

## DESIGUALDAD, CRECIMIENTO Y DESARROLLO ECONÓMICO EN AMÉRICA LATINA

### INEQUALITY, GROWTH AND ECONOMIC DEVELOPMENT IN LATIN AMERICA

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#### Abstract

The objective of the paper is to identify the causal relationships between income inequality, levels of democracy and economic growth in Latin America from 1996 to 2014. With this objective in mind, fixed and random effects models are estimated with a periodicity of growth episodes of two, five and ten years to analyze the impact of the variables of interest in different time horizons. The countries in the sample are Argentina, Bolivia, Brazil, Chile, Colombia, Dominican Republic, Ecuador, El Salvador, Jamaica, Mexico, Panama, Peru, and Venezuela. The results indicate that increments in the levels of democracy have a negative effect on the growth of GDP per capita in the two-year growth episodes, to later become positive in the fifth year and reach its maximum effect ten years later. This highlights the importance of the stability of political regimes for a country to reach a state of stationary growth. The results of the Gini variable show that higher levels of income inequality lead to lower economic growth. Its negative impact reaches its maximum five years after the shock that triggered the increase in inequality.

**Keywords:** economic growth, income inequality, democracy, Latin America, per capita income, policymaking.

#### Resumen

El objetivo del artículo es identificar las relaciones causales entre la desigualdad de ingresos, los niveles de democracia y el crecimiento económico en América Latina de 1996 a 2014. Con este objetivo en mente, se estiman modelos de efectos fijos y aleatorios con una periodicidad de episodios de crecimiento de dos, cinco y diez años para analizar el impacto de las variables de interés en diferentes horizontes temporales. Los países de la muestra son Argentina, Bolivia, Brasil, Chile, Colombia, República Dominicana, Ecuador, El Salvador, Jamaica, México, Panamá, Perú y Venezuela. Los resultados indican que los incrementos en los niveles de democracia tienen un efecto negativo sobre el crecimiento del PIB per cápita en los episodios de crecimiento de dos años, para luego volverse positivo en el quinto año y alcanzar su efecto máximo diez años después.

Fecha de recepción: Octubre 2019 / Fecha de aceptación en forma revisada: Mayo 2020

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Esto resalta la importancia de la estabilidad de los regímenes políticos para que un país alcance un estado de crecimiento estacionario. Los resultados de la variable Gini muestran que niveles más altos de desigualdad de ingresos conducen a un menor crecimiento económico. Su impacto negativo alcanza su máximo cinco años después del choque que desencadenó el aumento de la desigualdad.

**Palabras clave:** crecimiento económico, desigualdad en el ingreso, democracia, América Latina, ingreso por habitante, formulación de políticas.

### Introduction

The curve of Kuznets (1955) argues that the relationship between income inequality and growth of gross domestic product per capita has an inverted U shape. This relationship explains the transition from a rural to an industrial economy, a process in which inequality should increase in the early stages of economic development to accelerate the steady-state growth rate. Once a more advanced stage of growth is reached, inequality in income distribution should begin to decrease. However, the empirical regularity proposed by Kuznets is not automatic and generates conflicts and social tensions in its evolution.

Davtyan (2016) argues that income inequality creates political conflicts that decrease the productivity of labor and capital, reducing growth. Furthermore, political, and economic reforms, which aim to increase the efficiency of productive factors, are more difficult to implement. In this way, economic and political institutions are being shaped little by little depending on the degree of concentration of income and political power, they end up being inclusive or exclusive. Acemoglu, Johnson & Robinson (2005) define the former as institutions that protect the economic participation of most of the society and private property and encourage impartial political and justice systems. While the exclusive privileges some social groups over the rest, they lead to an increase in the concentration of political and economic power and limit the exercise of civil rights.

In the absence of full civil, economic, and political rights, incentives are created for some groups in society to engage in criminal activities, from theft, drug trafficking to political revolutions such as guerrillas or armed groups. According to Barro (2000), the participation of certain sectors in crime and other activities represents an inefficient allocation of resources, which could be used in productive activities. In addition, they violate individual private property. In short, poor, and unequal countries are socio-politically unstable, their instability reduces the incentives to save and invest. Even worse, poor countries are socio-politically unstable, and they are poor because they are socio-politically unstable, (Aghion, Caroli, & García-Peñalosa, 1999) This implies that these countries are trapped in a vicious cycle of instability, poverty, and inequality.

Considering the above context, the objective of the article is to identify the causal relationships between income inequality, levels of democracy and economic growth in Latin America from 1996 to 2014. With this objective in mind, fixed and random effects models are estimated with a periodicity of growth episodes of two, five and ten years to analyze the impact of the variables of interest in different time horizons. The countries in the sample are Argentina, Bolivia, Brazil, Chile, Colombia, Dominican Republic, Ecuador, El Salvador, Jamaica, Mexico, Panama, Peru, and Venezuela. The results indicate that increments in the levels of democracy have a negative effect on the growth of GDP per capita in the two-year growth episodes, to later become positive in the fifth year and reach its maximum effect ten years later. This highlights the importance of the stability of political regimes for a country to reach a state of stationary growth. The results of the Gini variable show that higher levels of income inequality lead to lower

economic growth. Its negative impact reaches its maximum five years after the shock that triggered the increase in inequality.

This paper is divided into three sections in addition to introduction and conclusion. The first does a literature review highlighting the empirical findings of the effects of income inequality and democracy on economic growth. The second presents the theoretical framework on the theories that explain the relationships at the macroeconomic level between inequality, democracy, and growth. Section three specifies the econometric methodology, the data, and the models to be estimated. Finally, section four presents the results of the estimated models with their respective analysis.

### **Literature review**

Table 1 presents a synthesis of the literature that explores the relationship between income inequality and economic growth, specifying whether the effect on growth is negative, positive, or inconclusive. Specifically, Barro (2000) exposes the non-existence of a statistically significant causal channel between income inequality and investment and GDP growth rates for a panel of 100 countries from 1965 to 1995. However, Barro argues the existence of an empirical regularity where higher levels of inequality tend to retard growth in poor countries; but they encourage it in high-income countries. The variables used by Barro are the investment index (private plus public) over GDP, the total fertility rate and the results of international science exams, math, and tests as a percentage of correct answers. Its methodology is based on the use of least squares in three stages where the main endogenous variable changes according to the objective of the specific regression.

Kang (2015) and Davtyan (2016) are two cases in the growth literature since they make use of multivariate models of time series, unlike most documents that make use of panel data techniques. Kang (2015) makes use of VAR and VECM models for individual Asian economies. The author finds that there is a tradeoff between income inequality and growth, so he suggests that development interventions focus on minimizing the impacts on one variable in the face of changes in the other. For his part, Davtyan (2016) explores the dynamic interactions between economic growth, inequality, and fiscal performance. For this, it uses a structural vector autoregressive model (SVAR) for the United Kingdom (UK), United States (USA) and Canada. Their results show that income inequality has a negative effect on growth in the UK; but a positive one in the USA and Canada. Furthermore, inequality reduces the fiscal performance of all the countries analyzed. Davtyan's results show the strength of making individual time series models by countries and not putting them all together in a data panel. With this method, the model specification can capture the individual characteristics of each country.

Most inequality studies are based on comparative studies between countries through panel data, but the study by Panizza (2002) carries out a comparative study within the United States. The author uses a combination of cross sections and finds a negative relationship between income inequality and economic growth. In addition, it alerts on the importance of choosing the estimation method and the model specification, since they have an impact on the results and interpretations. Its methodology consists of using standard fixed effects and generalized method estimates of moments.

Effect of income inequality on economic growth	
Effect	Authors
Negative	Persson & Tabellini (1992), Alesina & Rodrik (1994), Persson & Tabellini (1994), Perotti (1994), Clarke (1995), Alesina & Perotti (1996), Perotti (1996), Panizza (2002), Sukiassyan (2004), Orozco & Rivera (2018).
Positive	Li & Zou (1998), Aghion & Howitt (1998), Forbes (2000).
Inconclusive	Barro (2000), Banerjee & Duflo (2003), Dominicus, Groot, & Florax (2006), Shin, Kim, & Yamamura (2009), Castells-Quintana & Royuela (2014), Shin (2012), Kang (2015), Davtyan (2016).

*Table 1. Inequality literature review.*

Table 2 presents a synthesis of the literature focused on exploring the relationship between levels of democracy and economic growth using the same types of negative, positive, or inconclusive effects. Specifically, Alesina & Rodrik (1994) study the relationship between growth and politics through an endogenous growth model with distributive conflicts between agents. The results of the proposed model show that the higher the rate of inequality of wealth and income, the higher the tax rate and the lower the growth. While Alesina, Özler, Roubini, & Swagel (1996) investigate the same relationship but empirically in a sample of 113 countries for the period from 1950 to 1982. Their results show that countries and periods with high political instability and low levels of democracy reduce growth.

Effect of democracy on economic growth	
Effect	Authors
Negative	Persson & Tabellini (1992, 1994), Li, Squire, & Zou (2001), Keefer & Knack (2002).
Positive	Alesina & Perotti (1994), Alesina, Özler, Roubini, & Swagel (1996), Deininger & Squire (1996), Pettersson (2003), Rodrik & Wacziarg (2005), Altman & Castiglioni (2009), Knutsen (2013), Acemoglu, Naidu, Restrepo & Robinson (2019), Perea & Rivera (2020).
Inconclusive	Clarke (1995), Barro (1996), Perotti (1996), Shin (2012).

*Table 2. Democracy literature review.*

In the same line of research, Barro (1996) studies the relationship between economic growth and democracy; to do this, it uses a panel of 100 countries for the period from 1960 to 1990. Its results show that the favorable effects of democracy on growth are the maintenance of the rule of law, free markets, small government consumption and high human capital. Furthermore, Barro finds a non-linear relationship between the variables, where higher levels of democracy increase growth at low levels of political freedom; but it is depressed by growth and a moderate level of freedom has already been reached. For the analyzed sample, economic development translates into improvements in health services, greater access to education, and greater political freedom.

## Conceptual framework

This section presents an overview of the body of theoretical research on the relationship between inequality, democracy, and economic growth. Explanations of the effect of income inequality on growth are classified into credit market imperfections, marginal propensity to save, and mass consumption in society. While the effects of democracy on growth can be explained by fiscal policy, civil, political, and economic rights.

### Inequality and growth

The imperfections in the credit market are caused by the asymmetries in the information and the limitations of the legal institutions at a specific moment (Barro, 2000). The combination of the two previous failures causes inefficiencies in the financial exchange since the agents do not know a priori if the exchange is beneficial or if the other agents will comply with the agreed contracts. As a result, the credit market is characterized by being a market with heterogeneous agents and with variable information and wealth endowments. In this market, inequality is understood as differences in the capital stock and in the flow of income between the participants.

The relationship between the functioning of the credit market and economic inequality can be analyzed from two different positions. The first is based on the article by Kaldor (1957) where it is argued that inequality in wealth and income leads to higher growth based on two arguments: 1. The marginal propensity to save of the rich is greater than that of the poor. If it is assumed that the growth rate of the gross domestic product is related to the national propensity to save; the most unequal societies will grow faster. 2. Investment projects, the creation of new industries, research activities and the development or implementation of innovations involve large sunk costs. With imperfect credit and capital markets.

The second position has its origin in later empirical works, one of them is that of Perotti (1992), where the relationship between loan and value for national mortgages is used as an indicator of the availability of credit in the United States. Their results show that a greater availability of credit for the population has a positive and significant effect on the growth rate. As the share of national income in the lowest two quintiles declines, capital accumulation and growth decline. This implies that a lower level of inequality in wealth and income allows a greater part of the population to access credit tools for consumption and investment. Such access takes the form of higher collateral in possession of the debtors, which reduces the risk of default and gives a higher level of confidence to the financial system (Rivera & Rivera, 2019). As a synthesis of the above, the distribution of income generates liquidity restrictions that affect the speed of accumulation of human capital and physical capital; this reduces the incentives to make new investments.

Similar to Perotti (1992), Aghion, Caroli, & García-Peñalosa (1999) carry out a Ramsey-Kass-Koopmans model where they show that inequality has the following negative effects on growth: 1. Inequality reduces investment opportunities 2. Inequality worsens the incentives of debtors to pay 3. Inequality generates macroeconomic volatility. As a solution to the above, the government can redistribute resources to the less gifted. By reducing inequality, it can improve growth and decrease the volatility of the system. Furthermore, Barro (2000) argues that an efficient redistribution of resources from the rich to the poor should increase savings rates; a fact that according to Kaldor (1957) increases the performance of the economy.

Regarding mass consumption, Matsuyama (2002) formulates a general equilibrium model that focuses on firms and the impact of productivity changes on mass consumption in society. The author states that improvements in productivity allow a greater number of households to access a

consumer good through lower prices. It is important to clarify that these new households are lower on the income scale than households that could buy the product at its original price. Lower prices generate greater domestic demand, which in turn encourages greater investment in research and development to achieve a new productivity improvement. The above process describes in a general way the pattern that the expansion of mass consumption has followed in contemporary societies

Excessive income inequality limits the proper functioning of the consumption massification process and its potential for investment in new technologies and industrialization. Lorente (2018) argues that demand stagnates in the upper strata when the income distance between strata is large, the reduced volume of sales does not justify carrying out new investments in capital or research to lower prices. In this way, growth based on mass consumption stagnates and incentives for innovation disappear.

### **Democracy and inequality**

First, Pettersson (2003) defines a consolidated democracy as a political system with the following three characteristics: 1. A freely and fairly elected government is defeated in the following elections and it accepts the result 2. The democratic system has survived crisis or shocks in time that confirm its solidity. 3. The electoral system makes the rulers responsible through mechanisms of political control in the power of society.

With this in mind, Acemoglu, Naidu, Restrepo, & Robinson (2019) argue that the positive transmission channels of democracy towards growth include economic reforms, greater investment, higher tax collection, better provision of public goods, less social instability, restriction on the power of dictators to command, reduction of social conflicts and the impossibility of that a group with political power monopolizes the most lucrative economic activities. Furthermore, the authors conclude that there is a strong complementarity between democratic institutions and proximate causes of economic growth and development.

Considering the above, the transmission channel for the above effects is fiscal policy. Alesina & Perotti (1994) state that the fiscal channel allows political decisions in a democracy to influence development. The level of taxation and spending are the result of a voting process in which income or wealth are the main determinants of voters' preferences. The poor prefer a higher level of public spending as it has a redistributive effect. In this context, political parties compete for votes and once in power, the public spending they incur is determined by their popularity and ideology (Hernández, 2005).

In this way, fiscal policy is not directed by technical criteria, but by changing political motivations that are determined by the preferences of society; preferences determined by the income and wealth levels of each social group (Rivera & Rivera, 2019). The motivations exposed by Hernández (2005) mean that in democracies where there are periodic elections, politicians in power incur higher public spending in election years to maximize their probability of re-election. The proximate consequences of this maximization process are the creation of a political budget cycle or political cycle.

In dictatorial systems or failed democracies, the government's propensity to carry out bad public and economic policies to guarantee its political survival is greater than in consolidated democracies (Acemoglu, Johnson, & Robinson, 2005; Knutsen, 2013). Democracy limits the discretionary power of the government in office and forces economic policies to be guided by criteria of efficiency and equity, not by political or ideological criteria.

Regarding the civil, political, and economic rights, Knutsen (2013) argues that the vertical accountability mechanisms of consolidated democracies avoid failed public policies. These

mechanisms are free elections, free speech, free media, institutions of political control, open accounts, division of powers and justice systems and impartial conflict resolution. The result of the combination of these mechanisms minimizes the incentives that politicians must commit acts of corruption, repression or spending for electoral purposes.

The biggest problem with the mechanism is that it is based on a relationship of political power between social groups and the state. Those who do not enjoy any type of influence will hardly be protected when their rights are violated (Sachs, 2002). Usually in this group without political power is the poorest population of each country and their social position generates losses in the accumulation of human capital and physical capital. Worse still, the inability to fully exercise their rights causes increases in criminal activities such as drug trafficking and robbery. As a synthesis of the previous mechanism, the excessively unequal distribution of income and political power generates restrictions in the exercise of the rights of some social groups that eventually leads to socio-political instability.

### Methodology

The measure of income inequality is obtained from the standardized world income inequality database (SWIID), which maximizes comparability of income inequality data for the widest possible sample of countries and years. Specifically, the Gini index is taken after taxes and transfers, where 100 represents perfect inequality and 0 perfect equality (Solt, 2019).

The variable to control democracy is taken from the Polity IV project. Specifically, polity variable is constructed from the weighting of the democratic and autocratic aspects of a country. the resulting unified policy scale ranges from +10 (strongly democratic) to -10 (strongly autocratic) (Marshall, Gurr, & Jaggers, 2018).

In addition, a vector of control variables is constructed using variables identified by Panizza (2002), Perroti (1996) and Barro (2000), these variables are usually correlated with growth. The vector of control variables is made up of the logarithm of income, human capital, fertility rate, percentage of urban population, percentage of population above 65 years old and government expending. To identify the relationship between income inequality, levels of democracy and economic growth in Latin America, we estimate the following regression model:

$$Growth_{it} = \alpha + \beta Gini_{it} + \gamma Polity_{it} + \delta X_{it} + U_{it} \quad (1)$$

Where  $Growth_{it}$  is the growth of the per capita product of country  $i$  in year  $t$ ,  $Gini_{it}$  captures the distribution of income,  $Polity_{it}$  captures political stability,  $X_{it}$  the vector of controls, and  $U_{it}$  are the errors. The equation (1) is estimated using fixed and random effects, also, to obtain consistent results, the model is estimated with and without control variables. The periodicity of the estimation is defined with growth episodes of two, five and ten years to analyze the impact of the variables of interest in different time horizons from 1996 to 2014. Specifically, the model for two-year growth episodes includes in its regression the years 1996, 1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012 and 2014; five year episodes include 1996, 2001, 2006 and 2011; and ten year episodes include 1996 and 2006. The countries in the sample are Argentina, Bolivia, Brazil, Chile, Colombia, Dominican Republic, Ecuador, El Salvador, Jamaica, Mexico, Panama, Peru, and Venezuela.

Table 3 presents the summary statistics of the chosen variables.

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum	Variance
2 year growth episode	258	0,0002	0,15	-0,93	0,25	0,02
5 year growth episode	255	0,0004	0,10	-0,38	0,17	0,01
10 year growth episode	250	0,0004	0,07	-0,19	0,10	0,00
Gini	260	46,15	3,93	37,10	53,00	15,48
Democracy	260	7,53	6,18	-88,00	10,00	38,20
Log of Income	260	9,11	0,47	8,00	9,97	0,22
Income	260	9997	4494	2984	21340	20198109
Human Capital	260	2,50	0,28	1,79	3,07	0,08
Government	260	0,16	0,05	0,09	0,34	0,00
Fertility Rate	260	2,56	0,47	1,75	4,38	0,22
Urban	260	72,88	11,59	50,86	91,50	134,44
Old	260	6,50	1,58	4,18	10,73	2,50

Table 3. Summary statistics.

### Results

The results of the basic model with fixed and random effects are found in Table 4. First, increments in the levels of democracy have a negative effect on the growth of GDP per capita in the two-year growth episodes, to later become positive in the fifth year and reach its maximum effect ten years later. This highlights the importance of the stability of political regimes for a country to reach a state of stationary growth (Rivera & Rivera, 2020). The initial impact of democracy is due to changes in the rules of the game that bring about more democratic political systems, that is, agents within an economy do not automatically adapt to new regulations. However, clear rules, respect for private property, fair political participation, functional justice systems, and political and civil guarantees have a positive impact on long-term growth. Furthermore, a higher level of democracy suggests a more stable social environment for the development of the citizens of a country, especially in Latin America, considering the historical centralization of political and economic power in a small group of people.

Variable	Lenght of Growth Episode					
	2 years		5 years		10 years	
	FE	RE	FE	RE	FE	RE
Democracy	-0.000504* (0.000254)	-0.000298 (0.000423)	0.00688 (0.0143)	-0.000530 (0.0101)	0.00252 (0.0118)	4.13e-05 (0.00850)
Gini	-0.0145*** (0.00360)	-0.00639** (0.00272)	-0.0184*** (0.00388)	-0.00708** (0.00299)	-0.0120 (0.0154)	-0.00415 (0.00317)
Constant	0.678*** (0.166)	0.298** (0.124)	0.808*** (0.156)	0.335*** (0.124)	0.549 (0.767)	0.196 (0.172)
Observations	129	129	51	51	25	25

R-squared	0.050	0.0569	0.173	0.0987	0.081	0.1259
Countries	13	13	13	13	13	13

*Table 4. Basic regressions. Notes: standard errors in parenthesis. FE denotes fixed effects and RE denotes random effects. \* refers to a parameter which is statistically significant at 10%, \*\* at 5% and \*\*\* 1%.*

The results of the Gini variable show that higher levels of income inequality lead to lower economic growth. Its negative impact reaches its maximum five years after the shock that triggered the increase in inequality. Furthermore, most of the coefficients obtained for these variables are significant at 5%, which shows that the causal channels suggested in the literature review section are functional.

The previous results contradict the results of studies that favor the accumulation of physical and human capital regardless of their distribution. It is clear that in order to improve the standard of living of its inhabitants, it is mandatory to expand the productive capacity of its economy, however, social policies in charge of minimizing the social friction generated by the growth process are also central to a country's development. Putting these policies aside implies that certain sectors accumulate discontent to, eventually, generate social unrest and political violence.

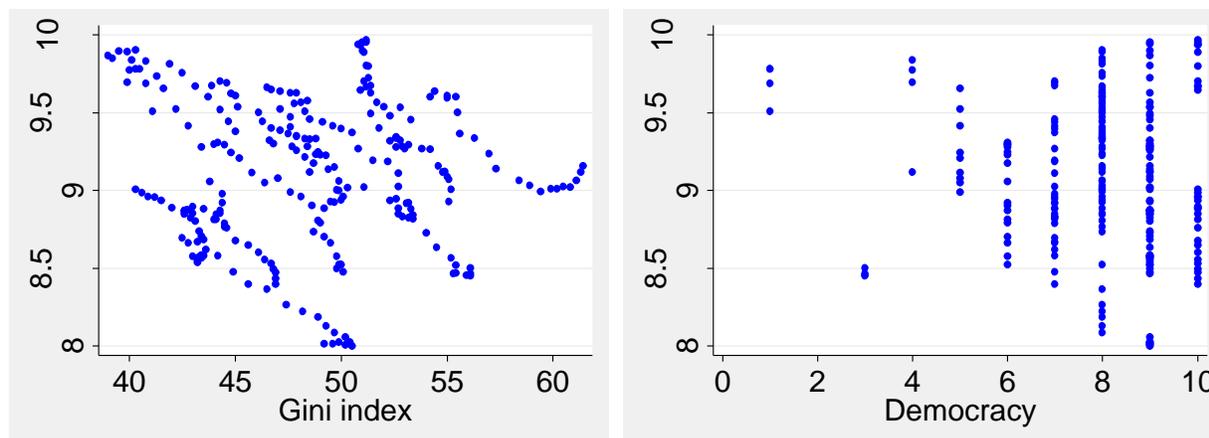
The results of the extended model with fixed and random effects are found in Table 5. Unlike the results without control variables, the impact of democracy on growth is positive for all growth episodes considered. This situation occurs due to the natural interaction that fiscal policy has with the other variables of an economy, such as the accumulation of human capital and the urban population. On the other hand, the relationship of income inequality with other variables means that its impact on growth is not constant. An example of this is its relationship with capital accumulation, a better level of income distribution and wealth delay the volume of investment that fewer people could make. Similarly, faster capital accumulation leads to higher levels of growth, in this case, the interaction of income distribution with capital leads to a positive relationship of the variable of interest. In any case, the global and long-term effect of the variable is positive, as observed in the model for ten-year growth episodes.

The logarithm of income has a positive relationship with the study variable. The logic of the inclusion of this variable points to the massification of consumption and the investment potential of a population. The process of development and economic growth has a high correlation component towards past economic results, that is, jumps in the living standards of the inhabitants are not automatic, there are intermediate steps between two points. In this way, the past or present income of a typical inhabitant of Latin America is an excellent indicator of their potential future income. Regarding the impact of human capital, its causal relationships occur through better qualified labor and a greater potential for the generation of applicable scientific knowledge. These two variables have the potential to grow together in a positive feedback process, where a higher level of education leads to a higher level of income, which increases the possibility of accessing more knowledge and information.

Variable	Length of Growth Episode					
	2 years		5 years		10 years	
	FE	RE	FE	RE	FE	RE
Democracy	-0.000696* (0.000358)	0.000122 (0.000577)	0.0110 (0.0142)	0.00637 (0.0107)	0.0103 (0.00831)	0.00417 (0.00814)
Gini	0.0434** (0.0168)	-0.00373 (0.00340)	0.0253** (0.00965)	-0.00542 (0.00362)	0.0289* (0.0134)	-0.00292 (0.00259)
Log of Income	0.229 (0.155)	-0.0113 (0.0734)	0.238 (0.146)	0.0167 (0.0665)	0.203** (0.0840)	0.0583 (0.0631)
Human Capital	-0.145 (0.201)	0.0736 (0.0703)	-0.0661 (0.193)	0.0750 (0.0626)	-0.231 (0.236)	0.0183 (0.0520)
Fertility Rate	-0.357*** (0.110)	-0.126*** (0.0257)	-0.279** (0.102)	-0.0988*** (0.0209)	-0.193** (0.0746)	-0.0511** (0.0231)
Urban	0.00537 (0.00653)	-0.000196 (0.00105)	-0.000556 (0.00596)	0.000276 (0.000943)	0.000658 (0.00988)	-0.000254 (0.000908)
Old	-0.00163 (0.0494)	-0.0159*** (0.00424)	-0.0368 (0.0592)	-0.0222** (0.00910)	-0.0405 (0.0557)	-0.0153* (0.00882)
Government	-1.069 (0.667)	-0.638 (0.491)	-0.480 (0.522)	-0.266 (0.401)	-0.490 (0.452)	0.0264 (0.248)
Constant	-3.019* (1.447)	0.633 (0.653)	-2.172* (1.128)	0.290 (0.601)	-1.914** (0.811)	-0.218 (0.604)
Observations	129	129	51	51	25	25
R-squared	0.404	0.3784	0.681	0.5730	0.826	0.7935
Countries	13	13	13	13	13	13

*Table 5. Expanded regressions. Notes: standard errors in parenthesis. FE denotes fixed effects and RE denotes random effects. \* refers to a parameter which is statistically significant at 10%, \*\* at 5% and \*\*\* 1%.*

The expanded model makes it possible to identify a stylized fact in the demographics of the Latin American countries. Fertility levels and the percentage of the population over 65 years old have a negative relationship with the economic growth observed in all the growth episodes considered. The explanation, again, has to do with the distribution of income and the consumption potential of a population. Rivera & Rivera (2020) show that the demographic growth of the region during the 20th century was faster than the expansion of GDP, with this, the part of the income that corresponds to each inhabitant is less, making it difficult to accumulate physical and human capital. The negative impact of the population over 65 years old is due to the ineffectiveness of the security systems in Latin America, where the majority of retirees do not have a stable source of income due to high levels of informality. Furthermore, the population that achieves a pension cannot maintain the same level of consumption that they had when they were in the labor market.



*Graph 1. Relationship between growth, democracy, and inequality.*

Graph 1 shows the discovered relationship between income inequality, democracy, and economic growth. In addition to the direction of the effects already mentioned, it is found that the stability of these variables matters. Going from a political or civil state to a better or worse state very quickly, causes distributive disturbances that hinder economic activity. This supports economic and social policies that lead Latin American societies to a desirable state with progressive and planned processes. In this environment, the consistency of fiscal policy becomes one of the greatest challenges for fiscal policy, changes in regimes and political ideologies change the motivations and assumptions that public spending should have. The relationships between inequality, democracy and growth are intricate, that does not mean that it is impossible to determine the impacts that one variable has on the other. As already mentioned, higher levels of democracy and lower levels of inequality in the distribution of wealth and income generate higher levels of growth, and also make it sustainable. Despite these findings, the positions of governments are changing, so they cannot carry out sustainable and consistent social plans.

### **Conclusion**

This paper managed to identify the causal relationships between income inequality, levels of democracy and economic growth in Latin America from 1996 to 2014. Further, thanks to the literature review and conceptual framework carried out, it was possible to establish the causal explanation that each of these variables plays economic growth under the vision of growth by accumulation of factors, by innovation and institutional hypotheses.

First, inequality has the following negative effects on growth: 1. Inequality reduces investment opportunities 2. Inequality worsens the incentives of debtors to pay 3. Inequality generates macroeconomic volatility. As a solution to the above, the government can redistribute resources to the less gifted. By reducing inequality, it can improve growth and decrease the volatility of the system. Second, the positive transmission channels of democracy towards growth include economic reforms, greater investment, higher tax collection, better provision of public goods, less social instability, restriction on the power of dictators to command, reduction of social conflicts and the impossibility of that a group with political power monopolizes the most lucrative economic activities.

The results of the estimated models indicate that increments in the levels of democracy have a negative effect on the growth of GDP per capita in the two-year growth episodes, to later become positive in the fifth year and reach its maximum effect ten years later. This highlights the

importance of the stability of political regimes for a country to reach a state of stationary growth. The results of the Gini variable show that higher levels of income inequality lead to lower economic growth. Its negative impact reaches its maximum five years after the shock that triggered the increase in inequality.

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