

# Incidence Of Gender Equality in Economic Growth: The Case of Peru, 2001–2018

Incidencia de la igualdad de género en el crecimiento económico:  
El caso de Perú, 2001 - 2018

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## ABSTRACT

The situation in Peru is not indifferent to gender inequality, which is a persistent problem in our society hindering the best possible scenario of economic growth. This study aims to measure the incidence of gender equity in Peru's economic growth, given that, in recent years, the role of women in the socioeconomic sphere has gained momentum, positively impacting GDP growth across the world. Results are obtained from a quantitative analysis conducted from 2001 to 2018, by estimating the logarithmic regression model, which is based on time-series data. The analysis shows a significant relationship between gender equity and economic growth.

*Keywords:* gender inequality, economic growth, GDP.



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## RESUMEN

La situación en el Perú no es indiferente a la desigualdad de género, que es un problema persistente en nuestra sociedad obstaculizando el mejor escenario posible de crecimiento económico. El presente estudio tiene como objetivo medir la incidencia de la equidad de género en el crecimiento económico del Perú, dado que, en los últimos años, el rol de la mujer en el ámbito socioeconómico ha cobrado impulso, impactando positivamente en el crecimiento del PBI en todo el mundo. Los resultados se obtienen a partir de un análisis cuantitativo realizado entre los años 2001 y 2018, mediante la estimación del modelo de regresión logarítmica, el cual se basa en datos de series de tiempo. El análisis muestra una relación significativa entre la equidad de género y el crecimiento económico.

*Palabras Clave:* desigualdad de género; crecimiento económico; PIB.

Society has evolved by assigning roles based on gender, confining women to domestic and child-rearing tasks (García, 2008). Although governments and many international organizations fight gender inequality, it is still a problem in society and it limits the countries' social and economic growth. Therefore, this study aims at determining the incidence of gender equality on the evolution of Peru's economic growth during the period 2001–2018.

The impact of reducing gender inequality and social gaps on economic growth is a matter of debate. Some economists claim that reducing gender inequality and social gaps generates a significant and positive impact on economic growth; however, Barro and Lee (1994) and Barro and Sala-I-Martin (1995) assert that the existence of such gaps is what boosts economic growth by limiting women to educating their children.

Iceland has the narrowest gender gap in the world, according to the Global Gender Gap Report 2020, and it has held this position for over a decade, followed by Norway and Finland (World Economic Forum [WEF], 2019). The European Union has played an important role in fighting gender inequality. It accompanied the change in society by amending laws gradually as from the adoption of a treaty by the European Economic Community in 1957. It first passed a law on gender discrimination focused on equal pay, and then established directives on equal pay, equal opportunities for men and women in legal and professional spheres and maternity, among others (Sender and Timmer, 2019).

By contrast, Latin America and the Caribbean is one of the regions with the most inequality, discrimination, and violence. According to the Human Development Report Office (2019), it is the fourth most unequal region with its Gender Inequality Index standing at 0.383 in 2018. Vázquez, Arredondo, and De la Garza (2016) argue that Latin American culture negatively influences the struggle for women's empowerment in society. Moreover, Váscquez (2017) and Usman and Lestari (2016) have studied and proven that narrowing the gender gap has a considerable effect on a country's economic growth. According to the Social Institutions and Gender Index (SIGI) report drafted by the Organization for Economic Cooperation and Development (OECD, 2019), the cost to the global economy of gender-based discrimination is USD 6 trillion or 7.5% of the global GDP, while in South America, the cost amounts to USD 279 million.

Furthermore, according to the report issued by the World Economic Forum (WEF, 2019), Peru ranks 66 out of 153, as it still has to reduce gender inequality by 28.6%. The country's most alarming index is Economic Participation and Opportunity (rank 90), as it is one of the countries with the lowest wage equality (WEF, 2019). Similarly, female political empowerment is one of the weak points; Iceland ranks first in this index with 67.4%, while Peru's index stands at 24.8% (WEF, 2019).

In Peru, inequality is inherent in society not only in terms of violence against women but also in women's difficulty in achieving economic autonomy; as mentioned by Vázquez, Arredondo, and De la Garza (2016), the number of women who do not earn any income of their own doubles the number of men in the same situation. Moreover, a study by the WEF (WEF, 2015) shows that Peru is among the countries that offer the fewest opportunities for women's participation in GDP growth, even though in recent decades (1990–2010) their economic participation went up by 1.6% per year.

Therefore, education is considered one of the most influential tools in bridging the gender gap. Authors such as Rios (2019) find that greater public spending on education is necessary, along with the implementation of new public policies. Reducing gender inequality is essential at present, since an increased representation of women in the different social, economic, and political areas would gain multiple economic and performance benefits for Peru.

According to the Ministry of Labor and Employment Promotion (MTPE, 2019), the average monthly income of the male employed population in 2018 was PEN 450 higher than that of the female employed population in the urban sector. The difference is just as sharp in the rural sector, as men collect an average monthly income that is PEN 318 higher than that of women. Gender inequality is extremely evident in education as well; women illiteracy rate was 8.3% in 2018, while such rate amounted to only 2.9% for the male population (Peruvian Institute of Statistics and Informatics [INEI], 2019). Furthermore, according to the 2019 Human Development Report of the United Nations Development Program (UNDP, 2020), Peru has a Gender Inequality Index of 0.381 and ranks 87th worldwide. Compared with Switzerland, which has an index of 0.037 and ranks first, Peru has a very high inequality index (Human Development Report 2019 of UNDP, 2020).

This study identifies and quantifies the relationship between gender inequality and economic growth in Peru to make a meaningful contribution to stakeholders. A favorable environment with equal rights, responsibilities and, above all, opportunities is a significant contribution to society, especially to women, who have always been considered a vulnerable population, and thus are the main stakeholders of this study.

Section one introduces the research project, followed by an overview of the theoretical framework supported by authors' knowledge about economic growth and feminist politics in section two. Section three describes the methodology, followed by the quantitative analysis of the data using such methodology. Section four presents the results, followed by the discussion (section five), and finally the conclusions (section six).

## **THEORETICAL FRAMEWORK**

Several studies have shown that gender inequality has negatively affected economic growth in many countries worldwide. According to Mishra, Mishra, and Sarangi (2020), women's advancement and consequential gender equality have significant implications for human capital formation, increase in labor productivity, employment creation, poverty reduction, and overall socioeconomic and human development. Therefore, inclusive growth and sustainable development would not be possible without women's empowerment and gender equality. Their results provide evidence of an overall positive impact of the gender parity index of health, education, employment, and democratic representation on the economic growth of Asia in the long run (Mishra, Mishra, and Sarangi, 2020). Thus, gender equality is an important determinant of economic growth in Asian countries and, hence, should be on board while planning the empowerment of women.

Meanwhile, Klasen and Lamanna (2009) argue that gender gaps in education and employment significantly reduce economic growth; the combined "costs" of education and

employment gaps in Middle East and North Africa and South Asia amount to 0.9–1.7 and 0.1–1.6 percentage point differences, respectively, in growth compared to East Asia. Gender gaps in employment appear to have an increasing effect on economic growth differences between regions, with the Middle East, North Africa, and South Asia suffering slower growth in female employment (Klasen and Lamanna, 2009). Their results show that the cost of failing to make efforts to reduce the gender gap in women's education and employment not only has an effect on society but also harms economic performance and growth (Klasen and Lamanna, 2009).

In Peru, Rios (2019) analyzes the role of education in reducing the gender wage gap, as there is still a large difference between income collected by the Peruvian male and female population. Their results showed that education exerts a positive influence in addressing the gender wage gap, emphasizing that not only should there be an increase in investment in education, but that it must be accompanied by policies that help reduce school dropout rates among women. Finally, it highlights that this gap can only be eliminated by investing in education and receiving external help, that is, public policies.

### *Gender and Gender Identity*

According to the World Health Organization (WHO), gender is a social construct of characteristics of women and men. This includes norms, attitudes, behaviors, and roles, among others, associated with being a woman, man, girl, or boy (WHO, 2020). Similarly, gender identity according to Ahmed and McNeilly (2014), refers to how individuals perceive themselves as being male or female, while gender role describes characteristics that are sexually dimorphic within a normal population.

### *Economic Growth and Women's Access to Education*

Endogenous growth theory emphasizes human capital as a determinant of economic growth. Lucas (1988) proposes the existence of externalities based on human capital accumulation through learning-by-doing or schooling, which would reinforce capital productivity and boost the economy.

Human capital accumulation will be analyzed from the perspective of schooling. In Lucas' (1988) model, two effects are considered: first, an internal effect explained as the individuals' human capital in their own productivity; second, an external effect defined as the level of skill, that is, the relation between this person's productivity and the other factors of production.

Uribe (1933) describes that productivity develops better with external productivity, the exploitation of economies of scale, learning-by-doing, and knowledge, which is associated with human capital on the basis of complementarity. Endogenous growth theory upholds that the level of education of the overall population describes how its economy can bolster and exploit opportunities.

Gender gap in women's educational attainment has been studied by many authors for its possible effect on economic growth. According to Psacharopoulos (1995), the rate of return to female education is positive and marginally higher than that of men. King and Hill (1993) found that female education has an important and positive effect on Gross Net Product (GNP).

### *Women's Role in the Labor Market*

Women's role and their participation in society has been restricted and stereotyped for many years; lately, we have observed a drastic rise in female participation in the labor market

in Latin America, from 32% in 1990 to 53% in 2008, building considerable growth for the different economies (International Labor Organization and United Nations Development Program, 2009). However, according to the International Labor Organization (ILO, 2017), female labor force participation remains 27% lower than male participation; similarly, female unemployment rate is higher than that of men; 6.2% of women are unemployed compared to 5.5% of men. Moreover, women are more likely than men to be underemployed; in developing countries, the percentage of underemployed women represents up to 50% of employment (ILO, 2017).

In the same report produced by the ILO (2017), it is explained that greater women participation in the labor market would promote economic growth. According to the ILO report (2017) conclusions, increased women participation is equivalent to a greater use of a country's productive capacity, thus boosting nationwide competitiveness.

Despite the great benefit that could be brought by a greater inclusion of women in the labor market, it has become evident that such inclusion must be accompanied with cultural changes and amendments or creation of laws in the countries that support women inclusion in the labor market to achieve the due recognition of women's rights. Women still encounter great difficulties in accessing managerial positions or in overcoming the obstacles faced when they occupy managerial positions (Ayala, Cabezas, and Filippis, 2011).

## METHODS

This study analyzes annual time-series data of a sample of 12 relevant variables related to economic growth during 2001–2018. Data were collected from several Peruvian institutions such as the Central Reserve Bank of Peru (BCRP), the Latin American and Caribbean Demographic Center (CELADE), the Economic Commission for Latin America and the Caribbean, and the Peruvian Institute of Statistics and Informatics (INEI).

### *Model*

According to the theoretical framework, the model developed based on Klasen and Lamanna (2009) and Mishra, Mishra, and Sarangi (2020) customized to the Peruvian situation is as follows:

$$GDP = f(FLE, MLE, TFR, WENP, AYE15W, AYE15M, EAFP, FSEP, MSEP, FAR, MAR)$$

### *Variables*

The variables used in the research are annual time-series data.

**Table 1**

#### *Variable Characteristics*

Variable	Name	Measurement Unit	Type	Frequency	Source
GDP	GDP per capita	Constant Peruvian Soles	Dependent	Annual	BCRP
FLE	Female life expectancy	Years	Independent	Annual	CELADE
MLE	Male life expectancy	Years	Independent	Annual	CELADE
TFR	Total fertility rate	Births per woman	Independent	Annual	INEI
WENP	Women elected to national parliament	Percentage	Independent	Annual	CEPAL

AYE15W	Average years of education attained by women aged 15+	Years	Independent	Annual	INEI
AYE15M	Average years of education attained by men aged 15+	Years	Independent	Annual	INEI
EAFP	Economically active female population	Percentage of total EAP	Independent	Annual	INEI
FSEP	Female salaried employed population	No. of people	Independent	Annual	INEI
MSEP	Male salaried employed population	No. of people	Independent	Annual	INEI
FAR	Female activity rate	Percentage	Independent	Annual	INEI
MAR	Male activity rate	Percentage	Independent	Annual	INEI

Note. Prepared by the authors

### Descriptive Statistics

We performed a logarithmic transformation because some of the series had a high level of variance.

**Table 2**

*Summary of the descriptive statistics of the logarithmic series*

	LGDP	LFLE	LMLE	LTFR	LWENP	LAYE15W
<b>Mean</b>	9.436670	4.331922	4.259315	0.919409	-1.452794	2.264061
<b>Desc. Stats.</b>	0.244466	0.016402	0.017908	0.086407	0.194966	0.035476
<b>Skewness</b>	-0.277656	-0.440611	-0.355734	0.033752	-0.079259	-0.388822
<b>Kurtosis</b>	1.592183	2.130978	2.048845	1.788453	1.397258	1.759466

Note. Prepared by the authors

**Table 3**

*Summary of the descriptive statistics of the logarithmic series*

	LAYE15M	LEAFP	LFSEP	LMSEP	LFAR	LMAR
<b>Mean</b>	2.299907	-0.831104	7.654154	8.307645	-0.459664	-0.202046
<b>Desc. Stats.</b>	0.031061	0.014494	0.263219	0.152680	0.033861	0.011790
<b>Skewness</b>	-0.434685	-1.204920	-0.272299	-0.377203	-1.220576	-0.101893
<b>Kurtosis</b>	1.787048	3.614699	1.540223	1.612183	3.705771	1.940901

Prepared by the authors

**Table 3**

*Summary of Jarque–Bera’s test for normality of logarithmic series*

Series	JB test statistic	Prob (JB test statistic)	Null Hypothesis
LGDP	1.717741	0.423640	Not rejected
LFLE	1.148812	0.56303	Not rejected

<b>LMLE</b>	1.058163	0.589146	Not rejected
<b>LTFR</b>	1.104302	0.575710	Not rejected
<b>LWENP</b>	1.945432	0.378055	Not rejected
<b>LAYE15W</b>	1.607741	0.447593	Not rejected
<b>LAYE15M</b>	1.670293	0.433811	Not rejected
<b>LEAFP</b>	4.638888	0.098328	Not rejected
<b>LFSEP</b>	1.820651	0.402393	Not rejected
<b>LMSEP</b>	1.871373	0.392316	Not rejected
<b>LFAR</b>	4.843002	0.088788	Not rejected
<b>LMAR</b>	0.872414	0.646484	Not rejected

Note. Prepared by the authors

## RESULTS

According to the model established, below the results of our investigation are detailed. In addition, some statistical tests for validation, robustness and statistical significance will be detailed.

### *Model Estimation*

$$\begin{aligned}
 lGDP = & -23.54733 + 13.30742 lFLE - 7.7724 lMLE + 0.7159 lTFR - 0.0316 lWENP \\
 & - 1.0127 lAYE15W - 0.1157 lAYE15M - 1.7968 lEAFP + 0.8581 lFSEP \\
 & + 0.2509 lMSEP + 1.4540 lFAR - 3.00482 lMAR
 \end{aligned}$$

**Table 4**

*Multiple linear regression model*

Variable	Coefficient	Standard Deviation	T-statistic	Prob.
<b>Constant</b>	-23.54733	1.714127	-13.73721	0.0000
<b>LFLE</b>	13.30742	1.884008	7.063359	0.0004
<b>LMLE</b>	-7.722402	1.967410	-3.925162	0.0078
<b>LTFR</b>	0.715852	0.113981	6.280476	0.0008
<b>LWENP</b>	-0.031628	0.006480	-4.880604	0.0028
<b>LAYE15W</b>	-1.012668	0.295990	-3.421293	0.0141
<b>LAYE15M</b>	-0.115679	0.416714	-0.277599	0.7906
<b>LEAFP</b>	-1.796797	0.477803	-3.760543	0.0094
<b>LFSEP</b>	0.858064	0.040794	21.03394	0.0000
<b>LMSEP</b>	0.250888	0.064801	3.871647	0.0083
<b>LFAR</b>	1.454010	0.302151	4.812195	0.0030
<b>LMAR</b>	-3.004820	0.499887	-6.011002	0.0010
<b>R-squared</b>	0.999950		<b>Durbin-Watson stat</b>	2.446300
<b>F-statistic</b>	10912.70		<b>Prob(F-statistic)</b>	0.000000

Note. Prepared by the authors

## Individual Significance Testing

For the estimated equation, the parameters of the variables LFLE, LMLE, LTFR, LWENP, LAYE15W, LEAFP, LFSEP, LMSEP, LFAR, and LMAR are individually significant; their p-value is less than the significance level set to 5%, respectively. Therefore, we rejected the null hypothesis of no statistical significance of the parameter.

## Overall Significance Testing

All the model parameters estimates are overall significant because they present a high value of the F-statistic equal to 10,912.7 and a p-value of 0.000. According to the overall significance test, as the p-value is less than 5%, the null hypothesis of no statistical significance of overall parameters is rejected.

## Analysis of Compliance Tests on the Assumptions of OLS

### Homoscedasticity

#### *Glejser Test*

$$p - value_{F-stat} = 0.7038 > \alpha = 0.05$$

Since p-value 0.7038 is greater than 5%, the null hypothesis of no heteroscedasticity of the residuals is not rejected.

#### *Breusch–Pagan–Godfrey Test*

$$p - value_{\chi^2} = 0.6096 > \alpha = 0.05$$

Since p-value 0.6096 is greater than 5%, the null hypothesis of no heteroscedasticity of the residuals is not rejected.

### No Autocorrelation

#### *Durbin–Watson Test*

According to the results found, Durbin–Watson (d) stands at 2.4463, whereas  $n = 18$  and  $k = 11$ . With these data, we can calculate the upper and lower limits, which are,  $dL = 0.177$  and  $dU = 3.265$ , respectively. Durbin–Watson is located between both limits, which means that it is in a zone of indecision without exact results. To such end, we need to conduct other tests such as the Breusch–Godfrey test, also called the Lagrange multiplier.

#### *Lagrange Multiplier Test for Autocorrelation*

We conducted the Lagrange multiplier autocorrelation test. Analyzing the test with the first lag, we found a p-value of 0.0660, which is greater than 5%. Thus, the null hypothesis of no autocorrelation in the residuals is not rejected. We concluded that the model does not present correlation in the residuals with its own lags, that is, the model has no autocorrelation.



## Correlogram

We analyzed the correlogram of the residuals, which shows that no autocorrelation function of the residuals exceeds the significance bands; therefore, it is very likely that the model has no autocorrelation. Upon analyzing the correlogram, we found that the autocorrelation (ACF) exhibits short memory series. We suspect that the series is stationary and that the partial autocorrelation (PACF) represents short memory series. Therefore, it follows a White Noise process.

## Normality

$$p - value_{JB} = 0.920462 > \alpha = 0.05$$

We confirmed the normality of the model's errors using the Jarque–Bera normality test. Since p-value of the test is 0.920462, which is greater than 5%, the null hypothesis of normality of the errors is not rejected. We determined that the model residuals follow a normal distribution with a mean of zero and constant variance.

## Dickey–Fuller Unit Root

$$p - value_{JB} = 0.000 < \alpha = 0.05$$

Applying the Dickey–Fuller test, we confirmed that the residuals do not have a unit root, since p-value is less than 5%; hence, errors are stationary.

## Linearity

### *Ramsey Test*

$$p - value_{F_{calculated}} = 0.1867 > \alpha = 0.05$$

To demonstrate the correct specification and check the linearity of the model parameters, we conducted the Ramsey reset test. The results show that there is linearity in parameters, since p-value is 0.1867, which is greater than 5%. Thus, the model is correctly specified.

## DISCUSSION

A 1% increase in female life expectancy would raise GDP per capita by 13.3%, while a 1% boost in male life expectancy would decrease GDP per capita by 7.8%. Hence, faster growth will be achieved when efforts are invested in women's progress in society because life expectancy at birth accurately describes the quality of human capital in an economy, which can have the greatest impact on economic growth. The value of this female-to-male ratio goes up when female life expectancy at birth increases faster than male life expectancy at birth. In other words, growth can be accelerated only when society as a whole promotes women's development and gender equality in terms of longer and healthier lives.

In addition, with a 1% improvement in the total fertility rate, GDP per capita would speed up by 0.7%; with an increase in fertility rate, a greater number of young workers available would join the production systems. Presently, due to technological advancement and opening-up of markets, the labor force is highly qualified.

Moreover, when the average number of years of education of women aged 15 and older increases by 1%, GDP per capita would decrease by 1.01% due to the higher number of Peruvians able to access education owing to the country's improved economic conditions, reducing a portion of the human capital that joined the labor market at a very young age. Further, some people tend to be more interested in their academic and career development, which has affected other variables closely related to the economy, such as the fertility rate. According to World Bank information (2020), the fertility rate stood at 3.91 and 2.26 births per woman in 1990 and 2017, respectively, which means a decline of 1.63 children per woman. This drop usually has a negative impact on the labor market replacement rate, as it generates an imbalance between the young and adult population.

These results show that a 1% increase in the economically active female population would decrease GDP per capita by 1.80%. This negative result is explained by the fact that a large percentage of women who enter the labor market join the informal sector (Peruvian Ombudsman's Office, 2020). According to UN Women (2016), informal employment includes the population working as street vendors, traders of minor goods, or housewives. Globally, 63% of women are informally employed. In Peru, 75.3% of women who are economically active are informal employees (Ministry of Women and Vulnerable Populations, 2020). The Peruvian Ombudsman's Office (2020) also mentions that these high figures of women in employment informality are caused by different barriers, which include the education gender gap, gender-based marginalization in certain types of work, factors related to pregnancy and maternity, sexual coercion or harassment, and gender stereotypes.

The relation between women elected to national parliament and GDP indicates that a 1% increase in participation decreases GDP per capita by 0.03%. By contrast, Mishra, Mishra, and Sarangi (2020) found that this variable has a positive effect of 0.0048% on the growth variable. This relation can be explained by the low rate of female participation, which is affected by various factors such as women's limited experience in political positions, poor public representation in the media, and the way in which political life is structured that it is alien to how women manage family responsibilities (Peruvian Ombudsman's Office, 2020). Laws on women's political participation have evolved since 1997, when gender quota law forced political parties to have a minimum of 25% female participation; the current amendment to the Organic Election Law provides for parity and a 40% alternation. However, according to the Peruvian Ombudsman's Office (2020), women's participation in Congress did not even reach 30% in the last Congress elections.

Furthermore, an increase in the male wage-earning population variable boosts GDP by 0.25%, while a rise in the female wage-earning population increases GDP per capita by 0.86%. Moreover, increased male and female activity rate increase GDP by 3% and 1.45%, respectively. These results are consistent with those obtained by Mishra, Mishra, and Sarangi (2020) and Klasen and Lamanna (2009). As can be seen, the impact of a growing female wage-earning population is stronger than that of men, although both are positive. According to UN Women data (2020), women's economic empowerment, heightened female labor participation in the economy, and reduced gender labor gap have a much faster effect on economic growth, which supports our research results.

In addition, according to a research study conducted by the International Monetary Fund (2019), a company's return on assets would increase from 8% to 13% when women occupy senior positions. Similarly, this study reveals that the banks or financial institutions with women in managerial positions would enhance sector stability. Even so, the importance of male participation in the labor market should not be underestimated. According to a study conducted by the International Monetary Fund by Ostry et al. (2018), the skills of both genders complement each other, which enhances company competitiveness in terms of skills, points of

view, and decision-making techniques concerning risks and collaborations. This study also showed that expanding women's participation in the economy helps to exceed a country's expected economic growth. Furthermore, according to the ILO (2019), approximately 80% of women in the labor market are employed in low productivity sectors, such as in the agricultural, commercial, and service sectors. Therefore, the effect of the female activity rate on economic growth differs from the effect produced by the male activity rate.

In accordance with the theoretical framework, according to Psacharopoulos (1995), the rate of return to female education is positive; King and Hill (1993) found that female education has a significant and positive effect on GNP. The results from our model indicate that the average number of years of schooling attained by the 15-year-old female population has a negative effect on economic growth because an increase in female education reduces fertility, thus generating a negative impact on capital creation, consequently, limiting economic growth in the long run.

Additionally, when analyzing theories about women's role in the labor market, we should follow the guidelines of the theories presented by the ILO, which explain that higher female participation in the labor market has a positive influence on economic growth. A reason that supports this assertion is that the increase in women's education improves both their skills and productive capacity and earnings. The endogenous growth model studied by Lucas (1988) also states that formal education strengthens productivity.

Finally, according to the theoretical model provided by Mishra, Mishra, and Sarangi (2020), gender equality has a significant impact on economic growth, while Klasen and Lamanna (2009) show that gaps in education and employment have a negative effect on a country's economic growth. In general, this model cannot fully demonstrate that gender gaps have an impact on economic growth because variables such as the percentage of women elected to parliament, the average number of years of education attained by the female population aged 15 and older, and the economically active female population have a negative effect on economic growth. However, an in-depth review of these variables should be made in the Peruvian context

## CONCLUSIONS

Gender inequality is an existing problem in society even a huge gender gap can harm an economy. Global efforts to narrow such gap are made by several organizations, including the United Nations that addressed gender inequality as a Sustainable Development Goal. The information collected throughout the development of this research evidences that closing the gender gap in different sectors, such as education and employment, boosts economic growth.

Based on the results from the econometric model, we reached the following conclusions:

The overall variables of gender inequality had a significant impact on economic growth during the period elapsed from 2001 to 2018.

All the demographic indicators have a positive impact on economic growth. A 1% increase in female and male life expectancy would increase GDP per capita by 13.3% and 7.8%, respectively, whereas a 1% rise in the total fertility rate would improve GDP per capita by 0.7%. Life expectancy has such effect because it accurately describes the quality of human capital in an economy, which can have the greatest impact on economic growth; while the total fertility rate improves GDP because it would represent a greater number of young workers available that would join the production systems.

A 1% increase in the average number of years of education attained by women aged 15 and older would reduce GDP per capita by 1.01%. Although results show a negative influence

on economic growth, this is mainly due to the limited number of years covered by this study and that the relationship between these two variables is not studied in the long term. According to the information collected from this study, education has a positive influence on a country's economic growth mainly in the long term, since higher educational attainment leads to highly qualified human capital and, possibly, higher productivity when joining the labor market. Thus, their participation in productive activities will make a bigger contribution to the country's economy.

Labor indexes were consistent with the theory and results of other pieces of research used in this study. A 1% rise in the economically active female population and in women elected to national Congress would decline GDP per capita by 1.80% and 0.03%, respectively. Additionally, the effect of a 1% increase in the male wage-earning population on GDP is 0.25%, while in the case of the female wage-earning population, it boosts GDP per capita by 0.86%. Meanwhile, a 1% increase in the male and female labor force participation rate increases GDP per capita by 3% and 1.45%, respectively. In general, narrowing the gender labor gap has a highly positive effect on Peruvian economic growth with respect to the variables used. The effect of a larger economically active female population on economic growth is greater than the effect of the same variable for men. Further, the female and male activity rate raises GDP. Finally, the economically active female population had a negative effect on the growth variable; according to the pieces of research analyzed, it is directly linked to the informal sector of the economy. Most women who join the labor force are employed in the informal sector due to various reasons such as the large gender gaps in employment evidenced by the difference in the illiteracy rate, workplace marginalization, and gender stereotypes.

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