well as contributions in general), have had a clear growing trend during the period 2000-2018.

La tabla 7 presenta la tributación, que es el resultado de sumar la tributación directa, la tributación indirecta y las contribuciones, ocurridas durante el periodo 2000-2018, expresadas en millones de soles.

Table 7 presents taxation, which is the result of adding direct taxation, indirect taxation and contributions, which occurred during the period 2000-2018, expressed in millions of soles.

Table 7

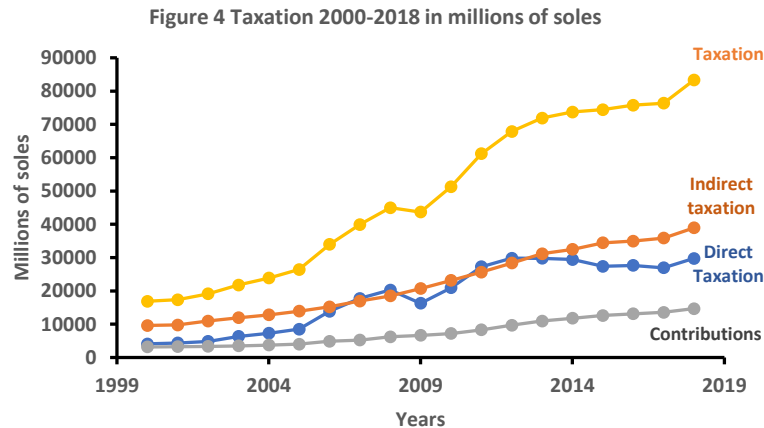
Taxation 2000-2018 in millions of soles

Years	Direct taxation	Indirect taxation	Contributions	Taxacion
2000	4,072.04	9,631.99	3,184.11	16,888.14
2001	4,350.08	9,760.48	3,255.11	17,365.68
2002	4,850.93	10,945.88	3,318.81	19,115.62
2003	6,331.98	11,940.59	3,502.27	21,774.84
2004	7,293.32	12,825.31	3,722.21	23,840.84
2005	8,511.92	13,914.30	4,000.35	26,426.57
2006	13,889.09	15,217.28	4,861.54	33,967.91
2007	17,734.58	16,953.88	5,218.72	39,907.18
2008	20,276.85	18,483.77	6,211.32	44,971.94
2009	16,298.82	20,692.34	6,667.45	43,658.60
2010	20,936.49	23,169.01	7,189.09	51,294.59
2011	27,251.51	25,636.08	8,318.67	61,206.25
2012	29,824.33	28,353.91	9,694.08	67,872.32
2013	29,782.66	31,168.95	10,946.33	71,897.94
2014	29,430.01	32,483.64	11,780.94	73,694.60
2015	27,374.39	34,451.33	12,595.01	74,420.73
2016	27,654.58	34,968.87	13,136.88	75,760.33
2017	26,949.58	35,841.05	13,578.55	76,369.19
2018	29,741.75	38,919.35	14,646.07	83,307.17

Source: From tables 1, 3 and 5



This table shows that taxation has been growing throughout the analysis period, with the exception of 2009, the year of the North American financial crisis, as illustrated in figure 4.



If we estimate the trend line of taxation, we will obtain the following results:

$$y = -8E+06 + 4147.3x$$

$$r^2 = 0.9715$$

Where: y is taxation

x is the time

r2 is the coefficient of determination

Dichos resultados muestran que hay una relación directa entre la tributación y el tiempo, con un elevadísimo nivel de ajuste de los datos a la regresión, expresado en el valor del coeficiente de determinación ($r^2 = 0.9715$), lo que se interpreta en el sentido que ha existido una tendencia creciente de la tributación durante el periodo 2000-2018.

These results show that there is a direct relationship between taxation and time, with a very high level of adjustment of the data to the regression, expressed in the value of the coefficient of determination ($r^2 = 0.9715$), which is interpreted in the sense that there has been a growing trend in taxation during the period 2000-2018.

Table 8 presents the government's current spending in the period 2000-2018, in millions of S/.

Table 8
 Current expenses 2000-2018 in millions of soles

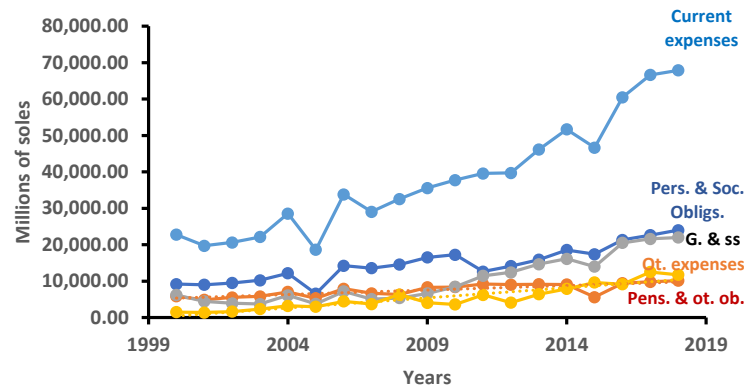
Years	Gastos corrientes				Total
	Personal and Social Obligations	Pensions and other social obligations	Goods and services	Other current expenses	
2000	9,176.58	5,854.91	6,213.46	1,522.63	22,767.59
2001	9,018.80	4,862.33	4,464.27	1,389.25	19,734.65
2002	9,501.64	5,530.90	3,947.92	1,663.05	20,643.51
2003	10,252.44	5,810.19	3,734.55	2,339.74	22,136.93
2004	12,176.66	7,065.12	6,103.24	3,220.83	28,565.85
2005	6,566.23	5,311.28	3,761.21	2,991.95	18,630.68
2006	14,255.32	7,923.95	7,210.66	4,445.97	33,835.90
2007	13,564.38	6,665.46	5,100.66	3,714.15	29,044.66
2008	14,544.49	6,304.46	5,375.30	6,318.19	32,542.44
2009	16,535.93	8,325.85	6,634.06	4,071.96	35,567.80
2010	17,270.53	8,392.69	8,466.20	3,606.75	37,736.17
2011	12,642.02	9,187.81	11,477.41	6,257.06	39,564.31
2012	14,131.43	9,049.74	12,417.90	4,117.58	39,716.65
2013	15,905.75	9,144.30	14,679.88	6,411.12	46,141.05
2014	18,559.59	9,097.11	16,127.72	7,892.97	51,677.38
2015	17,397.24	5,603.48	14,010.37	9,639.17	46,650.26
2016	21,346.01	9,442.84	20,534.22	9,161.13	60,484.20
2017	22,628.56	9,838.95	21,609.91	12,535.21	66,612.63
2018	23,994.88	10,144.40	21,988.32	11,766.87	67,894.46

Source: Ministry of Economy and Finance

This table shows that current government spending and its components, in general, have been growing during most of the analysis period, as illustrated in Figure 5.



Figure 5 Current expenses 2000-2018 in millions of soles



If we estimate the trend line of current government spending and its components (Personal and Social Obligations, Pensions and other social obligations, goods and services, other current spending), we will obtain the results shown in Table 9.

Table 9
 Current expenditure trend line and its components

Concept	Trend line	Coefficiente de determinación
Personal and social obligations	$y = -2E+06 + 768.08x$	$r^2 = 0.8099$
Goods and services	$y = -2E+06 + 1021.3x$	$r^2 = 0.8326$
Other expenses	$y = -1E+06 + 554.52x$	$r^2 = 0.8437$
Pensions	$y = -487870 + 246.6x$	$r^2 = 0.6252$
Current expenses	$y = -5E+06 + 2590.5x$	$r^2 = 0.8964$

These results show that there is a direct relationship between current expenses and time and between current expenses (Personal and Social obligations, Pensions and other social obligations, goods and services, other current expenses) and time, with high levels of adjustment of the data to the regressions, expressed in the value of the coefficient of determination (ranging from 0.6252 to 0.8964), which is interpreted in the sense that all the data series (both Personal and Social obligations, Pensions and other social obligations, goods and services, other current expenses, such as current expenses in general), have had a clear growing trend during the period 2000-2018.

Table 10 presents the capital expenditures of the government and its components (Physical Investment, Financial Investment and Other Capital Expenditures; it does not include the payment of external public debt), during the period 2000-2018, in millions of Soles.

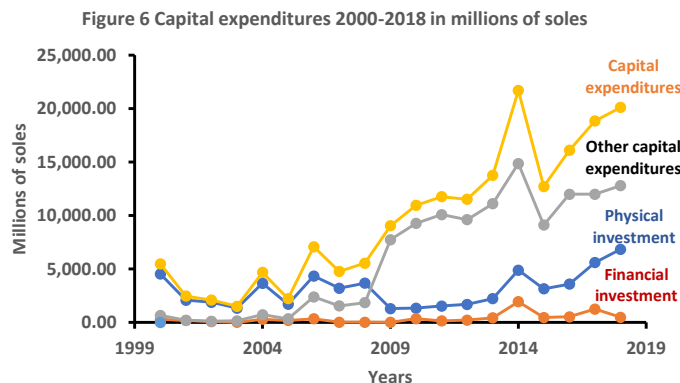
Table 10
 Capital expenditures 2000-2018 in millions of soles

Years	Gastos de capital			
	Physical investment	Financial investment	Other capital expenditures	Total
2000	4,536.19	283.93	663.83	5,483.94
2001	2,081.05	190.06	199.87	2,470.98
2002	1,890.98	89.34	108.87	2,089.20
2003	1,343.27	15.20	157.23	1,515.70
2004	3,664.01	291.62	723.85	4,679.48
2005	1,697.97	191.95	336.17	2,226.09
2006	4,346.38	341.91	2,392.72	7,081.02
2007	3,206.26	22.62	1,542.46	4,771.34
2008	3,671.62	17.45	1,855.88	5,544.95
2009	1,296.35	14.80	7,738.43	9,049.58
2010	1,333.60	354.56	9,265.65	10,953.81
2011	1,538.01	138.87	10,090.90	11,767.78
2012	1,688.15	220.59	9,615.94	11,524.68
2013	2,229.49	422.86	11,110.37	13,762.72
2014	4,894.35	1,937.43	14,863.02	21,694.81
2015	3,142.60	465.62	9,108.00	12,716.22
2016	3,589.90	525.57	11,990.51	16,105.98
2017	5,605.79	1,254.72	11,991.18	18,851.68
2018	6,839.93	485.36	12,793.68	20,118.96

Source: Ministry of Economy and Finance



This table shows that government capital expenditures and other capital expenditures have been growing, while physical investment and financial investment have had many fluctuations and have practically remained the same during the period of analysis, as illustrated in figure 6.



If we estimate the trend line of government capital expenditures and its components (Other capital expenditures, physical investment, and financial investment), we will obtain the results shown in table 11.

Tabla 11
Capital expenditure trend line and its components

Concept	Trend line	Determination coefficient
Physical investment	$y = -230413 + 116.23x$	$r^2 = 0.1634$
Financial investment	$y = -89299 + 44.64x$	$r^2 = 0.2828$
Other capital expenses	$y = -2E+06 + 877.8x$	$r^2 = 0.8506$
Capital expenditures	$y = -2E+06 + 1038.7x$	$r^2 = 0.8348$

These results show that there is a direct relationship between capital expenditures and time and between other current expenditures and time, with very high levels of adjustment of the data to the regressions, expressed in the value of the coefficient of determination (0.8348 and 0.8506, respectively), which is interpreted in the sense that these data series have had a clear growing trend during the period 2000-2018. The same has not happened with the physical investment that has a very low value for the coefficient of determination ($r^2 = 0.1634$) nor for the financial investment that has had a low value for the coefficient of determination ($r^2 = 0.2828$), which it is interpreted in the sense that these data series have not had a trend during the period 2000-2018.

Table 12 presents public spending, which is the result of adding the current expenses and the capital expenses that occurred during the period 2000-2018, expressed in millions of soles.

Table 12
Public spending 2000-2018 in millions of soles

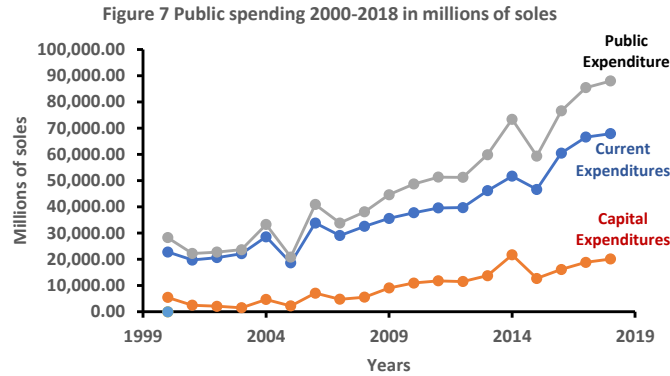
Years	Current Expenditures	Capital Expenditures	Public Expenditure*
2000	22,767.59	5,483.94	28,251.53
2001	19,734.65	2,470.98	22,205.62
2002	20,643.51	2,089.20	22,732.70
2003	22,136.93	1,515.70	23,652.63
2004	28,565.85	4,679.48	33,245.33
2005	18,630.68	2,226.09	20,856.77
2006	33,835.90	7,081.02	40,916.92
2007	29,044.66	4,771.34	33,816.00
2008	32,542.44	5,544.95	38,087.39
2009	35,567.80	9,049.58	44,617.38
2010	37,736.17	10,953.81	48,689.97
2011	39,564.31	11,767.78	51,332.08
2012	39,716.65	11,524.68	51,241.33
2013	46,141.05	13,762.72	59,903.77
2014	51,677.38	21,694.81	73,372.19
2015	46,650.26	12,716.22	59,366.48
2016	60,484.20	16,105.98	76,590.17
2017	66,612.63	18,851.68	85,464.31
2018	67,894.46	20,118.96	88,013.43

* Does not include debt payment

Source: From tables 8 and 10



This table shows that public spending has been growing for most of the analysis period, as illustrated in Figure 7.



If we estimate the trend line of public spending, we will obtain the following results:

$$y = -7E+06 + 3629.2x$$

$$r^2 = 0.8985$$

Where: y is public expenditure

x is the time

r² is the coefficient of determination

These results show that there is a direct relationship between public spending and time, with a very high level of adjustment of the data to the regression, expressed in the value of the coefficient of determination ($r^2 = 0.8985$), which is interpreted in the sense that there has been a growing trend in public spending during the period 2000-2018.

Inferential results

First, we will test whether there has been a significant relationship between direct taxation and public spending.

The hypotheses to be tested would be the following:

H0: There has been no significant relationship between direct taxation and public spending in Peru in the period 2000-2018.

H1: There has been a significant relationship between direct taxation and public spending in Peru in the period 2000-2018.

As indicated supra, we have used Pearson's correlation coefficient (r), both to establish whether the relationship between the variables is significant.

Table 13 presents the data on direct taxation and public spending in Peru in the period 2000-2018, which we are going to test.

Table 13
Direct taxation and public spending

Years	Direct taxation	Public expending
2000	4,072	28,252
2001	4,350	22,206
2002	4,851	22,733
2003	6,332	23,653
2004	7,293	33,245
2005	8,512	20,857
2006	13,889	40,917
2007	17,735	33,816
2008	20,277	38,087
2009	16,299	44,617
2010	20,936	48,690
2011	27,252	51,332
2012	29,824	51,241
2013	29,783	59,904
2014	29,430	73,372
2015	27,374	59,366
2016	27,655	76,590
2017	26,950	85,464
2018	29,742	88,013

Source: From tables 1 and 12



From the data in table 13, we have applied Pearson's r, using SPSS software, the results of which are shown in table 14.

Tabla 14

Prueba de hipótesis de la relación entre tributación directa y gasto público

		Tributación directa	Gasto Público
Tributación directa	Correlación de Pearson	1	,865**
	Sig. (bilateral)		0.000
	N	19	19
Gasto Público	Correlación de Pearson	,865**	1
	Sig. (bilateral)	0.000	
	N	19	19

** . La correlación es significativa en el nivel 0,01 (bilateral).

La tabla 14 muestra que la relación entre la tributación directa y el gasto público en el Perú en el periodo 2000-2018 ha sido significativa para un nivel de significación del uno por ciento, por lo tanto, rechazamos la hipótesis nula y aceptamos la hipótesis alternativa.

Table 14 shows that the relationship between direct taxation and public spending in Peru in the period 2000-2018 has been significant at a significance level of one percent, therefore, we reject the null hypothesis and accept the alternative hypothesis.

Second, we will test whether there has been a significant relationship between indirect taxation and public spending

The hypotheses to be tested would be the following:

H0: There has been no significant relationship between indirect taxation and public spending in Peru in the period 2000-2018.

H1: There has been a significant relationship between indirect taxation and public spending in Peru in the period 2000-2018.

Table 15 presents the data on indirect taxation and public spending in Peru in the period 2000-2018, which we are going to test.

Table 15

Indirect taxation and public spending

Years	Indirect taxation	Public spending
2000	9,632	28,252
2001	9,760	22,206
2002	10,946	22,733
2003	11,941	23,653
2004	12,825	33,245
2005	13,914	20,857
2006	15,217	40,917
2007	16,954	33,816
2008	18,484	38,087
2009	20,692	44,617
2010	23,169	48,690
2011	25,636	51,332
2012	28,354	51,241
2013	31,169	59,904
2014	32,484	73,372
2015	34,451	59,366
2016	34,969	76,590
2017	35,841	85,464
2018	38,919	88,013

Source: From tables 2 and 12

From the data in table 15, we have applied Pearson's r, using SPSS software, the results of which are shown in table 16.

Table 16
Hypothesis test of the relationship between indirect taxation and public spending

		Indirect taxation	Public spending
Indirect taxation	Pearson correlation	1	,956**
	Sig. (bilateral)		0.000
	N	19	19
Public spending	Pearson correlation	,956**	1
	Sig. (bilateral)	0.000	
	N	19	19

** The correlation is significant at the 0.01 level (bilateral)

Table 16 shows that the relationship between indirect taxation and public spending in Peru in the period 2000-2018 has been significant at a significance level of one percent, therefore, we reject the null hypothesis and accept the alternative hypothesis.

Third, we will test whether there has been a significant relationship between contributions and government spending.

The hypotheses to be tested would be the following:

H0: There has been no significant relationship between contributions and public spending in Peru in the period 2000-2018.

H1: There has been a significant relationship between contributions and public spending in Peru in the period 2000-2018. Table 17 presents the data on contributions and public spending in Peru in the period 2000-2018, which we are going to test.

Table 17
Contributions and public spending

Years	Contributions	Public spending
2000	3,184	28,252
2001	3,255	22,206
2002	3,319	22,733
2003	3,502	23,653
2004	3,722	33,245
2005	4,000	20,857
2006	4,862	40,917
2007	5,219	33,816
2008	6,211	38,087
2009	6,667	44,617
2010	7,189	48,690
2011	8,319	51,332
2012	9,694	51,241
2013	10,946	59,904
2014	11,781	73,372
2015	12,595	59,366
2016	13,137	76,590
2017	13,579	85,464
2018	14,646	88,013

Source: From tables 3 and 12

From the data in table 17, we have applied Pearson's r, using SPSS software, the results of which are shown in table 18.

Table 18
Hypothesis test of the relationship between contributions and public spending

		Contributions	Public spending
Contributions	Pearson correlation	1	,956**
	Sig. (bilateral)		0.000
	N	19	19
Public spending	Pearson correlation	,956**	1
	Sig. (bilateral)	0.000	
	N	19	19

** The correlation is significant at the 0.01 level (bilateral)

Table 18 shows that the relationship between contributions and public spending in Peru in the period 2000-2018 has been significant at a significance level of one percent, therefore, we reject the null hypothesis and accept the alternative hypothesis. Finally, we will test whether there has been a significant relationship between taxation and public spending.

The hypotheses to be tested would be the following:

H0: There has been no significant relationship between taxation and public spending in Peru in the period 2000-2018.

H1: There has been a significant relationship between taxation and public spending in Peru in the period 2000-2018.

Table 19 presents the data on taxation and public spending in Peru in the period 2000-2018, which we are going to test.

Table 19

<i>Taxation and public spending</i>		
Years	Taxation	Public spending
2000	16888	28,252
2001	17366	22,206
2002	19116	22,733
2003	21775	23,653
2004	23841	33,245
2005	26427	20,857
2006	33968	40,917
2007	39907	33,816
2008	44972	38,087
2009	43659	44,617
2010	51295	48,690
2011	61206	51,332
2012	67872	51,241
2013	71898	59,904
2014	73695	73,372
2015	74421	59,366
2016	75760	76,590
2017	76369	85,464
2018	83307	88,013

Source: From tables 7 and 12

From the data in table 19, we have applied Pearson's r, using SPSS software, the results of which are shown in table 20.

Table 20

<i>Hypothesis test of the relationship between taxation and public spending</i>			
		Taxation	Public spending
Taxation	Pearson correlation	1	,936**
	Sig. (bilateral)		0.000
	N	19	19
Public spending	Pearson correlation	,936**	1
	Sig. (bilateral)	0.000	
	N	19	19

** Correlation is significant at the 0.01 level (bilateral)

Table 20 shows that the relationship between taxation and public spending in Peru in the period 2000-2018 has been significant at a significance level of one percent, therefore, we reject the null hypothesis and accept the alternative hypothesis.

IV. DISCUSSION AND CONCLUSIONS

We agree with Podestá (2020) in the sense that, in the medium term, the priority of governments should focus not only on protecting social spending, but also on revitalizing

public investment, which will naturally increase public spending.

We also agree with Ramírez and López-Herrera (2019), since despite the neoliberal policies that are implemented, the state cannot be oblivious to the need to stabilize the economy in the manner of the Keynesian proposal.



We agree with the proposal of Aparco and Flores (2019), who, when evaluating Wagner's Law and the Keynesian proposal on the relationship between public spending and the Gross Domestic Product, suggest that the Keynesian idea is fulfilled in the short term, although it would be necessary to think about what happens in the long term regarding the evolution of said relationship.

We could not disagree with the conclusion of Brito-Gaona (2017) who suggests that if you want to increase private investment in Latin America, you should think about reducing the income tax on corporations, which is totally logical, more well, what would have to be evaluated is whether the benefit of more investments is offset by a reduction in their contributions to the state.

We agree with the work of Uribe (2015) that shows that public spending will tend to rise in all countries since the State has been assuming an increasingly leading role in the economy.

Castañeda's (2013) conclusion also seems reasonable to us, in the sense that tax reforms will be successful if taxpayers feel that their welfare improves.

It is also clear what Morel et al. (2020), on the improvement of its tax institutions, although there are still elements that distort this progress, such as the exceptions to certain legal and natural persons.

Aro (2018) considers that public spending has had a positive impact on the economic growth of the regions of Peru, which, extrapolated at the national level, is equivalent to giving public spending more than a stabilizing role to become a factor growth in the long term.

Oliver (2016) es más específico y sostiene que una mayor la recaudación tributaria en la Región

Oliver (2016) is more specific and argues that higher tax collection in the La Libertad Region has improved the quality of life in that region, which means that the money collected by the regional government is more effective than said money in private hands. to improve the quality of life of the inhabitants.

Monge et al. (2009) question the effectiveness in the management of social programs, in the old debate that public management is always less efficient than private management, which is not necessarily true.

In general, the glossed investigations do not question the increasing importance that the State has been acquiring in the economy of the countries, on which there is, indeed, sufficient empirical evidence. The question that we analyze is more oriented towards establishing whether the expenses made by the State are in line with its income or whether the State spends without taking into account its capacity to collect taxes and contributions.

Finally, we can conclude the following:

1. According to the results of the research carried out, it has been shown that there has been a significant relationship between direct taxation and public spending in Peru in the period 2000-2018.
2. According to the results of the research carried out, it has been shown that there has been a significant relationship between indirect taxation and public spending in Peru in the period 2000-2018.

3. According to the results of the research carried out, it has been shown that there has been a significant relationship between contributions and public spending in Peru in the period 2000-2018.
4. According to the results of the research carried out, it has been shown that there has been a significant relationship between taxation and public spending in Peru in the period 2000-2018.

V. REFERENCIAS

- [1] Aguas, E. (2009). Breve introducción a la tributación internacional sobre la renta. Anuario de la Facultad de Derecho, ISSN 0213-988-X, vol. XXVII, 2009, 55-70. <https://dialnet.unirioja.es/descarga/articulo/3232738.pdf>
- [2] Aparco, E., & Flores, A (2019). La hipótesis Keynesiana del gasto público frente a la Ley de Wagner: Un análisis de cointegración y causalidad para Perú. *Revista de Economía del Rosario*, 22(1), 53-73. <http://dx.doi.org/10.12804/revistas.urosario.edu.co/economia/a.7764>
- [3] Aro, R. (2018). Incidencia del gasto público en el crecimiento económico e indicadores sociales de las regiones del Perú en el marco del presupuesto por resultados, 2012-2016 [Tesis de licenciatura, Universidad Nacional del Altiplano]. http://repositorio.unap.edu.pe/bitstream/handle/UNAP/8589/Aro_Huallpa_Rosmery.pdf?sequence=1&isAllowed=y
- [4] Banco Central de Reserva del Perú (2011). *Glosario de términos económicos*. <https://www.bcrp.gob.pe/docs/Publicaciones/Glosario/Glosario-BCRP.pdf>
- [5] Brito-Gaona, L. F. (2017). *Inversión privada, gasto público y presión tributaria* [Tesis doctoral, Universidad de La Coruña]. https://ruc.udc.es/dspace/bitstream/handle/2183/20268/BritoGaona_LuisFelipe_TD_2018.pdf?sequence=2&isAllowed=y
- [6] Castañeda, V. (2013). *La economía política de la tributación en América Latina durante el periodo 1980-2010: los determinantes de su estructura y carga tributaria* [Tesis doctoral, Universidad Nacional de Colombia]. http://fce.unal.edu.co/media/files/documentos/Doctorado/Tesis/Tesis_Vctor_Castaeda.pdf
- [7] Hernández, J. L. (2009). *La composición del gasto público y el crecimiento económico*. *Análisis Económico* Núm. 55, vol. XXIV Primer cuatrimestre de 2009. <https://www.redalyc.org/pdf/413/41311453005.pdf>



- [8] Macroconsult (2015). Elementos de la recaudación en el Perú. <https://sim.macroconsult.pe/wp-content/uploads/2015/11/REM-09-2015.pdf>
- [9] Ministerio de Economía y Finanzas (MEF, 2006). Terminología básica de la administración financiera gubernamental. https://www.regionpiura.gob.pe/documentos/marco-legal/glosario_terminologia_basica_adm_financiera.pdf
- [10] Monge, A., Vásquez E., & Winkelried, D. (2009). ¿Es el gasto público en programas sociales regresivo en el Perú? Centro de Investigación de la Universidad del Pacífico; Consorcio de Investigación Económica y Social. Documento de Trabajo N° 84. <https://www.cies.org.pe/sites/default/files/investigaciones/es-el-gasto-publico-en-programas-sociales-regresivos-en-el-peru.pdf>
- [11] Morel, J., Trivelli, C., Vásquez, Y., & Mendoza, J. A. (2020). Poder y tributación en el Perú: un balance bibliográfico. Documento de Trabajo N° 269. Instituto de Estudios Peruanos, IEP. https://repositorio.iep.org.pe/bitstream/handle/IEP/1173/Morel_Trivelli_Vasquez_Mendoza_Poder-tributacion-peru.pdf?sequence=1&isAllowed=y
- [12] Oliver, N. (2016). La recaudación tributaria y su impacto en el desarrollo social de la Región La Libertad periodo 2000-2013 [Tesis doctoral, Universidad Nacional de Trujillo]. <https://dspace.unitru.edu.pe/handle/UNITRU/4018#:~:text=L a%20conclusi%C3%B3n%20m%C3%A1s%20importante%20a,de%20vida%20de%20la%20comunidad>
- [13] Pacheco, J. (2022). Gasto público (características, objetivo e importancia). Web y Empresas. <https://www.webyempresas.com/gasto-publico/>
- [14] Peralta, C. E. (2015). Tributación y derechos fundamentales los principios constitucionales como límite al poder tributario. reflexiones a partir de los ordenamientos jurídicos de Brasil y Costa Rica. Revista de Ciencias Jurídicas N° 138 (89-134) Setiembre-Diciembre 2015. <https://www.corteidh.or.cr/tablas/r35092.pdf>
- [15] Podestá, A. (2020). Gasto público para impulsar el desarrollo económico e inclusivo y lograr los Objetivos de Desarrollo Sostenible. Cepal; Agencia Española de Cooperación Internacional para el Desarrollo. https://www.cepal.org/sites/default/files/publication/files/46276/S2000670_es.pdf
- [16] Ramírez, E., & López-Herrera, F. (2019). El gasto público en México y su postura fiscal procíclica (1980-2016). El trimestre económico, 86(342), 405-435. E.pub 19 de junio de 2020. <https://doi.org/10.20430/ete.v86i342.682>
- [17] Ríos, G. (Coordinadora) (2020). Manual de derecho fiscal. Instituto de Investigaciones Jurídicas de la Universidad Nacional Autónoma de México. <https://archivos.juridicas.unam.mx/www/bjv/libros/13/6278/11a.pdf>
- [18] Sunat (2020). Glosario de términos tributarios sobre cultura tributaria y aduanera. <https://cultura.sunat.gob.pe/sites/default/files/2020-10/Glosario-de-Terminos-sobre-Cultura-Tributaria-y-Aduanera.pdf>
- [19] Uribe, R. (2015). El gasto público: una reducción bien difícil. Semestre Económico, 3(6). <https://revistas.udem.edu.co/index.php/economico/artic le/view/1418>