

# ECONOMIC GROWTH AND EMPLOYMENT IN THE LAMBAYEQUE REGION DURING THE PERIOD 2001-2015

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## ABSTRACT

*The objective of this work was to determine the impact generated by economic growth on employment in the Lambayeque Region, Peru, during the period 2001 to 2015. Using an econometric model with time series, we analyze the behavior of each of the variables and determine the type of relationship between them. By using the correlated descriptive method and the support of the EViews program led to establishing its intercausality. It was concluded that Lambayeque's economic growth is unstained, being sensitive to external factors and has had a positive but weak impact on employment, with increasing participation of women in the labour market in recent years, influenced by improvements in the level of education and changes in the structure of labour demand.*

**Keywords:** Economic Growth, Gross Domestic Product, Employment.

## INTRODUCTION

This research refers to economic growth and its impact on employment in the Lambayeque region: Economic growth expresses the increase in the production of final goods and services of an economy in a given period of time (one year) and that is measured due to the increase in the Gross Domestic Product (GDP), then when the GDP increases it means that there is an increase in the consumption of services such as electricity, gas, oil; increased investment, savings, etc. Consequently, it is assumed that there will be improvements in decent employment, but perhaps this will not happen, because companies seek to maximize their utility and employ as a strategy to increase productivity levels, deciding to use technology and not hire new personnel or demand the minimum.

Barbosa (2020), in his research compared the economic policy of Brazil from 2011 to 2019, stating that there is a reaction of the authorities to exogenous shocks during the analyzed period and the evolution of the economy, argued that the consequent loss of competitiveness international trade of the Brazilian manufacturing industry generated many political pressures, concluding that so far the economic result has resumed its growth in 2017, although at a slow pace, the unemployment rate began to fall, but it continues to be very high in historical comparisons and most of the new jobs generated that belongs to the informal sector, while inequality continues to increase since the recession of 2014-2016.

Bortz et al. (2020), pointed out that the various Kaleckian models have raised the interaction between economic growth and functional income distribution in open economies, but

they usually omit the effects exerted by the level of public and private external indebtedness on emerging economies and in development, such as those in Latin America, for this reason in their research they presented an expanded Kaleckian model that incorporates external indebtedness and allows identifying the transmission channels operating from exogenous factors that promote capital inflows and outflows towards key macroeconomic variables: type of nominal change, functional distribution of income, inflation rate and economic growth, the model was relevant to assess the macroeconomic context of countries and regions and other emerging and developing economies, they concluded that an economy open to capital inflows can suffer severe changes in participation of workers in income and economic activity.

Bosch et al. (2018), mentioned that Chile has had an economic difference in recent decades, however, it has implemented important pro-market modernization reforms, but it has an unexpectedly low female participation rate, so it misses an important source of economic growth. Various studies indicate that the cause of this low female labor participation in Chile is a low reconciliation between families and the labor market; econometric estimates indicated that there are significant gains if reconciliation increases, due to an increase in productivity rather than an increase in the job offer.

Fuentes & Mainar (2015), stated in their article that the social economy in the current situation is very important due to its ability to generate employment and to stimulate sectors or groups with special problems of economic development, which is why measuring the real scope, Both direct and indirect impact of the same on activity and employment is of utmost importance, for this reason they proposed multisectoral models, based on Social Accounting Matrices, the results showed that Social Economy companies have a capacity for job creation higher than other companies in Spain, especially in service sectors. This is increased by the high capacity to multiply the impacts and the significant employment ratio of these sectors (basically Services), expanded in the case of the Social Economy.

Acosta et al. (2015), analyzed the relationship between country risk and its macroeconomic determinants during the period 1998-2013 for Argentina, Brazil, Mexico and Venezuela, using a South Bayesian model with a change in the Markovian regime; they identified two regimes for each country. A first regime, related to periods of stability and favorable conditions in the international context and a second regime, which coincides temporarily with periods of both national and international disturbances, the results suggest that regime changes in the relationship of country risk with its determining factors they depend on the source of the uncertainty. If the source of uncertainty is associated with external events, such as international crises, the volatility of the financial markets becomes relevant, while the variables of solvency and liquidity are less important. If the triggers for the uncertainty are of internal origin, the latter are the key variables to explain the country risk.

The growth of the economy plays a key role for the generation of employment and its contribution to the reduction of poverty and equality. However, the impact of growth is more direct in countries with higher levels of economic development and a higher degree of wage earning, while in poorer countries a significant part of job creation arises from household needs and the corresponding pressure of the, which does not necessarily correspond to the dynamics of demand.

To analyze this problem, it is important to know that, in a diverse country like Peru, the economic impact at the regional level has differed in these, both in periods of growth and deceleration. The regions of Peru show very marked differences such as in their geographical extension, their demographic composition, in the type of economic activities they carry out, the

degree of territorial articulation for national and international trade, infrastructure they have, the purchasing power of their population to internal demand and others that mean strengths or weaknesses that contribute to its growth.

Lambayeque is the second smallest department in Peru (after Tumbes), with a population that has grown five times in almost 70 years and is the economic confluence point for products from the jungle and northern highlands of the country; it has shown great commercial dynamism in the last 20 years, reaching economic growth figures of over 10% (2007) and positioning its contribution to the national GDP at 3.44%.

This Region leads the regional competitiveness index in the north of the country, according to the measurement carried out by the National Competitiveness Council (CNC) corresponding to the years 2014/2015 compared to the years 2013/14, this indicator qualifies Lambayeque as one of the most competitive regions, occupying the top third of the list and the tenth place of the regions that contributes the most to the national Gross Value Added (GVA), reaching a sustained economic growth of 6.7% per year in the five-year period 2011-2015.

For several consecutive years its GDP has exceeded the national average, reaching its highest growth in 2012 with 9.5% vs 6.1%; Lambayeque develops mainly the activities of manufacturing, agriculture, commerce and construction; undoubtedly, it is one of the most important in terms of agro-export, but with an insufficient number of trained workers for the agro-export sector.

According to Vela (2015), periods of contractions in the GDP of the Lambayecana economy are always associated with climatic phenomena, it does not suffer many impacts from fluctuations in the prices of mining commodities that always affect the Peruvian economy in general, but it is highly vulnerable to natural phenomena, either due to excess such as the El Niño - FEN Phenomenon or in other cases with even worse consequences for the GDP in the event of droughts.

Regarding the labor force, in 2015 of the total EAP, 96.8% were working; While the unemployment rate was 3.2%, this rate essentially involves a greater number of men between the ages of 14 to 29 years and, mainly, people who only have secondary studies; Although it is true that a high percentage of the EAP is employed, it is a concern that only 19% (approximately) have a formal job.

## MATERIAL AND METHODS

The present research work was descriptive, causal and applied; non-experimental, employing analytical, historical and statistical methods. The study sample is represented by the annual historical series of GDP and employment for the Lambayeque region during the period 2001 to 2015.

## RESULTS

During the study period, the GDP and the population of Lambayeque present ascending figures, consequently, there were changes in the GDP per capita registering an increase of 87% (\$ 1,542.00), reaching the sum of 2,883.00 in 2015 USD and which is equivalent to 46.3% of Peru's per capita GDP, achieving an average annual growth rate of 5.6%. This growth has not been sustainable and when evaluating it by five-year period, it turns out that during the first study period, the rate was 4.1%, between 2006-2010 it exceeded 8%, while in the last period it was

4.9% Table 1.

In 2007, 2008 and 2012, the real GDP of Lambayeque reported the highest growth rates and even higher than that of the national economy, despite economic difficulties in the international environment such as the financial crisis in the United States, collapse in international prices of our main export products, but with a dynamism in the country's domestic demand, well-contained inflation expectations and a slow recovery in the world economy.

Year	Lambayeque PBI Real	Population (Thousands of inhabitants)	PBI Per Capita	PBI Per Capital Percentage change
2001	5 027 110	1 099.25	4 573.24	1.7
2002	5 273 438	1 113.08	4 797.33	4.9%
2003	5 484 376	1 126.12	4 989.22	4.0%
2004	5 459 696	1 138.65	4 966.77	-0.4%
2005	5 901 931	1 150.98	5 369.08	8.1%
2006	6 220 636	1 163.00	5 659.01	5.4%
2007	6 880 023	1 112.87	6 258.86	10.6%
2008	7 512 522	1 185.68	6 834.26	9.2%
2009	7 910 362	1 196.66	7 196.18	5.3%
2010	8 449 884	1 207.59	7 686.99	6.8%
2011	8 937 792	1 218.49	8 130.85	5.8%
2012	9 782 672	1 229.25	8 899.45	9.5%
2013	10 138 533	1 239.88	9 223.18	3.6%
2014	10 354 787	1 250.35	9 419.91	2.1%
2015	10 806 386	1 260.65	9 830.73	4.4%

**Source:** BCR-INEI

Of the 635,700 people making up the economically active population existing in the Lambayeque region in 2015, a number of 615,700 (96.8%) are employed in a situation and 20,000 are unemployed. The employed population performing through adequate jobs or underemployment; of the total employed, 308,500 people have a suitable job and 307,200 people were underemployed. It is important to emphasize that of the employed population in 2015; approximately 8 out of 10 workers belong to the informal sector.

During the period under study, the economically active and employed population reached increases of 33.3% and 35.5% respectively; obtaining the latter, an annual growth rate of 2.9%. For its part, adequate employment grew by 6.95% and underemployment decreased by -0.59%.

Likewise, the Occupied EAP of Lambayeque has oscillated between 91.6 and 96.9% of the total EAP and when evaluating its average annual growth per five-year period, it turns out that in the first it grew 3.62%, in the second 3.97%, incorporating in this period of time the largest number of workers (88,300) and in the last stage a reduced 0.22% was reached, equivalent to 5,493 people; for its part, the unemployed population decreased by 2.5 percentage points, decreasing at an average annual rate of 0.83%, with an approximate figure of 20,000 unemployed in 2015 Table 2.

Year	2001	2015	Average annual increase 2001-2015 (Thousands of people)	Average annual growth rate(%) 2001 - 2015
Total PEA	476.9	635.7	11.3	2.07
Working population	454.4	615.7	11.5	2.19
Suitable employment	120.4	308.5	13.4	6.95
Underemployed	334.0	307.2	-1.9	-0.59
Unemployed Population	22.5	20.0	-0.2	-0.83

**Note:** The Economically Active Population with adequate employment is made up of those who work 35 or more hours a week and receive income above the minimum reference. On the other hand, the underemployed population can be visible and invisible, the first refers to working less than the duration of a normal working day; being in this situation involuntarily and; look for additional work or be available to work longer hours. Invisible underemployment is when the person normally works 35 or more hours a week, but her income is less than the minimum reference income.

**Source:** Prepared with data from INEI and BCR. Own elaboration

The numbers shown in Table 3 reflect that the labor force of the Lambayeque region, during the period analyzed (2001-2015) has been experiencing important changes in their academic training; the participation of the employed population with higher education (non-university and university) increased from 16.9% in 2001 to 27.7% in 2015, in a lesser proportion (3.6 percentage points) the employed population with secondary education grew. In contrast, the participants with primary education decreased by 13.7 percentage points compared to what was registered in 2001 (39%). This scenario reflects an important evolution of people for having a profession to improve their income, being observed in the labor market shortages and a higher price of services for the home offered by people of the female sex.

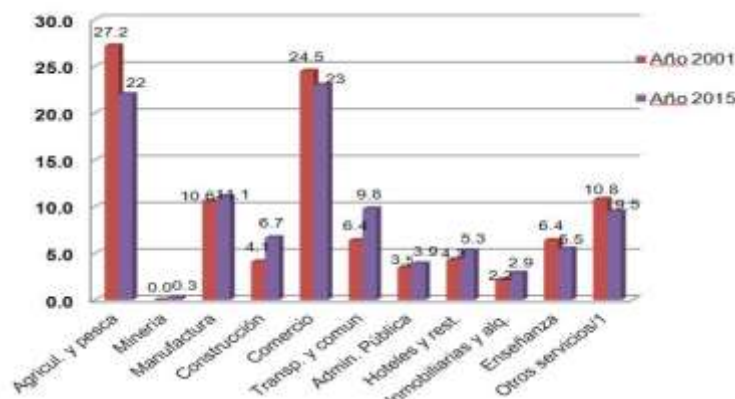
Year	At the most Primary	Secondary Education	Higher
2001	39.0	43.4	16.9
2002	32.9	47.7	19.3
2003	34.8	46.5	18.8
2004	35.7	43.6	20.6
2005	35.1	44.5	20.4
2006	33.2	45.0	21.8
2007	38.1	41.1	20.9
2008	35.0	43.8	21.3
2009	35.0	43.3	21.7

2010	34.9	42.9	22.2
2011	33.5	45.0	21.5
2012	31.9	42.8	25.4
2013	30.1	45.3	24.6
2014	28.4	45.2	26.5
2015	25.4	47.0	27.7

**Source:** Prepared with data from INEI and BCR. Own elaboration

The participation of the employed population in the period 2001-2015 by branches of activity has been modified. In 2015, the Agriculture and Fishing (22%), Commerce (23%), Education (5.5%) and other services (9.5%) sectors absorbed a lower percentage of employed persons than those registered in 2001, Agriculture and Fishing (27.2%), Commerce (24.5%), Education (6.4%) and other services (10.8%). On the other hand, there are the sectors that increased their participation such as Manufacturing, Construction, Transportation and Communications; Public Administration, Hotels and Restaurants and Real Estate and Rentals. It should be noted that only about a third of the employed population is affiliated with social security and pension insurance.

The (Figures 1-3) report a significant impact on traditional activities in the Region such as agriculture and fishing, which fell by more than five percentage points.

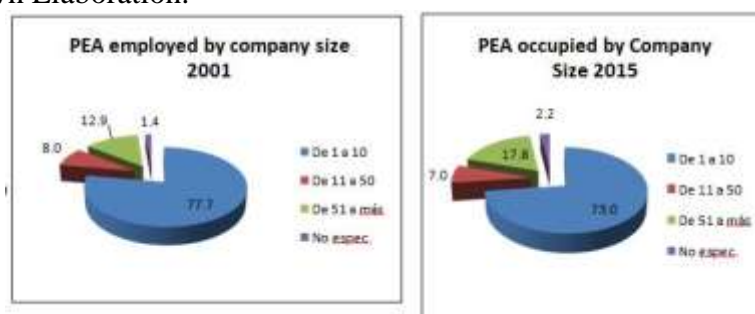


**FIGURE 1**

**LAMBAYEQUE: PERCENTAGE STRUCTURE OF THE EMPLOYED POPULATION, ACCORDING TO BRANCHES OF ACTIVITY, 2001 AND 2015**

**Note:** Other Services/1 includes: Electricity, gas and water, financial intermediation, health and social service activities, other community, social and personal service activities.

**Source:** INEI- Own Elaboration.

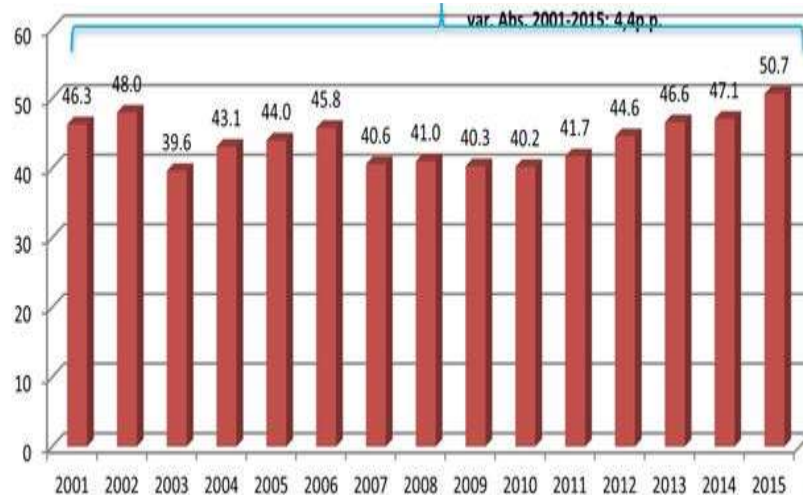


**FIGURE 2**

**LAMBAYEQUE: EMPLOYED EAP ACCORDING TO COMPANY SIZE YEAR 2015**

**Note:** In 2015, a greater participation of the employed population in companies with 51 to more workers is observed, going from 12.9% in 2001 to 17.8% in 2015. In the case of companies with 1 to 10 workers (micro-enterprises), decreased from 77.7% to 73.0%; in companies of other sizes the changes are not significant.

**Source:** National Institute of Statistics and Informatics I- Own Elaboration.



**FIGURE 3**

#### **PARTICIPATION OF THE SALARIED EMPLOYED POPULATION 2001-2015**

**Note:** The available information allows us to show that during the study period (2001-2015) the participation of the salaried population (employees and workers) increased by 4.4 percentage points. It is important to note that in the last year of the research period it reached its maximum level, exceeding the national average (47.1%).

**Source:** National Institute of Statistics and Informatics-Own Elaboration.

According to the results of the estimation of the error correction vector econometric model, it was found that the economic growth of the department of Lambayeque has had a positive impact on the level of employment. Faced with an increase of 1.0% in economic growth in Lambayeque, the level of employment has grown by 0.21%. Likewise, the goodness of fit projected a result of 0.6518, which means that 65.18% of the variable GDP per capita of Lambayeque explains the behavior of employment Table 4.

<b>Table 4</b>		
<b>MISTAKE CORRECTIO ESTIMATES</b>		
Vector Error Correction Estimates		
Date: 12/27/19	Time: 10:52	
Sample (adjusted): 2004	2015	
Included observations: 12 after adjustments		
Standard errors in ( ) & t-statistics in [ ]		
Cointegrating Eq:	CointEq1	
LNPEAOL(-1)	1.000000	
LNPBIP(-1)	-0.209088	
	(0.05042)	
	[-4.14657]	
C	-11.41113	
Error Correction:	D(LNPEAOL)	D(LNPBIP)
CointEq1	-0.755119	0.055760
	(0.25189)	(0.39533)

	[-2.99784]	[ 0.14105]
D(LNPEAOL(-1))	-0.060937	-0.144568
	(0.15859)	(0.24889)
	[-0.38425]	[-0.58084]
D(LNPEAOL(-2))	-0.029826	0.157491
	(0.16275)	(0.25542)
	[-0.18327]	[ 0.61659]
D(LNPBIP(-1))	0.265936	0.161445
	(0.25859)	(0.40585)
	[ 1.02840]	[ 0.39780]
D(LNPBIP(-2))	0.627190	0.056866
	(0.27730)	(0.43521)
	[ 2.26177]	[ 0.13066]
C	-0.033196	0.043905
	(0.02546)	(0.03996)
	[-1.30393]	[ 1.09883]
R-squared	0.651753	0.168954
Adj. R-squared	0.361547	-0.523585
Sum sq. resids	0.003467	0.008539
S.E. equation	0.024037	0.037725
F-statistic	2.245827	0.243963
Log likelihood	31.86965	26.46090
Akaike AIC	-4.311608	-3.410150
Schwarz SC	-4.069155	-3.167696
Mean dependent	0.016055	0.056519
S.D. dependent	0.030082	0.030563
Determinant resid covariance (dof adj.)		5.92E-07
Determinant resid covariance		1.48E-07
Log likelihood		60.30330
Akaike information criterion		-7.717217
Schwarz criterion		-7.151493
Number of coefficients		14

## DISCUSSION

Based on the findings, we accept the general hypothesis that establishes the existence of a dependency relationship between Lambayeque's economic growth and the level of employment. Although the economy of Lambayeque in the period 2001-2015 has been growing and fluctuating, the study shows that there is a weak incidence of economic growth in the generation of employment in the Lambayeque region.

The results indicate that in the face of a 1.0% increase in economic growth in Lambayeque, the level of employment has experienced a variation of 0.21%. The results found are related to what is stated by Alvites (2010) when explaining through an econometric model that there is no strong causal relationship between economic growth and employment in Peru in the period 2001 - 2012; Likewise, it coincides with the results of Cruz & Ríos (2013), who determined that employment in Mexico in the last 10 years has not grown at the same rate as the growth of production.

Another finding of the study is related to the growth of the GDP per capita and the improvements in the level of education achieved by the working-age population and the employed EAP, as well as the increase in average income, of which Smith (1776) establishes that material



wealth, and therefore the prosperity of society, obey the level of per-capita income of the population. Consequently, the greater or less the national production, the better or worse the comfort of each inhabitant of a nation.

Unemployment rates in Lambayeque during the study period have been fluctuating, a situation that is adverse to that expressed by neoclassical economists and analyzed by Muñoz (2008). *“Neo-classical economists conclude that the labor market presents an excess supply that, due to being momentary will necessarily have to be decreasing”*. However, for Muñoz, empirical evidence in developed or developing countries shows us that unemployment rates are increasing and persistent.

Another success of the research is related to the variation of employment in the face of a change in wages, a situation that synchronizes with the classical theory of employment and commented on by Chamorro (2011) *“Thus, the classical theory of employment begins with the fundamental assumption that a decrease in wages would increase the levels of employment in an economy, establishing an inverselyproportional relationship between the level of wages and the level of employment”*; During the study period, Lambayeque has suffered these effects.

The Peruvian Institute of Economics (2016) in its 2015 annual report of the Regional Competitiveness Index (INCORE) concludes that Lambayeque continues in ninth place in the Ranking of Regions, although it advanced in the Infrastructure and Education pillars, it fell in Labor and Institutions, aspects that coincide with the results found in the investigation; where the members of the occupied Lambayeque EAP with higher education increased by 64% and the population with primary education decreased by -36%.

## CONCLUSIONS

According to the results of the estimation of the error correction vector econometric model, it was found that the economic growth of the department of Lambayeque had a positive but weak impact on the level of employment. Faced with an increase of 1% in the economic growth of Lambayeque, the level of employment has experienced a growth of 0.21%.

The dynamism achieved by its economy, during the period 2001 - 2015, allowed for several years to obtain a GDP higher than that of the national economy (years: 2005, 2007, 2008, 2012 and 2015), achieving that its GDP increased by 115% (approximately), for its part, the population, in the same period increased by 15%. This scenario generated an increasing GDP per capita (except for 2004), with an average annual growth rate of 5.6%, registering by 2015 a GDP per capita of 9,831 soles, an amount well below the national average (17,852, 69 soles).

The Lambayeque region shows little sustained growth results and has been sensitive to external factors, especially agriculture and industry, affected in some cases by the *“El Niño”* phenomenon and in others by the drought that has not allowed it to reach its peak. Maximum level of production. When evaluating the GDP per capita by five-year period, it turns out that during the period 2001-2005 an average annual growth was achieved that exceeded 4%, while between 2006 and 2010 it grew at an average of 8% and in the last five years (2011-2015) achieved 4.9%.

Lambayeque's labor force, in the period 2001-2015, increased by 187,200 people and its economically active population in 2015 stood at 615,693, characterized by a young employed EAP, with a greater incorporation of female workers; As of 2015, 64.5% are in the range of 14 to 44 years, presenting.

## REFERENCES

- Acosta, A., Barráez, D., Pérez, D., & Urbina, M. (2015). Country Risk, Macroeconomic Fundamentals and Uncertainty in Latin American Economies. *Monetaria*, 3(2), 147-174.
- Alvites, C. (2015). Economic Growth and its Incidence in the Generation of Employment in Peru: 2001-2012.
- Barbosa-Filho, N.H. (2020). From Dilma to Bolsonaro: Brazilian economic policy in 2011-2019. *The Economic Quarter*, 87(347), 597-634.
- Bortz, P.G., Michelena, G., & Toledo, F. (2020). Exogenous shocks and external indebtedness. Effects on growth and distribution in emerging and developing economies. *The Economic Quarter*, 87(346), 403-436.
- Bosch, M.J., García, C.J., Manríquez, M., & Valenzuela, G. (2018). Macroeconomics and Family Conciliation: The Economic Impact of Childcare. *The Economic Quarter*, 85(339), 543-582.
- Chamorro, A. (2011). Some elements about the classical theory of employment and the Keynesian version. Trends.
- Cruz, G., & Ríos, H. (2014) Elasticities resulting from the employment of workers in Mexico: an analysis by occupations. *Mexican Journal of Economics and Finance*, 9(1), 37-59.
- Fuentes, P., & Mainar, A. (2015). Economic and employment impact of the Social Economy in Spain. A multisectoral analysis, *Public, Social and Cooperative Economy Magazine*, 83, 63-81.
- Vela, L. (1996.) The Lambayecana economy: recent evolution and perspectives.

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